Evaluation Report

Parque Nacional Revillagigedo

Location: Revillagigedo Archipelago, Mexico, Eastern Pacific Ocean

Blue Park Status: Nominated (2020), Evaluated (2021)

MPAtlas.org ID: 68808404

Manager(s): Comisión Nacional de Áreas Naturales Protegidas (CONANP)

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Figure 1: Revillagigedo National Park, located 400 km south of Mexico’s Baja peninsula, covers 148,087 km² and includes 3 zone types – Research (solid blue), Tourism (dotted), and Traditional Use/Naval (lined) – all of which ban all extractive activities. It is partially surrounded by the Deep Mexican Pacific Biosphere Reserve (grey) which protects the water column below 800 m. All 3 zones of the National Park are shown in the same shade of dark blue, reflecting that they all have Regulations Based Classification scores \( \leq 3 \), corresponding with a fully protected status (see Section 2.1 for more information about the regulations associated with these zones).

(Source: MPAtlas, Marine Conservation Institute)
Figure 2: Three-dimensional map of the Revillagigedo Marine National Park shows the bathymetry around Revillagigedo’s islands. (Source: Comisión Nacional de Áreas Naturales Protegidas, 2018)
1.1 Eligibility Criteria: Biodiversity Value (must satisfy at least one)

1.1.1. Includes rare, unique, or representative ecosystems.

The Revillagigedo Archipelago is comprised of a variety of unique ecosystems, due in part to its proximity to the convergence of five tectonic plates. The resulting diverse geoforms – for example, the shield volcanoes that emerged from underwater to create Revillagigedo’s islands – and varied relief form complex heterogeneous habitats (see the bathymetry of the area in Figure 2). Revillagigedo National Park protects mangroves, shallow and mesophotic coral reefs, rocky reefs, abyssal plains, hydrothermal vents and seamounts. Revillagigedo is an important stepping stone for coral species crossing from the Indo-Pacific to the Eastern Tropical Pacific. Additionally, mangrove thickets are focalized in patches around Socorro Island.

1.1.2. Includes area of high species richness or endemism within the context of the biogeographic region.

Revillagigedo is recognized as a region of great zoogeographic relevance with a unique dispersal of marine fauna as organisms from the Indo-Pacific, Gulf of California and the Mexican Pacific converge in the transition zone. The Revillagigedo Archipelago is located within two large marine ecoregions – the Mexican Pacific Transition and the Southern Californian Pacific. At the boundary of these ecoregions, the convergence of the California Current, North Equatorial Current and the Coastal Current of Costa Rica creates a highly productive transitional zone. Near Clarion Island, these currents generate an increase in primary productivity and abundance of phytoplankton: 190 macroalgal species (38 Chlorophyta, 29 Phaeophyta, 123 Rhodophyta) have been registered around the Archipelago’s four islands. The diversity of the algal communities is greater than that reported for other islands of the Mexican Tropical Pacific and depends on the geomorphological configuration and the rocky and coral reef habitats present in the archipelago. As a result of high productivity, Revillagigedo National Park supports incredibly biodiverse ecosystems and large aggregations of benthic and pelagic species.

The rocky reefs of Revillagigedo house at least half of all recorded marine fauna species in the region. The coral community of the archipelago is one of the most diverse in the Eastern Tropical Pacific. It includes 22 species of hermatypic corals, half of which are only found in the Eastern Tropical Pacific and one third of which are found exclusively in

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the waters of Revillagigedo. The islands of Revillagigedo, particularly Socorro Island, contain a high diversity of invertebrates, mainly crustaceans and mollusks. The pronghorn spiny lobster (*Panulirus penicillatus*), a commercially valuable species, is also abundant in the waters of Socorro Island and San Benedicto Island.

