



Note to Reviewer on the Nomination of the National Marine Sanctuary in the Pacific Remote Islands

The Pacific Remote Islands Coalition submitted a "Pacific Remote Islands National Marine Sanctuary Nomination" package to NOAA's Office of National Marine Sanctuaries (ONMS) on March 11, 2023. Before ONMS was able to complete its review of the nomination package to determine whether it met the [national significance criteria and management considerations](#) described in the [sanctuary nomination process](#), on March 24, 2023, [President Biden](#) directed NOAA to consider initiating designation of a national marine sanctuary in the Pacific Remote Islands. NOAA looked to the guidance provided in the Presidential Memorandum when it decided to initiate the national marine sanctuary designation process for the Pacific Remote Islands.

President Biden's "[Memorandum on Conserving the Natural and Cultural Heritage of the Pacific Remote Islands](#)" directed the Secretary of Commerce to "consider initiating designation of a National Marine Sanctuary pursuant to the National Marine Sanctuaries Act, 16 U.S.C. 1431 *et seq.*, to provide the most comprehensive and lasting protections to the significant natural and cultural resources of the submerged lands and waters surrounding the seven islands, atolls, and reefs of the Pacific Remote Islands Marine National Monument – both within and outside the Monument boundary, to the full extent of the seaward limit of the United States Exclusive Economic Zone – including marine life, shoals, seamounts, reefs, banks, and sediments high in minerals and sequestered carbon dioxide for the benefit of present and future generations."

On April 18, 2023, in response to this Presidential Memorandum, NOAA published a [Notice of Intent](#) to "Conduct Scoping and To Prepare a Draft Environmental Impact Statement for the Proposed Designation of a National Marine Sanctuary for the Pacific Remote Islands" in the Federal Register. This notice initiated the NOAA [process](#) to consider designating a national marine sanctuary in the Pacific Remote Islands.

PACIFIC REMOTE ISLANDS National Marine Sanctuary Nomination

February 2023



Photo by: Kydd Pollock

*I Ola Kanaloa, I Ola Kākou Nei
The ocean's health, is our collective health*



Section I–Basics

Nomination Title: Pacific Remote Islands National Marine Sanctuary

Nominator Name(s) and Affiliation(s): Pacific Remote Islands Coalition

Nomination Point of Contact:

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Section II–Introduction

Narrative Description

The diverse and intact ecosystems of the Pacific Remote Islands, including vast pelagic seascapes and critical open-ocean underwater seamounts, support a host of species from corals and marine mammals to seabirds and vegetation found nowhere else in the world. And while celebrated for its remoteness, this region has a storied history beginning with Pacific Island cultures–Native Hawaiians, Chamorro, and other Indigenous Peoples–who voyaged across the Central and Western Pacific interpreting the stars, winds, and currents to exercise a wayfinding proficiency that allowed for the vastness of the largest ocean on Earth to become an shared home. This legacy of open-ocean voyaging is being perpetuated and revitalized by contemporary non-instrument navigators who are not only retracing the sail routes of their ancestors but have circumnavigated the globe. Also, the bravery and sacrifice of the Hui Panalā‘au—a group of 130 young men, mostly Native Hawaiian, who voluntarily occupied the islands of Jarvis, Baker, and Howland, from 1935 to 1942 when the region was the prime oceanic battlefield of World War II. Their presence played a vital role in the United States making a territorial claim over the islands, which are defining elements of the modern footprint of America.

Today, these islands and surrounding waters are home to a diversity of threatened and endangered wildlife and deep-sea species found nowhere else while the world’s ocean faces a biodiversity and climate crisis. The window of opportunity to halt and reverse the worst impacts of climate change is closing. Nature is declining globally at rates unprecedented in human history. Intact natural ecosystems such as the Pacific Remote Islands are more resilient to the effects of climate change and can help in the fight against biodiversity loss. There is also a global cultural awakening that recognizes the importance of authentic engagement of Indigenous Peoples’ and their knowledge, stories, and cultural connections with the land and sea.

When President George W. Bush established the original Pacific Remote Islands National Marine Monument in 2009, along with two other marine monuments in the Pacific, the head of his administration’s Council on Environmental Quality, James Connaughton, said, ““These locations are truly among the last pristine areas in the marine environment on Earth.” In his first week in office President Biden said, “We have a narrow moment to pursue action at home and

abroad in order to avoid the most catastrophic impacts of that crisis and to seize the opportunity that tackling climate change presents.”

In the face of the mounting climate and biodiversity crises and in line with the administration’s priority to honor Indigenous and Tribal cultures and practices, the administration should use its authority to make history, and honor history, by designating the waters surrounding all of the Pacific Remote Islands to the full extent of the Exclusive Economic Zone (EEZ) as a new National Marine Sanctuary (NMS). The proposed NMS should encompass the areas within the existing Pacific Remote Islands Marine National Monument and extend to the seaward limit of the EEZ around Howland and Baker Islands, and Kingman Reef and Palmyra Atoll. This would add nearly 700,000 square kilometers of highly protected waters, resulting in creation of the world’s largest highly protected marine protected area (MPA) in national waters.

Establishing and managing the area as a national marine sanctuary would bring clear and comprehensive legal protection for sanctuary resources. The proposed NMS should be created to supplement and complement, not supplant, existing management authorities. It should also be created to supplement and complement the high level of protection provided by the existing Pacific Remote Islands Marine National Monument. Designation will ensure timely development of a comprehensive management plan for the region, utilizing NOAA’s well-defined process to monitor sanctuary conditions and update management programs to ensure protection of sanctuary resources. Sanctuary designation will bring NOAA’s capacity and expertise in research and management of coastal and marine resources, maritime heritage and archaeology, and public education and outreach more fully to bear. And it will build on the existing relationship that NOAA has with the U.S. Fish and Wildlife Service in managing the marine national monument to enhance research and resource protection.

Goals Description

1. **Initiate and complete the designation of the sanctuary by September 2024**, to ensure the area is protected and actively managed—and thus able to contribute to biodiversity and climate goals—as soon as possible. The Coalition requests support from the highest levels of leadership within NOAA and US Fish and Wildlife to ensure that the natural, historic and cultural resources of the Pacific Remote Islands are protected as an entire area, including both the existing Monument and all surrounding waters including the waters that are part of existing National Wildlife Refuges.
2. **Permanently and strongly protect an area of unique, diverse and pristine marine ecosystems.** As stated above, the proposed NMS would be created to supplement and complement, not supplant, existing management authorities and high level protections. Designation of the proposed NMS would permanently protect an extensive and connected area of pristine coral reefs, seamounts, open ocean and deep-sea habitat from the benthic floor through the water column. Such protections should include prohibitions on all extractive and destructive activities, including:
 - a. Prohibition of all commercial fishing within the sanctuary to protect the integrity and functioning ecological processes of terrestrial and marine systems within the sanctuary.
 - b. Prohibition of any disturbance of the seafloor including exploration for and development of oil and gas, seabed mining, and any other extractive activities that

disturb, or are likely to disturb, the seafloor, or pollute the waters of the sanctuary, including noise pollution.