Revillagigedo National Park protects 389 reported species of fish, of which 352 are bony fish, representing 13.2% of the total ichthyofauna in Mexico. Of these, 16 are endemic to the Revillagigedo Archipelago. The remoteness of the region has sustained large populations of pelagic fish, including transpecific species that disperse across the Eastern Pacific Barrier, a 6400 km stretch of ocean with depths of up to 11 km that separates the central from the eastern Pacific Ocean. Fish biomass in the Revillagigedo Archipelago is greater than nearly anywhere else in the world, only falling behind Galapagos Marine Reserve in Ecuador and Cocos Island National Park in Costa Rica. Elasmobranchs are the most diverse group of the pelagic fish community. Twenty-eight species of sharks have been recorded in Revillagigedo, and it is an important breeding site for the silvertip shark (*Carcharhinus albimarginatus*), the whitetip reef shark (*Triaenodon obesus*) and the Galapagos shark (*Carcharhinus galapagensis*). The archipelago also includes a large aggregation of giant manta rays (*Manta birostris*).

In addition to fish, Revillagigedo National Park is home to an abundance of other marine species including hawksbill turtles (*Eretmochelys imbricata*) and several species of seabirds, such as the wedge-tailed shearwater (*Ardenna pacifica*), Townsend’s shearwater (*Puffinus auricularis*) and the Laysan albatross (*Phoebastria immutabilis*). It includes important breeding and nesting sites for green sea turtles (*Chelonia mydas*).

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The region is also an important spot for feeding, reproduction, and movement of marine mammal species such as a large aggregation of humpback whales (*Megaptera novaeangliae*), as well as blue whales (*Balaenoptera musculus*), pantropical spotted dolphins (*Stenella attenuate*), spinner dolphins (*Stenella longirostris*), false killer whales (*Pseudorca crassidens*) and orca whales (*Orcinus Orca*).18

1.1.3. Includes demonstrated historic or predicted ecological refugia.

According to Carter et al. (2020), coral reefs surrounding the Revillagigedo Archipelago have the characteristics of a coral refugia, suggesting increased resilience to climate change. These characteristics include: 1) a moderate ocean warming trend and weaker El Niño associated thermal anomalies than other regions of the Eastern Tropical Pacific; 2) high frequency temperature variations caused by internal waves, which can improve coral tolerance to thermal stress; 3) intermittent high-frequency temperature variability caused by tropical cyclones promoting coral resilience and having a cooling impact on sea surface temperature during the warmer periods of the year; 4) high species diversity relative to other coral populations in the Eastern Tropical Pacific, increasing the likelihood of ecological redundancy, and significant self-recruitment to maintain in situ coral populations; 5) multiple endemic coral species, which has indicated climate stability in the past; 6) high connectivity, which could support expansion of persistent coral species; and 7) few human-induced stressors. The authors conclude that Revillagigedo should be recognized as a globally significant sentinel site monitored for the effects of climate change and refugia.19

1.1.4. Includes area important for threatened species (including those identified by the IUCN Red List or national legislation), keystone species, or foundational species. Important areas include migration pathways and breeding, nursery, feeding, or assembly areas.

Several species in Revillagigedo National Park have been listed on the IUCN Red List, including the whale shark (*Rhincodon typus*; IUCN/EN20), scalloped hammerhead shark (*Sphyrna lewini*; IUCN/CR21) silky shark (*Carcharhinus falciformis*; IUCN/VU22), silvertip shark (IUCN/VU23), hawksbill turtle (IUCN/CR24), and blue whale

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Experts suggest that several other threatened and endangered species live in and rely on Revillagigedo’s waters, as well.\textsuperscript{26}

Official Mexican Standards (\textit{Norma Oficial Mexicana}, NOM) are mandatory regulations put into place to regulate activities that may be a risk to people, animals, plants and the environment.\textsuperscript{27} NOM-059-SEMARNAT-2010, which protects species at risk, is applicable to Revillagigedo and protects species that inhabit its waters, including the Townsend’s shearwater, hawksbill turtle, the whale shark, almaco jack (\textit{Seriola rivoliana}), and all marine mammals that migrate through the waters of Revillagigedo. It also protects the purple snail (\textit{Plicopurpura pansa}), which is of cultural importance to Pacific indigenous peoples. The rocky intertidal zone of Socorro island houses the largest population of the purple snail and is considered a genetic reserve of the species.\textsuperscript{28}

The Revillagigedo Archipelago is located in a migratory crossroads for several pelagic species of great ecological and economic importance in the Mexican Pacific, mainly the yellowfin tuna (\textit{Thunnus albacares}) bigeye tuna (\textit{Thunnus obesus}), silky shark, Galapagos shark\textsuperscript{29} and thresher sharks (\textit{Alopias pelagicus, A. superciliosus}).

The Archipelago is also an important breeding ground for green turtles, particularly Clarion and Socorro islands,\textsuperscript{30} and for silvertip, blacktip (\textit{Carcharhinus limbatus}), whitetip reef and Galapagos sharks.\textsuperscript{5} The silvertip shark has important nurseries at San Benedicto from where they move to Roca Partida where adult females aggregate before returning back to San Benedicto to give birth.\textsuperscript{31}

The Archipelago is also a very important aggregation site for scalloped hammerhead sharks, particularly around San Benedicto where they are resident, localized and in shallow water, thus making them highly vulnerable to fishing activities.\textsuperscript{32}

\textit{Qualifying Designations}

\textsuperscript{26} James T. Ketchum, Director of Marine Conservation, Pelagios Kakunjá, personal communication, 7 May 2020.
\textsuperscript{31} James T. Ketchum, Director of Marine Conservation, Pelagios Kakunjá, personal communication, 7 May 2020.
Revillagigedo was designated as an Important Bird Area (IBA) by BirdLife International in 2000,33 a Ramsar site in 2003,34 and a Hope Spot in 2018.35

1.2 Eligibility Criteria: Implementation (must satisfy all)

1.2.1 The MPA is designated by a legitimate and functional government representing the interests of civil society, and the MPA’s implementation meets the IUCN standards for recognizing indigenous peoples’ rights.

The four islands that make up the Revillagigedo archipelago belong to the national territory of Mexico as stipulated in Article 42 of the Constitution of the United Mexican States, which means that they are under the direct management of the Federal Government. Revillagigedo National Park was established as a protected natural area, with the character of a national park in November of 2017 and falls under the jurisdiction of the National Commission of Natural Protected Areas (CONANP) and the Secretary of the Navy, due to the presence of the Naval Sector in Isla Socorro and Isla Clarión.36 The Revillagigedo Archipelago is a UNESCO World Heritage site.

1.2.2 The MPA is designated to enhance the biodiversity value of the site.

The overall objective of the MPA is to “conserve the natural terrestrial and marine environments of Revillagigedo National Park.”37

1.2.3 The MPA designation is permanent or is effective for at least 25 years.

Revillagigedo was designated permanently as a National Park in November 2017.38

1.2.4 The MPA has a management plan that has been updated within the last 15 years.

The management plan was published in 2018.39

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1.2.5 The MPA implements strategies to enforce its regulations and enhance compliance rates that are appropriate for the MPA’s size, accessibility, and poaching threats; managers report that regulations are actively and consistently enforced.

To enforce regulations and ensure compliance, Revillagigedo National Park emphasizes the importance of surveillance, monitoring and inspection, which are achieved through cooperation and coordination with several other authorities. The management staff works closely with the Mexican Navy (The Secretaría Armada de México), who are stationed on Socorro Island and Clarion Island in the archipelago. Enforcement of National Park regulations is one of two primary reasons for Navy presence in Revillagigedo (the other being to maintain sovereignty). There is close coordination between CONANP and the Navy, who perform inspections, surveillance, and remote monitoring of the expansive park area, which could not be covered by park management alone.\textsuperscript{40}

CONANP also coordinates with the National Fishing Authority (Comisión Nacional de Acuacultura y Pesca, CONAPESCA) to utilize information collected via their Satellite Monitoring System. The system tracks the entire flotilla of large vessels (commercial and industrial) within and around the park in real-time and can differentiate between vessels in transit and those whose movements are consistent with fishing activity. The National Fishing Authority directly communicates potential infractions to the park director via email and phone alert, who then coordinates a response with the Navy base on Socorro Island.\textsuperscript{41}