3. **Consider only the potential for strictly regulated and permitted sustainable recreational or sustenance activities.** Cultural practices and limited recreational and sustenance fishing could be allowed and should only be considered if such activities can be documented to be consistent with maintaining the high level of protections of the existing PRIMNM and ecological integrity of the entire geographic scope of the proposed NMS. Such activities should only be considered and regulated if they can provide evidence that such activities can take place with minimal destructive and extractive human impact on its habitats and wildlife.
4. **Rename the area using a culturally appropriate process with support from the federal government on the outcome.** The unique ancestry, history and cultural significance of the Pacific Remote Islands should be honored with a new, and culturally appropriate name. Pacific Islanders believe that place names are an important way to perpetuate intergenerational knowledge and connection to an area's geology, history, and natural and supernatural phenomenon. The sanctuary designation process should ensure Pacific Islanders with ancestral ties to this area and also with cultural and language expertise in design and implementation lead a culturally appropriate process to give this area a name that better reflects its identity, individuality, and importance. The federal government should support whatever name emerges from this process. In addition, a sanctuary should consider and support the renaming of other geographic features (e.g. islands, seamounts, reefs, shoals, channels) and potentially plants and animals similar to the processes that have resulted from Native Hawaiian leadership in the management of the Papahānaumokuākea Marine National Monument.
5. **Honor the Hui Panalā'au at a level that is commensurate with their sacrifice.** In the twentieth century, the islands of Jarvis, Howland, and Baker were the location of notable bravery and sacrifice by more than 130 mostly Native Hawaiian young men, known as the Hui Panalā'au, who voluntarily occupied the islands from 1935 to 1942 to help secure territorial claims by the U.S. over the islands. These men should be honored and their work and stories celebrated in the new national marine sanctuary. The federal government should do this in close communication and collaboration with the living descendents of the Hui Panalā'au.
6. **Establish a co-governance or co-management framework to ensure Indigenous Pacific Islanders with long-standing genealogical ties to the area have a seat at the decision-making table for the area.** The sanctuary designation process should explore possible new or existing structures to enable a sustainable management regime that includes co-management within the cultural context and history of this region—specifically, this inclusion and participation of the appropriate Indigenous Pacific Island peoples with ancestral, historical, and cultural ties to the area, primarily Native Hawaiians, Chamorro, and other Micronesian cultures and communities. The Sanctuary Program should also design community engagement strategies that prioritize the involvement of those with cultural and language expertise to ensure proper integration of traditional knowledge systems, and at a minimum, create and hire a staff position to serve as a community liaison. The position should have prerequisite qualifications including commensurate expertise in Pacific Island language and culture appropriate to the region.”

This position should serve as a point of contact for Indigenous Pacific Islanders and facilitate community engagement in the designation and management of the sanctuary.

7. **Promote cultural, historic and scientific research with the sanctuary.** With strong protection, the sanctuary will provide a natural laboratory where nature and culture are one. A collection of rich and abundant ecosystems, rich in cultural histories and ecological functions that can act as a backdrop to better understanding the structure and productivity of tropical marine ecosystems relatively free of anthropogenic effects, and ways to ensure long term resilience, within the context of climate change. It has been shown that management is enhanced when its approach “emphasizes integration of science, policy, cultural knowledge, traditions, and practices ... appropriate for both natural and cultural resources” (Kikiloi 2017). Also, in keeping with this administration’s commitment to scientific integrity and knowledge-and evidence-based policymaking, elevating Indigenous Traditional Ecological Knowledge (ITEK)—a form of Indigenous Knowledge—will ensure cross-sector benefits as well as the perpetuation and advancement of intergenerational practice to increase our understanding of the natural world.
8. **Provide public education, outreach, and community engagement around the marine ecosystems, wildlife, and maritime, historic and cultural heritage of the sanctuary through high-quality virtual experiences that overcome the remoteness of this area.** The proposed sanctuary can improve education at the intersections of science, technology, community, and culture, as the pathway toward meaningful connections to this special place targeting students, educators, policy makers, community leaders, and the general public. Furthermore, it is an opportunity to center cultural, scientific, and historical narratives by incorporating cultural expertise alongside scientific interpretations, while utilizing the latest advances in surface and underwater imagery, video, and other multimedia and education technologies.
9. **Establish a pre-designation Sanctuary Advisory Council** to work closely with the community, NOAA, and the Administration to ensure that best practice standards are used to design the final Council and to create a resilient management regime. Empower the pre-designation Council to prioritize the exploration of co-management models and processes that include relevant and appropriate representation within the Pacific region and complement existing efforts to manage and protect the domain and interests of the United States in the Pacific. The Council should include seats that will enhance the proposed co-management regime, and strengthen the long term commitment to and inclusion of intergenerational and cultural practices from the Pacific Indigenous Peoples most closely connected to the PRI NMS, namely—Native Hawaiian (3, including a Kūpuna or elder), Indigenous Peoples with genealogical ties to the Pacific Remote Islands, Traditional Wayfinders (e.g., Pwo Navigators), Science and Research (3, including social science), Conservation, Education, and Citizen at Large.
10. **Develop and periodically review and update comprehensive management and monitoring programs for the sanctuary.** The National Marine Sanctuaries Act requires NOAA to develop a comprehensive management plan as a condition of sanctuary designation, and to periodically review and update that plan. NOAA also has a well-developed process for evaluating the condition of sanctuary resources to inform management plan updates. Given the remote nature of the area, this is an ideal site to

explore the use of leading technology to ensure compliance with regulations, collect ongoing data, and allow for enforcement.

11. **Draw attention to the impact and need for cleaning up the legacy of military activity in the area.** The Sanctuary designation could transform America’s relationship to this complex history through education and outreach, community partnerships that benefit the Pacific Island communities affected, as well as support research focused on potential cleanup approaches and pathways.

Location Description

The proposed Pacific Remote Islands National Marine Sanctuary is in the Central Pacific, and consists of Wake, Johnston, and Palmyra atolls; Howland, Baker, and Jarvis Islands; and Kingman Reef as well as the surrounding marine waters of the United States Exclusive Economic Zone (EEZ). (Figure 1.)

The islands and atolls as well as surrounding reefs are controlled by the United States and are protected as National Wildlife Refuges. The proposed sanctuary consists of the marine waters surrounding them to the outer limit of the EEZ (200 nautical miles), an area totalling about 2 million square kilometers (760,000 square miles). If designated as a national marine sanctuary and protected as proposed in this nomination, the proposed NMS would constitute the largest highly protected MPA on the planet, based on the standards and analysis of the Marine Protection Atlas. Taken together, these islands and their surrounding waters are “an important part of the most widespread collection of marine- and terrestrial-life protected areas on the planet under a single country’s jurisdiction”, as stated in Presidential Proclamation 8336, which established the original marine national monument in the area.

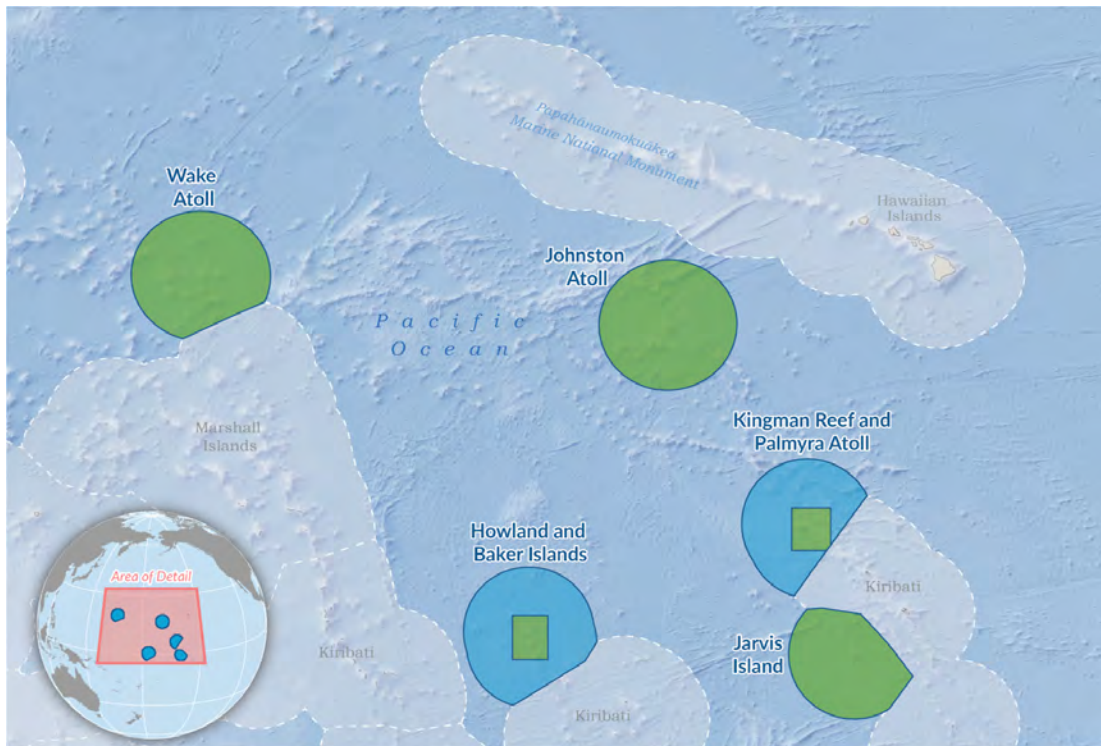


Figure 1: Proposed Pacific Remote Islands National Marine Sanctuary

● Proposed Sanctuary boundaries (blue and green)
● Current monument boundaries (green)

SOURCE: NOAA; MPAAtlas; Marine Conservation Institute; MarineRegions.org; Natural Earth.

Section III–Significance Criteria Information

Criterion 1–The area's natural resources and ecological qualities are of special significance and contribute to: biological productivity or diversity; maintenance or enhancement of ecosystem structure and function; maintenance of ecologically or commercially important species or species assemblages; maintenance or enhancement of critical habitat, representative biogeographic assemblages, or both; or maintenance or enhancement of connectivity to other ecologically significant resources.

The marine environment of the proposed NMS is of national and international significance. The proposed sanctuary would comprise one of the world's largest highly protected MPA, protecting a vast array of near-pristine coral reefs, that are connected to area of open ocean, which provides important forage and range for many species of management concern, and more than 260 open ocean seamounts, which are vital hotspots of biodiversity and habitat complexity that require the high levels of protection offered by a Pacific Remote Islands NMS..

Nearshore Environment

The majority of the information in this subsection is derived from Presidential Proclamation 8336, establishing the PRI National Marine Monument, and Presidential Proclamation 9173, expanding the boundaries of the PRI National Marine Monument. However, new information from current science and research has been added.

The coral reefs of the proposed NMS are some of the last remaining reefs relatively untouched by human activities. The trophic levels of these reefs are well-populated and contain a diverse array of species, many of them endemic. Wake Atoll is the northernmost atoll of the Marshall Islands ridge, and may be the oldest living atoll. It supports at least 29 species of birds, including recently established nesting colonies of Black-footed and Laysan Albatrosses. This is one of the few albatross nesting colonies in the northern hemisphere outside of the Hawaiian archipelago. Wake Atoll's coral reefs are thriving. Fish populations are abundant and diverse, with at least 323 species, including large populations of reef fish and sharks that are globally depleted.

Johnston Atoll, is a genetic and larval steppingstone from the Pacific Remote Islands to the Hawaiian Islands for corals, other reef fauna, and dolphins. Highly endangered monk seals also occasionally visit the island. It is also one of the oldest living atolls. Unlike most atolls, instead of a barrier reef it has a semi-circular emergent reef. It supports a thriving diversity of 45 coral species, including a dozen species that are regionally endemic. Its reef supports some 300 species of reef fish, and many threatened, endangered, or depleted species, including sea turtles, reef sharks, groupers, whales and dolphins. The atoll's islets host large populations of resident seabirds and migratory shorebirds, including several populations of regional, national, or international significance.

Palmyra Atoll and Kingman Reef are known to be among the most pristine reefs on the planet, providing an ideal laboratory for benchmarking and monitoring the effects of climate change on such ecosystems. They support a greater diversity of corals and other cnidarians than any other atolls or islands in the central Pacific. Palmyra hosts 418 fish species and Kingman Reef

supports 297 species. Large schools of rare Melon-headed whales reside off both atolls. Eleven nesting seabird species are found on Palmyra.

Upwelling from the Equatorial Undercurrent enhances biological productivity around Baker, Howland, and Jarvis Island, supporting intact, high-biomass, predator-dominated tropical marine ecosystems. These waters contain fish biomass twice that of Papahānaumokuākea and a top predator biomass greater than the Great Barrier Reef. There are about 300 species of fish found off the islands. They host about a dozen nesting species of birds. Jarvis alone has nearly three million pairs of Sooty Terns.

Offshore Environment

The pelagic area of the proposed sanctuary is important as habitat and foraging area for a variety of highly migratory species, many of them endangered or threatened. Also, the location and high levels of protection around these islands as a large-scale high protected marine area is of particular importance due to the effects of climate change on the distribution of pelagic fish populations migrating away from the Western Pacific Warm Pool to the north and east. Abundant top predators roam the vast waters of the area, including several tuna species, swordfish, marlin, and more than ten species of endangered or critically endangered sharks and rays. Fifty species of seabirds, at least a dozen of which nest in the Pacific Remote Islands, rely on open ocean areas for foraging trips that can extend to hundreds of miles. Cetaceans found in the sanctuary waters include sperm whales, blue whales, beaked whales, false killer whales, and multiple species of dolphins. There are multiple species of protected sea turtles in the region, including the endangered green sea turtle, the critically endangered hawksbill turtle (Balazs 1975, 1985; IUCN 2004, 2008; Naro-Marciel et al. 2009), the olive ridley, the loggerhead sea turtle, and the leatherback sea turtle—the largest sea turtle in the world and critically endangered in the Pacific Ocean. These waters are known to be important to the migration patterns of the leatherback sea turtle (Benson et al. 2011).

Deep-sea Environment

In addition to coral reefs and pelagic ecosystems, the deep sea floor around the Pacific Remote Islands is dotted with 263 known undersea mountains, or seamounts. These seamounts serve as ecological hotspots for biodiversity and habitat complexity between large swaths of mostly barren deep ocean seascapes far from land (Bohnenstiehl et al. 2018; Cantwell, Elliott, and Kennedy, 2018; Demopoulos et al. 2018; Kennedy et al. 2019). Research has shown that 15-44 percent of species on a seamount or seamount group are endemic. New species are discovered on virtually every expedition to seamounts, and because of the extreme conditions under which they have evolved, seamount species are of great interest in evolutionary biology, medicine and engineering and hold promise to support mankind.