Tourist activity is monitored by park rangers, who often accompany authorized guided trips and record all diving activity. Managers report that this direct supervision contributes to high compliance with administrative rules, especially regarding carrying capacity for scuba diving sites. It has also allowed for an ongoing training program for the captains, crews and guides about recommendations and best practices for recreational activities.\textsuperscript{42}

To maintain and improve enforcement and compliance, the management plan cites a series of activities required of the managing authorities. The activities and actions include:

- Convene at least one meeting per year with competent authorities to discuss inspection and surveillance
- Promote the intervention of competent authorities in matters of environmental crimes
- Establish links with port captains and tourist marinas that have influence in the park
- Establish remote monitoring systems to identify alterations to the ecosystems of the park

\textsuperscript{40} Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 7 February 2020.
\textsuperscript{41} Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 7 February 2020.
\textsuperscript{42} Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 7 February 2020.
• Coordinate all activities with the appropriate authorities\textsuperscript{43}

The park management reports a high level of compliance with the MPA regulations, especially among the Mexican commercial fishing fleet. Legal action was taken against three fishing vessels in 2019 (including one American sport fishing vessel) for noncompliance. Complaints were filed with the Federal Attorney General for Environmental Protection and the Attorney General's Office.\textsuperscript{44}

1.2.6 The MPA has a budget and staff.

Until 2020, Revillagigedo National Park received funding from two sources: the federal government and the Fondo para Áreas Naturales Protegidas (FANP) fund, which is a public-private grant for protected natural areas. The federal budget has fluctuated annually, but the FANP has increased annually – the combination of these funding sources produced a budget of US $67,000 in 2019 (not including salaries).\textsuperscript{45}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure3.png}
\caption{Funding in USD allocated to Revillagigedo National Park from the federal government ("FISCAL"), Fondo para Áreas Naturales Protegidas ("FANP"), and in total ("Acumulado") from 2018-2020. Note that this figure is based on budget allocations prior to the 2020 budget cut to CONANP. (Source: CONANP, 2019)}
\end{figure}

In 2020, CONANP’s federal budget for managing Mexico’s National Parks was cut by 75% due to COVID-19 related federal budget cuts. Revillagigedo’s management team and partners responded to these cuts by further diversifying its revenue stream. They have substantially increased the day-use fee from US $2.50 in 2020 to US $75 starting January 1, 2021. They also received a grant for an additional surveillance boat, which has been purchased (Gemini Waverider 1060 GRP Cabin), from the Save Our Seas Foundation.\textsuperscript{46}

\textsuperscript{44} Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 7 February 2020.
\textsuperscript{45} Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 7 February 2020.
\textsuperscript{46} Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 29 March 2021.
For the year of 2021, Revillagigedo will receive US $4,750 in federal funding through CONANP; US $58,940 from FANP; US $222,000 from the Save Our Seas Foundation for Gemini Waverider surveillance boat; and US $360,000 through green financing for protected areas from KfW Development Bank.\(^{47}\)

Four core park staff are salaried by CONANP, separately from the park’s CONANP-allocated budget, while four additional park employees are salaried by the United Nations Development Programme (UNDP). These CONANP and UNDP salaries amount to approximately US $106,763 for the year of 2021.\(^{48}\)

Currently, Revillagigedo National Park has a permanent staff of 9 people:
- 1 Director
- 2 Professional Executives
- 1 Head of Department - Administration and Operation
- 1 Manager - Permits, authorizations, registering the payment of entrance fees
- 4 Park Rangers - Tourism supervision, island biosecurity, land and marine biological monitoring, and surveillance\(^{49}\)

### 2.1 Award Status Criteria: Regulations

Scores 1-3 = Platinum, 3-4 = Gold, 4-5 = Silver

*Classification and scoring (1-8) of zones based on fishing gear, bottom exploitation, aquaculture, anchoring, and boating.*

The overall regulation score for Revillagigedo National Park is 2.