Like the rich biodiversity observed on the shallow water coral reefs surrounding near-shore environments, these largely unexplored deep-sea habitats act as biological refuges for unique organisms, many of which can be found nowhere else (Pitcher et al. 2007, Kennedy et al. 2019, Auscavitch et al. 2020). Additionally, given the numbers of seamounts dotting the ocean floor and associated high levels of endemism, seamounts may well harbor the largest number of undiscovered marine species left on Earth (Roark et al. 2009). In an expedition exploring Pacific U.S. marine protected areas, over 80% of species observed were new to science, including at least 14 new species of deep sea corals (Kennedy et al. 2019).

Recent exploration cruises conducted in 2021 by the Schmidt Ocean Institute and its Research Vessel (R/V) *Falkor* through seamounts within the area of the proposed sanctuary south of Howland and Baker Islands have led to the documentation of additional rare species, extensive mesophotic and deep-sea coral reefs, and schools of sharks and skates traversing through this region (Auscavitch 2021, Kagan 2021, Kennedy pers. comm., Rotjan 2021, Weinning 2021). This range of seamounts spans the border of the currently unprotected section of the U.S. Howland and Baker Islands EEZ and the Phoenix Islands Protected Area, and recently revealed new biological discoveries that may have important applications in medicine (Gauthier et al. 2021).

Connectivity among ecosystems and the “seamount mass effect”

Both the nearshore and open-ocean habitats of the sanctuary are globally important in their own right, but the ability to protect both, and the connectivity between the two, is a key feature of the proposed NMS (Figure 2). For example, many seabirds with colonies in the Pacific Remote Islands rely on tunas and other large predators to drive forage fish to the surface where they are accessible. This foraging strategy relies on healthy populations of both predators and prey, which is enhanced by protection of offshore areas from commercial fishing. The nearshore reefs, in turn, utilize nutrients brought inshore by offshore feeders. For example, studies have shown that coral reefs grow four times faster near islands with healthy bird populations, which all the Pacific Remote Islands have.

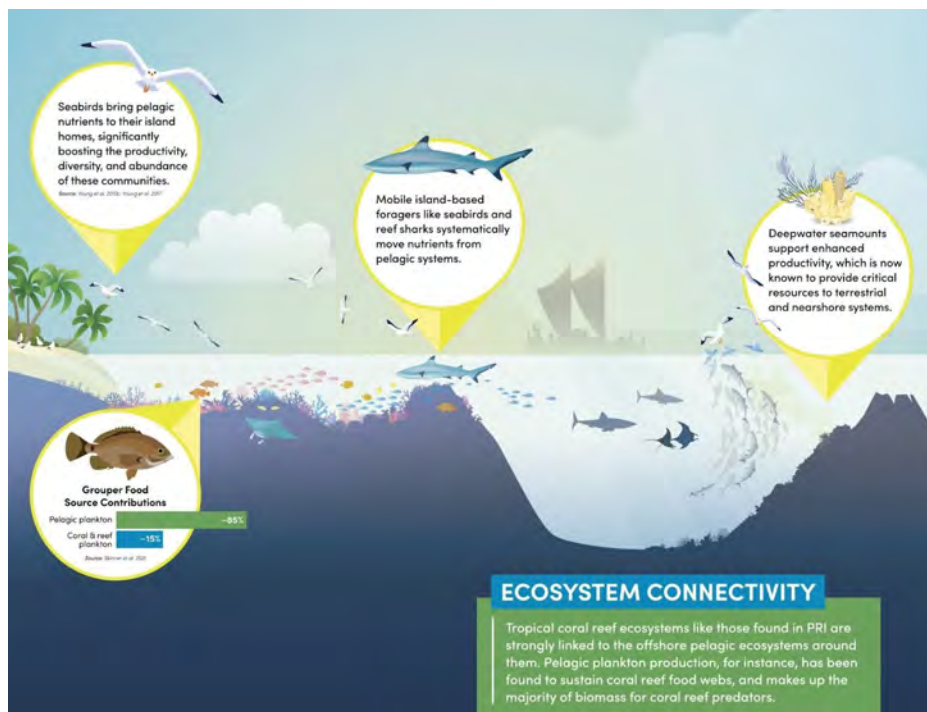


Figure 2. Pelagic communities within the proposed NMS are tightly connected with island and nearshore communities. New research underscores the importance of meaningfully and permanently protecting each of these ecosystems, and maintaining the dynamic natural processes that link them.

Specifically, protection of the deep-water ecosystems, reefs and open-ocean seamounts of the proposed NMS is likely the most important aspect of this nomination. While science first documented that islands drive nutrient flows in the ocean, or the Island Mass Effect (IME) 60 years ago (Gove et al 2015), the most current science is revealing that seamounts provide similar benefits. A decade of satellite chlorophyll data shows that the seamount mass effect provides

substantial long-term chlorophyll enhancements around Pacific seamounts (Leitner et al 2020), which means the fragile deep-water ecosystems of the proposed NMS are both vital and vulnerable; they require intergenerational protections, which is why adding protection to the full extent of the EEZ around Howland and Baker Islands, and Kingman Reef and Palmyra Atoll, is critical. While science continues to reveal more about the critical importance of seamounts, the United States has an opportunity to act now, through establishment of a Pacific Remote Islands NMS, to ensure the protection of the important spawning grounds and biodiversity hotspots provided by the many seamounts that exist within the United States EEZ. Further, this level of commitment will model the kind of leadership and bold action required to catalyze similar commitments across the region and the globe.

Criterion 2—The area contains submerged maritime heritage resources of special historical, cultural, or archaeological significance, that: individually or collectively are consistent with the criteria of eligibility for listing on the National Register of Historic Places; have met or which would meet the criteria for designation as a National Historic Landmark; or have special or sacred meaning to the Indigenous Peoples of the region or nation.

Tangible and Intangible Heritage and Culture

For the Indigenous Peoples of the Pacific Islands, cultural heritage is not defined as “submerged maritime heritage resources” or tangible artifacts, but the ocean itself, and the sacred intrinsic relationships between nature—the ocean, the sky and the islands—and people. In Native Hawaiian culture specifically, the Kumulipo is a central genealogy, a 2000 line chant, centering the ocean as the source of life. The chant describes the complicated web of interrelationships between Akua, the gods, the natural world, and associated organisms that collectively gives ‘Island Earth’ its pulse (Queen Lili‘uokalani 1897, *The Kumulipo* 1981). It provides direction and outlines responsibilities from the findings and interpretations of kūpuna (elders and ancestors), while recording familial lines and describing spiritual ancestral knowledge relating to creation and the first organisms to emerge from the depths of darkness: ‘āko‘ako‘a (coral) (Queen Lili‘uokalani 1897, *The Kumulipo* 1981).

Oral histories and more recent archeological evidence and voyaging simulations document Indigenous seafarer’s utilization of marine corridors to reach islands throughout the Pacific; including those within the proposed NMS, for cultural practices and exchanges (Di Piazza and Pearthree 2001b; Di Piazza, Pearthree, and Paillé 2014; Irwin and Flay 2015; Kerr et al. 2016; Bautista and Smith 2018; Villagomez 2018). As stopping points for resources, temporary shelter, and cultural duties, the islands within the proposed NMS prior to territorial claim by the United States were functional nodes within a water highway utilized by voyagers throughout the Pacific (Finney 1977, Di Piazza and Pearthree 2001a, 2001b).