Revillagigedo National Park is comprised of three types of zones (referred to as ‘subzones’ in the management plan): Research Zone, Tourism Zone and Traditional Use/Naval Zone. Most of the park area is within the Research Zone. Small areas surrounding the four islands are designated Tourism Zones, and two very small Traditional Use/Naval Zones buffer Naval stations (see Figure 1). None of the zones allow any type of extractive uses.

**Research Zone:** 147,529 km\(^2\)
- Zone Classification: 2
- Number of Fishing Gears Allowed: 0
- Fishing gears list (c indicates commercial, r indicates recreational or subsistence): 0
- Fishing Gear Impact Score: 0
- Bottom Exploitation and Aquaculture Index: 0

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\(^{47}\) Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 29 March 2021.

\(^{48}\) Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 29 March 2021.

\(^{49}\) Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 29 March 2021.
Anchoring & Boating Index: 1

The Research Zone covers almost the entire marine and land area of Revillagigedo National Park. It contains some of the region’s representative ecosystems such as hydrothermal vents, underwater mountains and coral reefs, and contains most of the marine biodiversity found in the Archipelago.\(^\text{50}\)

To preserve biodiversity, only scientific research and environmental monitoring to improve knowledge of the ecosystem are allowed. No fishing of any kind is permitted. Other prohibited activities include mining, dredging, discharge of contaminants, and jet ski use. Any activity that alters or destroys the feeding, nesting, shelter or breeding sites of wild animals is prohibited. Only anchorage of small (less than 15 m) vessels is permitted within this zone.\(^\text{51}\)

**Tourism Zone:** 402.7 km\(^2\)

Zone Classification: 2

Number of Fishing Gears Allowed: 0

Fishing gears list (c indicates commercial, r indicates recreational or subsistence): 0

Fishing Gear Impact Score: 0

Bottom Exploitation and Aquaculture Index: 0

Anchoring & Boating Index: 1

The Tourism Zone consists of a small rectangle around each island.\(^\text{52}\) It has similar regulations to the Research Zone, but also permits tourism and environmental education with low impacts. Tourism activities, such as diving, are strictly regulated to guard against habitat degradation and the spread of exotic species. Tourism operators must obtain the required authorization for tourism activities. Dive limits are established annually and ranged from 180-400 dives/year at individual sites in 2018. All dive groups consist of no more than eight divers per guide, and dive guides may only take out four dive groups per day. In the case of freediving, divers must avoid interfering with marine habitats.\(^\text{53}\) Similar to the Research Zone, no fishing or bottom exploitation are permitted, and anchoring of small vessels is only permitted at specific locations.\(^\text{54}\)

**Traditional Use Zone/Naval Buffer Zone:** 3.0 km\(^2\)

Zone Classification: 2

Number of Fishing Gears Allowed: 0

Fishing gears list (c indicates commercial, r indicates recreational or subsistence): 0

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Fishing Gear Impact Score: 0
Bottom Exploitation and Aquaculture Index: 0
Anchoring & Boating Index: 1

The Naval Buffer Zone includes four small areas that surround naval infrastructure and use areas, which are primarily terrestrial with only small marine portions, including a dock and coastal landing areas on Vargas Lozano Bay and Sulfur Bay. Construction and maintenance of infrastructure, exclusively for the support of Marine Secretariat activities and the National Park administration, are permitted, given that they do not significantly alter the environment.\(^{55}\) Navigation and anchoring of vessels is permitted, but limited to only military vessels, mainly patrol and cargo. The anchorage area is a sandy bottom bordered by corals, which are reportedly not impacted by the military activity.\(^{56}\) Low-impact tourism and scientific research and monitoring are allowed. Fishing, mining, discharge of waste and jet ski use are prohibited. Additionally, noise that could impact wild species is prohibited.\(^{57}\)

2.2 Award Status Criteria: Design, Management and Compliance

5 Attributes = Platinum, 4 Attributes = Gold, 3 Attributes = Silver

2.2.1 **Size:** MPA $\geq$ 100 km\(^2\) or explicitly designed as part of a network of MPAs to support population connectivity.

The marine area of Revillagigedo National Park is 147,933 km\(^2\) (the land area of the park is 155 km\(^2\)).\(^{58}\)

2.2.2 **Ecological Isolation:** Ecological or other protected area buffers surround habitats targeted for conservation within the MPA (e.g., soft sediment or deep water surrounding coral reefs).

The insular coral reef ecosystems of the Revillagigedo National Park are isolated by deep water within the expansive boundaries of the park (see Figure 2).

Revillagigedo National Park is also bordered by a biosphere reserve that is split into three areas adjacent to the National Park boundaries (see Figure 1). The Deep Mexican Pacific Biosphere Reserve is a deep-sea area that protects from 800 m below the surface to the

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sea floor, so it prohibits mining and bottom-trawling, while permitting other fishing activities.\textsuperscript{59,60}

2.2.3 **Age: MPA regulations in the site, comparable to the current regulations, are \( \geq 10 \) years old.**

The protections afforded by Revillagigedo Marine National Park are less than 10 years old. The government of Mexico formally established Revillagigedo National Park in November 2017.

2.2.4 **Effective Management Plan: The management plan identifies**

2.2.4.1 **Measurable conservation targets**

In addition to broad management objectives,\textsuperscript{61} Revillagigedo National Park’s management plan outlines six Conservation Subprograms, for which measurable targets and management activities are outlined. The subprogram areas are:

1) **Protection**: refers to the protection of the resources of the protected area, to ensure the integrity of the ecosystem.

2) **[Activities] Management**: activities carried out in the park such as tours, observation of flora and fauna, scientific research, autonomous diving and underwater filming/photography require regulation and monitoring to prevent adverse effects on the ecosystem.

3) **Restoration**: recover and restore ecological conditions prior to modifications caused by human activities or natural phenomena.

4) **Knowledge**: generate and disseminate knowledge about natural resources and ecological processes, as well as new or traditional technological practices that will enhance and maintain the sustainable use of biodiversity.

5) **Culture**: promote and disseminate educational materials and documentaries made by research institutions among the public, to heighten their awareness and understanding of conservation.

6) **[Coordination and Collaboration] Management**: how the administration of the park determines park policies, standards and management tools and how they facilitate participation with organizations and institutions.

Each of these subprograms have a number of components for which 2-7 “goals and expected results” (i.e., measurable targets) are identified.\textsuperscript{62}

2.2.4.2 **Threats to the conservation targets**

The management plan identifies the following ecological threats:


\textsuperscript{60} Secretario de Gobernacion (2016) Decreto por el que se declara Área Natural Protegida, con el carácter de reserva de la biosfera, la región conocida como Pacífico Mexicano Profundo.


1) **Climate change:** long-term climate changes that are separate from naturally occurring variations will have negative impacts on marine and coastal ecosystems, including:
   a. Increase in water temperature
   b. Increase in the sea level
   c. Increase in ocean acidification
   d. Coral bleaching
   e. Dispersion of invasive species
   f. Degradation of habitats
2) **Exotic species:** threats of non-native species, including plants, animals and other types of genetic material can have adverse effects on biodiversity. In Revillagigedo Archipelago, the introduction of species such as cats, pigs, sheep, mice and cockroaches have contributed to the dwindling of sea turtle and shearwater populations, amongst others.
3) **Fishing:** fishing and bycatch from fishing represent a threat to the ichthyofauna populations in the Archipelago.
4) **Vessel traffic:** the marine area of Revillagigedo National Park is a vessel transit zone, with navigation routes established by the Ministry of Communications and Transport. However, the presence of vessels presents threats to the marine environment including:
   a. Pollution
   b. Habitat degradation
   c. Aiding in illegal activities
5) **Activities related to tourism:** tourism has occurred in Revillagigedo since the 1980s, has presented a growing trend in the last decade and is expected to rise in the coming years. The most popular tourist activity is recreational diving due to the diversity and abundance of marine megafauna such as yellowfin tuna, giant mantas, sharks (5 species can be observed in a single dive), and whales.\(^{63}\)

### 2.2.4.3 Planned activities to mitigate threats and achieve conservation targets
For each of the components of the subprograms listed above, the management plan identifies strategies and a list of “activities and actions” with associated time horizons. See the activities associated with each subprogram in Section 6 of the management plan.\(^{64}\)

### 2.2.4.4 Monitoring plans to measure progress towards conservation targets
Conservation Subprogram 4 is the initiative dedicated to monitoring. Monitoring in Revillagigedo Marine National Park aims to prevent loss of resources and species. The monitoring program also aims to establish a baseline for evaluating long-term effectiveness of the MPA.