Polynesian and Micronesian oral history describes voyaging to PRI for cultural duties and traditions, such as the Marshallese voyaging to Eneen-Kio (Marshallese after the plentiful kio flower) or Wake Atoll, for seabird bones utilized in tattooing (Bautista and Smith 2018, Villagomez and McGuire 2021). Further, their names, many of which given in modern times by Hawaiian cultural scholars of the Kōmike Hua‘ōlelo (Hawaiian Language Lexicon Committee), are referential to how Native Pacific Islanders utilized these islands, the native flora, conditions of the islands, and namesakes of vessels utilized to transit the region (Bautista and Smith 2018,

Takata 2021a). Limited in resources, PRI likely never housed permanent populations, but instead provided food in the form of seabird and turtle eggs, fish and limu (seaweed) from their reefs, a place to rest, areas to cultivate small crops of plants, and burial grounds for those that did not survive ocean journeys (Di Piazza and Pearthree 2001a, 2001b; Bautista and Smith 2018).

Archeological research throughout neighboring islands in the Phoenix and Line Archipelagos have also pointed to even wider utilization of these atolls and reefs by Pacific voyagers, as small structures, basalt artifacts, spears, stones, and axes have been discovered linking to quarries in Samoa, Hawai‘i, Society Islands, Tuamotu Archipelago, and Marquesas as part of early Pacific trading routes (Di Piazza and Pearthree 2001b). Additional archeological work during the Whippoorwill Expedition in the mid-1920s pointed to coral walls and mounding structures on Howland Island that shared common traits with those of the far south-east Tuamotu Archipelago, while artifacts of Tahitian origin were also found (Bautista and Smith 2018).

To accomplish the extraordinary feat of open-ocean wayfinding without the use of instrumentation and contemporary technology, Pacific Islanders relied upon a deep knowledge of the stars, marine life far from any land, currents, weather, and other factors to provide continuous confirmation of the direction towards land (Lewis 1974, Finney 1992, Thompson n.d.). As seafaring people, Pacific Islanders understood these connections, and through their interpretation of the function of the ocean as a living entity, were able to navigate its waters far from the sight of land for millennia (Finney 1977, 1992; Kikiloi 2010; Irwin and Flay 2015; Thompson n.d.).

Today, teaching and practicing traditional open-ocean wayfinding is limited to areas like those within the proposed NMS and Papahānaumokuākea in which ancestral voyages far from land, crossing between distant islands, can be replicated and perfected. Given its distance from heavily populated islands, the proposed NMS acts as an open water lab for voyaging since voyagers can remain fully out of sight from land and its associated traits (Finney et al. 1986, Hawaiian Voyaging Traditions 2009, Buente et al. 2020).

Modern History

In addition to the Native Hawaiian and Pacific Islander cultural connections with the Pacific Remote Islands, there are numerous monuments to maritime, military, and political history. These waters stood as passageways for guano traders and hunting grounds for whalers, the final resting places for ships, the maritime amphitheater for battle in World War II, and the territorial fruits of the dedication of 130 brave Native Hawaiian men claiming land and sea in service to the United States. Much of this history remains unexplored, especially underwater.

In the 16th and 17th centuries, Europeans sailed through and began mapping the region (Magier and Morgan 2012, Bautista and Smith 2018). By the 1800s, whalers from New England began pursuing Pacific sperm whales as Atlantic populations declined (Magier and Morgan 2012, Smith et al. 2012, Bautista and Smith 2018, Kennedy et al. 2021). Historical data suggests that these waters were once some of the most productive in the world for sperm whales, which were heavily depleted by whaling and have still not recovered (Kennedy et al. 2021).

Toward the end of the 19th century and continuing until the early part of the 20th century, the large bird populations on the islands attracted the exporters of highly prized seabird feathers to feed fashion trends (Magier and Morgan 2012). Further, ship traffic across the region expanded

from the 1800s through the early 1900s as the islands became sources for copra (dried coconut kernels) and guano, which led to the establishment of working populations on these islands to gather, process, and ship materials for export (Tengan 2008, Magier and Morgan 2012, Bautista and Smith 2018). During these times, the islands became homes for laborers from Niue, Cook, and Hawai‘i, and made the PRI region a major shipping corridor for this growing economy.

Naturally, all of this ship traffic during the Age of Sail produced many shipwrecks, due to groundings, fires and other mishaps, creating a wealth of historic objects of interest (Magier and Morgan 2012, Bautista and Smith 2018). Many, if not most, of these historical shipwrecks remain undiscovered or unexplored due to the lack of high-resolution mapping of the seafloor in much of the EEZ surrounding the islands (Kim and Wessel 2011; Cantwell et al. 2018; Kennedy et al. 2019). Palmyra Atoll may harbor at least one shipwreck associated with the legend of the treasure of the *Esperanza*—a convoluted tale of the ship *Esperanza*, which carried looted Inca treasure from Peru, which was attacked and itself looted by pirates, whose own ship later sank off Palmyra. These and other historical shipwrecks, and their accompanying stories, speak volumes about the rigors of travel during the Age of Sail, but also of the history of colonization, and the accompanying exploitation of natural resources and Indigenous Peoples.



Figure 3: Graduates and students of Kamehameha School, later known as the Hui Panalā‘au, January 1936. Back row, left to right: Luther Waiwaiole, Henry Ohumukini, William Yomes, Solomon Kalama, James Carroll. Front row, left to right: Henry Mahikoa, Alexander Kahapea, George Kahanu, Sr., Joseph Kim.

The waters surrounding Wake Island have a rich maritime heritage, including several 19th century and early 20th century shipwrecks. They also are reported to contain a Japanese submarine and two troop transport vessels sunk, and some two dozen airplanes shot down, by American defenders when Japanese imperial forces launched an amphibious assault on the island just days after their attack on Pearl Harbor. The small American garrison, assisted by civilian workers, valiantly defended the island and repulsed the initial attack. But it was overrun by a reinforced and greatly superior Japanese force on December 23,

1941, thus becoming one of four American territories to be occupied by the Japanese during World War II. This little-known history is worthy of exploring and interpreting in the broader context of World War II in the Pacific, and how that history shaped today’s geopolitics.

Howland, Baker and Jarvis islands, and their surrounding waters, are of great historical and cultural significance both to Native Hawaiians and the nation. Beginning in the mid-1930s, young men—mostly Native Hawaiians—were recruited by the United States government to occupy these islands in order to secure a territorial claim. From 1935 until the end of 1941 small groups occupied each of the islands on a rotating basis.

These courageous young men became known as Hui Panalā‘au, which has been translated as “holders of the land society” or “club of colonizers” (Figure 3). One of the panalā‘au died of acute appendicitis on route home for surgery. Two of the group died when Japanese forces bombed and shelled Baker and Howland Islands on December 8, 1941—the same day as the attack on Pearl Harbor since the islands are west of the International Dateline (Center for Oral History 2006).

Criterion 3—The area supports present and potential economic uses, such as: tourism; commercial and recreational fishing; subsistence and traditional uses; diving;; and other recreational uses that depend on conservation and management of the area's resources. The main economic value in creating a large, highly protected MPA such as this is to maintain the ecological services delivered by intact and fully functional ecosystems. The direct link between the stability of the ocean and the stability of planetary climate means that not acting to protect places like the Pacific Remote NMS is a systemic risk to the economic viability and climate liveability of the United States and the planet (Ramani 2020). The value of protecting ocean-climate ecosystem services includes nutrient cycling, carbon storage, habitat and refugia for marine fish and wildlife, food production, cultural values, and climate regulation.

Although it is not a primary reason for establishing the sanctuary, the direct economic value of the proposed NMS would be its intrinsic value as an intact, highly protected ecosystem that supports reproduction and growth of valuable commercial food species such as tuna and billfish. Such a refugium is of increasing value as fishing pressure on these species continues to grow. While these species are likely to range outside even a sanctuary of this size, protecting a large area allows for unfettered growth and reproduction leading to healthier population biology, even if they are fished outside the EEZ.

It has often been assumed that establishing large, highly protected MPAs creates a direct tradeoff between ecosystem protection and economic uses, such as fisheries. Recent research has shown that, at least in the tropical Pacific, the effect on fisheries of large MPAs may be less detrimental than feared, and in some cases may be beneficial. A particularly relevant example is provided by Lynham and colleagues, who examined the economic effect of the expansion of Papahānaumokuākea Marine National Monument and the Pacific Remote Islands Marine National Monument on the Hawai‘i longline fishing fleet. They found that both catch and catch-per-unit-effort were higher in this fishery since the expansions began. They concluded that the monument expansions had little, if any, negative impacts on the fishing industry, corroborating ecological models that have predicted minimal impacts from closing large parts of the Pacific Ocean to fishing (Lynham et al. 2020).

Another recent study showed that fish populations are rebounding within Papahānaumokuākea and spilling over the boundaries, leading fishermen to catch more fish near the edges than they would have without these protections. Since the monument’s expansion in 2016, catch rates in the waters immediately adjacent to the monument have increased by 54% for yellowfin tuna, 12% for bigeye tuna, and 8% for all other fish species (Medoff et al. 2022).

The proposed sanctuary contains more than 260 relatively undisturbed seamounts. Because of the unique conditions for life on and near seamounts, their biodiversity contains species with physiological and biochemical processes that may be of high value for medicine and engineering,

and exploration of seamounts yields new species and other discoveries that are new to science with nearly every expedition.

Recent exploration of the deep sea in the Phoenix Islands Protected Area (PIPA), which is adjacent to the U.S. EEZ off Howland and Baker Islands, resulted in the discovery of non-toxic molecules that could be used in biomedical drug delivery applications (Gauthier et al. 2021). Researchers found that 80% of the bacteria examined from coral lesion swabs elicited no inflammatory response from mammalian lipopolysaccharide (LPS) receptors (Gauthier et al. 2021). These LPS molecules are among bioactive molecules notably utilized in biomedical drug delivery applications, so evasion of detection in mammalian systems points to non-pathogenic and non-toxic options for drug delivery, such as in cancer treatments, versus current methods (Gauthier et al 2021). Although the bacteria that synthesize these molecules were discovered in PIPA, recent exploration has yielded similar discoveries within the proposed sanctuary.

This discovery has immense potential for the development of new biological tools and therapeutics offering novel ways to deliver medicine. Importantly, this research used non-destructive sampling methods, highlighting the ability to both protect marine resources and to advance discoveries with major biomedical applications.

Criterion 4—The publicly derived benefits of the area, such as aesthetic value, public recreation, and access to places depend on conservation and management of the area's resources.

Establishing the proposed NMS would permanently and strongly protect one of the last remaining, relatively unspoiled, areas of ocean wilderness on the planet. The sanctuary would be of great public benefit in:

- The preservation of a vast seascape that is of invaluable cultural and spiritual significance to indigenous Pacific Islanders;
- Aiding in the conservation of economically valuable species, such as tunas;
- The protection and recovery of globally endangered and threatened species, such as sharks, seabirds, cetaceans and sea turtles; and
- Providing a large natural laboratory relatively free of direct human impact, in which to study evolutionary and ecological processes, including the effects of climate change.

As detailed under Criterion 2 above, the waters and islands of the PRI hold great cultural and spiritual significance for Pacific Islanders. Preserving the seascape that the ancestors of Native Hawaiians and other Pacific Islanders traveled to and through is particularly important in maintaining and strengthening their culture. Such benefits are not limited to the Native Hawaiian community, as sanctuary educational and interpretive programs can enlighten the broader public about the historical and ecological importance of the region, as well as the value of indigenous culture and practices regarding protection and sustainable use of natural resources. As evident by other large scale MPAs throughout the Pacific, the sanctuary designation can be a source of cultural revitalization.

Modern science has finally reached the same conclusion as thousands of years of indigenous knowledge and practice, namely that the ocean, from the shore to the deep sea, should be viewed as a single, interconnected entity that must be managed holistically to protect biodiversity and

provide the full range of ecological services. Establishment of a national marine sanctuary to protect and manage the marine waters of the Pacific Remote Islands provides the best vehicle for ensuring these public benefits are delivered in perpetuity. Permanent and strong protection of this region, its ecosystems, and biodiversity would contribute substantially to statutory and policy goals of the United States for conservation and preservation of biodiversity, including under the NMSA, Endangered Species Act, the Marine Mammal Protection Act, and the President's goal to conserve 30 percent of the United States' land and waters by 2030.

Coral reefs are globally threatened by unsustainable fishing, water pollution, and climate change. The reefs of the proposed NMS include some of the highest reported cover of live coral, rates of coral recruitment, and diversity of coral in the Pacific. Coral health within the sanctuary is generally high with low levels of disease and coral predation (Brainard et al. 2005, Sandin et al. 2008, Obura et al. 2011). Reef fish biomass at these sites is higher than at other sites in the Central Tropical Pacific (Sandin et al. 2008, Brainard et al. 2019). However, despite the high health of these reefs, two of these sites have still reported some declines in coral cover (13% at Kingman Reef and Baker Island) during the last surveys (Brainard et al. 2019), highlighting the delicate nature of these globally-threatened ecosystems and the need for all protections possible to preserve them.

The presence of thriving seabird colonies on the Pacific Remote Islands is both an indicator of healthy coastal and offshore ecosystems, and a benefit for coral reef conservation. Seabirds, which often forage hundreds of miles offshore, return to their island nesting colonies, bringing needed nutrients to nearshore reefs. Coral reefs and their communities then take up these seabird nutrients, causing reef-building corals to grow four times faster in reefs with seabirds than those without, and contributing to larger populations of herbivorous fish.

The area is an important tuna spawning ground. Recent work has also shown persistent tuna spawning activity of yellowfin, bigeye and skipjack tuna within the Phoenix Islands archipelago, of which Howland and Baker Islands are a part (Hernández et al. 2019). While this research did survey the U.S. EEZ around Howland and Baker Islands, some of the higher spawning sites, especially for skipjack, directly abuts the proposed sanctuary and strongly suggest there are high levels of spawning within these areas.