The goals for monitoring include identifying in detail the sites and seasons of feeding, nesting, shelter and reproduction of species of special interest, maintaining a permanent


monitoring of natural processes occurring in the National Park and creating the infrastructure necessary to perform monitoring and allow for the continuous assessment of biological, physical and environmental aspects. The objective is to create and maintain a permanent monitoring system. The plan explains that the intention of monitoring is to measure biological communities and ecosystem processes and function, particularly changes associated with climate change, tourism activities, and restoration programs.\(^{65}\)

While the management plan does not include specific monitoring targets, protocols or timetables, managers’ specific monitoring plans are being implemented in the park. According to park managers, monitoring plans are carried out annually, semiannually, biannually, monthly or continually during the tourist season, depending on ecosystem, habitat and species. Monitoring is carried out by park staff and sometimes in partnership with civil society organizations and academic institutions (see Section 2.2.6 for more about partnerships). Current monitoring includes abundance of large pelagic species, coral reefs (corals, invertebrates and reef fish), plankton, nesting seabirds and marine mammals.\(^{66}\)

To ensure effective management of the park’s biodiversity, managers have also prioritized monitoring the impacts of tourism and other human activities. In particular, managers report monitoring the impacts of diver interactions with marine organisms such as corals, turtles, sharks, dolphins, whales, and also sedimentation deposited on coral reef areas as a result of erosion and runoff.\(^{67}\)

### 2.2.5 Community Engagement: The local community is engaged in the management of the MPA.

An Advisory Council that includes representatives of Revillagigedo’s stakeholders, including tourism operators, scientists, public authorities and conservation NGOs provides technical expertise and advice to Revillagigedo’s management team. Tourism operators hold four positions on the Advisory Council and work on the tourism subcouncil where tourism activity and the management of the National Park are discussed.\(^{68}\)

Due to the remoteness of the region, there is no local community to be engaged in the management of the MPA. The only inhabitants of the Revillagigedo Islands are the Park managers and the Mexican Navy that work in collaboration to monitor and regulate the park. Park managers works closely to engage with, train, and monitor permitted tourism providers.\(^{69}\)

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\(^{67}\) Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 20 March 2020.

\(^{68}\) Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 20 March 2020 and 27 April 2020.

\(^{69}\) Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 7 February 2020.
2.2.6 Resources and Capacity: The MPA has adequate resources and capacity (including budget, staff, training, and leveraged partnership) to implement its management plan and its enforcement strategies.

The Park’s budget (comprised of funding from the federal government and from Fondo para Áreas Naturales Protegidas – see Section 1.2.6) is allocated according to strategic planning. The primary management objective is to maintain the greatest presence of park rangers in the National Park possible. Due to its remoteness and size, this requires financial resources and collaboration. The current allocation of resources are focused primarily on the following four areas:

1. Supervision of Public Use (30%). Ensures orderly activity with the least impact. Tourist activity is monitored for 8 months (duration of tourist season).
2. Biological Monitoring (45%). Includes biological monitoring in the Socorro, Clarión, Benedicto and Roca Partida islands, as well as underwater monitoring in the water surrounding the islands, and in the marine areas of the National Park.
3. Ecosystem Restoration (20%). Includes the mapping of degraded areas, consultation with experts, monitoring and support for conservation projects among others.
4. Technical Skills (5%). Staff training.70

Park managers leverage partnerships to extend their capacity, particularly with respect to enforcement and ecological monitoring. The operational dynamics of the National Park depend on a close collaboration with the Navy, the main ally in the island and marine territory. The park management also emphasizes effective coordination and communication with members of organized civil society, academia, researchers and tourism service providers.