While tropical tuna are undoubtedly highly mobile, the median residence time for these species within an EEZ is 3-6 months, suggesting that pelagic MPAs, especially when arranged in a coordinated network (as in PRI) can be effective for conservation (Sibert and Hampton 2003). Although no MPA can fully protect highly migratory species that range outside its boundaries, protecting such a large area of pelagic habitat, with included shallow-water features that are known to attract oceanic species, provides both refuge from fishing pressure and high quality foraging.

Sharks are a major component of predator biomass in tropical pelagic and reef environments and play an important role in ecosystem health and function (Roff et al. 2016). An analysis in tropical systems globally found declines of 74-92% in sharks across multiple species examined, along with substantial declines in body size (Roff et al. 2018). Stock assessments produced by the Western and Central Pacific Fisheries Commission (WCPFC) indicate that some pelagic sharks

have experienced population declines of over 95% in this region (WCPFC 2019). Nearly all this decline is likely due to bycatch fishing of sharks (Bradley et al. 2014, Dulvy et al. 2014), which occurs in both the longline and the purse seine fisheries, both of which operate in or directly adjacent to the waters of the proposed sanctuary.

Only very large closed areas are effective in protecting sharks from these threats (MacNeil et al. 2020), including reef sharks—many of which range more widely than are traditionally thought (White et al. 2017). Further, remote areas like the PRI have been shown to be the most effective at protecting sharks (Letessier et al. 2019). Comprehensive surveys of a few shark populations in proposed NMS and surrounding areas suggest abundances here are among the highest reported anywhere—a testament to the value of these remote and protected areas for conserving these species (Sandin et al. 2008, McCauley et al. 2012, Nadon et al. 2012, Bradley et al. 2017).

Large MPAs that prohibit industrial scale fishing are also critical to the protection and recovery of endangered and threatened cetaceans and sea turtles. They face a number of threats ranging from habitat loss, direct harvest (both intentional and as bycatch), to entanglement in fishing and other gear. Another relevant threat to cetaceans is noise pollution, by which acoustic noise from anthropogenic sources masks vocalization used by cetaceans for communication and feeding and even causes hearing damage (Weilgart 2007, Gómez et al. 2016, Avila et al. 2018). The hearing range of sea turtles also overlaps with anthropogenic ocean noise (NOAA Fisheries, 2022), but its effects on turtles are poorly understood. Currently, the Central Pacific remains a relatively quiet zone (Sirovic et al. 2013) and the proposed NMS, by preventing noise associated with fishing and seabed mining, could provide an important acoustic refuge (Levin et al. 2016, Martin and Entrup 2021).

In addition to their intrinsic conservation value, sea turtles are known to be important in helping maintain low algal covers on coral reefs and are thus likely important in helping reef resilience in the face of climate change and other disturbance (Wabnitz et al. 2010, Goatley et al. 2012, Burkholder et al. 2013). Of the 11 populations of green sea turtles listed by USFWS under the Endangered Species Act (ESA), three are endangered, and PRI straddles the habitat of two of these three endangered populations (Fed Reg. 2016). These areas are used both for migratory and feeding grounds, and there has been increasing observation of nesting activity in recent years and tracking studies have confirmed the importance of this area as foraging ground (Luke et al. 2004, Naro-Maciel et al. 2018). These waters are known to be important to the migration patterns of the leatherback sea turtle (Benson et al. 2011).

Not only are numerous species of seabirds present in these areas, but the two units also include some of the world's largest breeding colonies. Sooty tern breeding colonies at Palmyra alone range up to 750,000 nests at a time, and 150,000 nests at Howland Island. Black noddy colonies range up to 20,000 birds at Palmyra, the largest colony in the Pacific, and Palmyra's red-footed booby populations are estimated at 6250 pairs, the second largest colony in the world.

As detailed in earlier discussion on connectivity, seabirds are land place-based foragers, returning to and from regular sites—and thereby drive strong directional movements of nutrients—gathering resources at sea and depositing them on land where they rest, breed, and defecate (Young et al. 2010c, 2013). This nutrient movement has been shown to be critical to

supporting healthy functioning of both terrestrial and coral reef ecosystems. Loss of seabirds from ecosystems can drive whole-scale state change in ecosystems (Croll et al. 2005). Seabirds themselves are also an important food source for inshore communities; for instance, at Palmyra Atoll 29% of blacktip sharks were shown to eat seabirds (Papastamatiou et al. 2009).

The success of these islets as breeding colonies is, in part, due to the great success of terrestrial conservation efforts related to the terrestrial environments for seabirds. Cats, rats, or both were historically present on Palmyra Atoll, Baker Island and Howland Island but have now been eradicated on all sites, providing an important refuge from invasive predators and some recovery of seabird populations (Pierce et al. 2008, Rauzon et al. 2011). A new habitat restoration program at Palmyra Atoll promises to further restore terrestrial habitats for seabirds. Therefore, the main immediate threats to these populations are likely from disruption to their ocean food sources—both directly (e.g. removal of prey or predators that make that prey available) and indirectly via climate change—and direct negative interactions with fisheries.

Tropical seabirds in particular are energetically constrained in foraging in low productivity environments and lack deep diving capabilities; instead, many species rely on subsurface pelagic predators such as tuna, sharks, and dolphins, to drive their prey to the surface where it is more available to them. Reductions in abundance of these predators, or changes in their foraging behavior may dramatically reduce the ability of seabirds to effectively forage (Maxwell and Morgan 2013).

The presence of thriving seabird colonies on the Pacific Remote Islands is both an indicator of healthy coastal and offshore ecosystems, and a benefit for coral reef conservation. Seabirds, which often forage hundreds of miles offshore, return to their island nesting colonies, bringing needed nutrients to nearshore reefs. Coral reefs and their communities then take up these seabird nutrients, causing reef-building corals to grow four times faster in reefs with seabirds than those without, and contributing to larger populations of herbivorous fish.

Longline fisheries in particular may pose an important bycatch threat to seabirds. Seabirds can get caught on baited hooks on the miles of line laid out by longline fisheries. More than 160,000 seabirds are killed annually on longlines with strongest effects on petrels, albatrosses, and shearwaters (all found in these waters); this rate is likely to drive population declines for many of these long-lived, slow-reproducing species (Anderson et al. 2011). While much of the bycatch of seabirds occurs in higher latitudes and recent improvement in fishing practices have reduced bycatch, the Hawaiian longline fishery alone may catch hundreds of birds a year (Gilman et al. 2016).

There are also a number of migratory shorebirds recorded in the Pacific Remote Islands, including endangered and threatened species, that use this as an important stopover location during migration. Stopover locations are known to be key to the survival of shorebird species and their loss is a major cause of decline in this group, as they provide critical areas to rest and forage to facilitate their long migratory journeys (Studds et al. 2017).

Section IV–Management Consideration Information

Consideration 1–The area provides or enhances opportunities for research on marine sciences, including marine archaeology.

The proposed sanctuary includes some of the best remaining examples of pristine ecosystems with connectivity to adjacent, co-dependent ecosystems (e.g., nearshore reefs and adjacent pelagic waters, deep water, and open ocean seamounts) that are unimpaired by human activities. Such systems provide natural laboratories to study ecological and evolutionary processes in tropical systems without the need to filter out direct anthropogenic effects, such as industrial fishing and water pollution. They also provide control areas against which to benchmark the effects of climate change and other anthropogenic effects and to inform management decisions in less protected areas containing similar ecosystems.