Park managers currently collaborate with the following academic institutions and NGOs, whose technical expertise and research support the monitoring, adaptive management and conservation goals of the park.

- Universidad de Guadalajara
- Universidad de Colima
- Instituto de Ecología
- Universidad Nacional Autónoma de México
- Universidad Autónoma de Baja California Sur
- Universidad Michoacana de San Nicolás de Hidalgo
- Centro Interdisciplinario de Ciencias Marinas (CICIMAR) del Instituto Politécnico Nacional
- Centro de Investigaciones Biológicas del Noroeste (CIBNOR)
- Pelagios Kakunjá
- ECOS
- PRONATURA
- Island Ecology and Conservation Group (GECI)
- Coalición en Defensa de Los Mares de México (CODEMAR)

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70 Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 7 February 2020 and 20 March 2020.
3.1 System Priorities: Replicate Ecosystem Representation

The Blue Parks evaluation prioritizes nominees and Accelerator projects protecting ecosystems that are under-represented within their biogeographic region (<30% are protected in Blue Parks) or are rare in the biogeographic region.

Revillagigedo Marine National Park protects mangroves, shallow and mesophotic coral reefs, rocky reefs, seamounts, abyssal plains, and hydrothermal vents. Coral reefs and seamounts are protected by three other Blue Parks in the Eastern Tropical Pacific: Malpelo Fauna and Flora Sanctuary (Platinum, 2017), Cocos Island National Park (Gold, 2019), and Galapagos National Park (Silver, 2019). Revillagigedo National Park protects important replicate ecosystems in this region as well as some ecosystems that are not yet protected by other Blue Parks in the region, like mangroves and mesophotic reefs.

3.2 System Priorities: Ecological Spatial Connectivity

The Blue Parks evaluation also prioritizes nominees and Accelerator projects that improve ecological spatial connectivity among existing Blue Parks.

There are three other Blue Parks in the Eastern Tropical Pacific. Malpelo Fauna and Flora Sanctuary, Cocos Island National Park, and Galapagos National Park all protect coral reefs and seamounts, like Revillagigedo, and they are all hotspots for highly mobile species of sharks and rays. Revillagigedo is over 3,000 km northwest of Malpelo, Cocos, and Galapagos, however, and is not likely to be as ecologically connected as the other three are to one another. Scientists have observed an individual Galapagos shark

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(Carcharhinus galapagensis) travel from Revillagigedo to Galapagos. Additionally, there are records of a white nose shark (Nasolamia velox) and a tiger shark (Galeocerdo cuvieri) traveling between the Revillagigedo Archipelago and Cabo Pulmo National Park on the southeastern tip of the Baja peninsula, indicating potential shark population connectivity between Revillagigedo and the Gulf of California.

**Supplemental Information: Evidence of MPA Effects**

Because Revillagigedo Marine National Park is only a few years old, there is not yet any literature regarding MPA effects. However, the Director of the park reports that there is an important effort to monitor species of tuna, with the support of the Inter-American Tropical Tuna Commission (https://www.iatcc.org/CatchReportsDataSPN.htm), and assess effects of Revillagigedo’s no-take restrictions. The results of this work will inform decisions about extending these regulations beyond the current boundaries of the park.

There is also an on-going initiative to monitor the movements of sharks and other migratory fish within and beyond the park boundaries using satellite telemetry and their abundance and occurrence using Pelagic Baited Remote Underwater Video Systems (BRUVS) to assess the effectiveness of the MPA, with the support of Pelagios Kakunjá (www.pelagioskakunja.org).

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76 James T. Ketchum, Director of Marine Conservation, Pelagios Kakunjá, personal communication, 7 May 2020.

77 Javier Alejandro González Leija, Director, Revillagigedo National Park, personal communication, 27 April 2020.

78 James T. Ketchum, Director of Marine Conservation, Pelagios Kakunjá, personal communication, 7 May 2020.