The proposed NMS would encompass what is perhaps the world’s largest collection of relatively undisturbed seamounts. As mentioned above, protection of the deep-water ecosystems, reefs and open-ocean seamounts of the proposed NMS is likely the most important aspect of this nomination. These features are not only biodiversity hotspots containing a large number of endemic species, which will likely yield the discovery of new species but they are pivotal for maintaining essential ecosystem functions, specifically the Seamount Mass Effect (Leitner et al 2020). Recent cruises to explore the deep-sea environment of the proposed sanctuary have found rare and potentially undescribed species of coral, extensive mesophotic and deep-sea coral reefs, and schools of sharks and skates traversing the area south of Howland and Baker Islands, suggesting the area may serve as a corridor for the flow of deep-sea and pelagic organisms between the U.S. EEZ and the adjacent protected waters of the Phoenix Islands.

The waters near Palmyra and Kingman reef contain historically noteworthy shipwrecks, including a pirate ship that sank after looting the treasure ship *Esperanza*. Famed American aviator Amelia Earhart and her navigator Fred Noonan disappeared on route to Howland Island in early July 1937. Although many theories of the fate of Earhart and Noonan exist, the wreck of her Lockheed L10 Electra may lie beneath the waters of the proposed NMS. The possible presence of shipwrecks from early Chinese and Spanish explorers and merchants, also exists.

Wake Island has a rich World War II history. It was bombarded on the same day as the Japanese attack on Pearl Harbor. Although the island was overrun within two weeks by a well-provisioned and vastly numerically superior assault by the Japanese, vigorous defense of the island by a small American garrison, with assistance from civilian worker, including Native Hawaiians, resulted in the sinking of Japanese troop transports and the downing of two dozen airplanes in the waters surrounding the islands. Given that NOAA and the Office of National Marine Sanctuaries have a long history and decades of expertise in marine archaeological research, recognition of the area as a national marine sanctuary could invigorate exploration and documentation of the diverse maritime history of the region.

Consideration 2–The area provides or enhances opportunities for education, including the understanding and appreciation of the marine and Great Lakes environments.

The pristine reefs, open seas and deep-sea environments of the proposed NMS offer increasingly rare opportunities for students, educators, and policy makers to learn about and understand the structure, functioning and importance of healthy ecosystems. Understanding how natural ecosystems function, the services they provide to society, and the threats they face from human actions and activities, is increasingly important as society seeks to confront the challenge of global climate change and increasing rates of extinction. This knowledge, and the ability to connect with these ecosystems, is particularly important to the Indigenous Peoples of the Pacific Islands, whose culture is so closely tied to the oceans and marine life.

In addition to opportunities to educate about the ecosystems and marine life within the region, sanctuary designation would enhance opportunities to use the sanctuary to educate the public about traditional Polynesian navigation, and provide opportunities for Indigenous Peoples and others to actually learn and practice these ancient techniques in a region where the biological and ecological indicators that are so important to these practices remain intact.

Although the remoteness of the proposed sanctuary limits opportunities for hands-on educational experiences, technological advances have made it possible for students and the general public to gain high-quality virtual visitor experiences from the deep sea to the beaches of coral atolls without the disruption that human visitation can bring. The information, images, and educational and media resources and opportunities NOAA developed for the CAPSTONE campaign for U.S. MPAs in the Pacific and North Atlantic Stepping Stones expedition to the Northeast Canyons and Seamounts Marine National Monument are good examples of the way in which even the most remote regions of the Earth can now be brought in the classroom, living room, or board room using the latest technology. Public-private partnerships between NOAA and other ocean exploration institutions like the Ocean Exploration Trust's E/V Nautilus represent another avenue for education, bringing these remote places to the public via ship-to-shore opportunities, science communication fellowships, and more.

Several of the islands and atolls within the proposed sanctuary have important World War II-era histories. Wake Atoll was valiantly defended by a small American garrison and civilian workers in the days following the attack on Pearl Harbor. However, on December 23, 1941, it was overrun by a vastly numerically superior Japanese force, thus becoming one of four U.S. territories occupied by Japan during the war. One consequence of the recapture of Wake from the Japanese was that George H.W. Bush took off for his first sortie as a pilot, from Wake.

Beginning in 1935 until 1942, there was a government-sponsored program supporting occupation of Howland, Baker, and Jarvis Islands to establish a territorial claim over those islands by the United States. The successful campaign involved the recruitment of young men from Hawai'i, mostly Native Hawaiians, to occupy the islands continuously in rotating groups of four men per island. Although the effort successfully established the U.S. claim over the islands, three young men lost their lives in the process including two who died during the bombardment of Howard and Baker Islands on the same day (west of the International Dateline) as the attack on Pearl Harbor. This little-known history speaks volumes of the vigor, ingenuity and patriotism of these young Hawaiians.

Consideration 3—Adverse impacts from current or future uses and activities threaten the area’s significance, values, qualities, and resources.

“An ounce of prevention is worth a pound of cure” is a well-known saying that’s used to describe how much easier it is to prevent a problem than wait until after it’s happened and try to fix it. Although the ecosystems of the Pacific Remote Islands are among the healthiest in the world, they are subject to a number of threats, from which establishment of a national marine sanctuary in the region could help protect. The major threats are unsustainable and ecologically harmful fishing practices, seabed mining, and climate change.

Fishing

Globally, large pelagic fish populations are declining (Myers and Worm 2003) and climate change is predicted to redistribute the world’s fisheries in a dramatic way in the near future (Cheung et al. 2008). Some of the species commonly caught by fisheries activities—especially bycatch species such as sharks, turtles, and seabirds—have slow life histories and are unable to sustain even modest bycatch pressure. Protected areas help alleviate pressure on these populations by reducing or eliminating fishing mortality. For example, the establishment and expansion of PRI to the 200 nautical mile limit around Johnston Atoll has already been shown to have reduced catch rates of blue sharks and bigeye tuna. There was no similar effect observed for Kingman and Palmyra, which is protected at present only to 50 nautical miles (Gilman et al. 2020).

There is currently a high amount of industrial fishing pressure just outside the EEZ boundaries of Howland and Baker Islands, and Palmyra Atoll and Kingman Reef, with purse seine and longline fisheries making up the primary fishing interests in the area. There may also be some significant ‘flow-through’ fishing by purse seine vessel-released free-drifting fish aggregating devices in protected areas, although this has not yet been quantified. Protecting this area is both extremely valuable biologically and would cause minimal economic hardship.

Fisheries vessel traffic also poses risk from oil spills, increases in noise pollution in the area, and direct damage to reefs when ships sink, run aground, or drag gear. Fisheries are also a significant source of marine debris, especially in remote areas where other sources of marine debris are more limited (Amon et al. 2020).

In addition, the closure of the area to all industrial scale fishing makes monitoring and enforcement of activities in the area simpler, and may assist in detecting fishing activity, including problematic Illegal, Unreported and Unregulated (IUU) fishing. With the expansion of Chinese presence in the waters around Kiribati, a large-scale marine protected area may also benefit national security.

It is ideal to place MPAs in areas that are both biologically valuable and that cause minimal economic hardship. Establishing the proposed NMS achieves both goals. There is currently only sporadic fishing activity happening in the unprotected EEZ around Howland and Baker Islands and Palmyra Atoll and Kingman Reef (White et al. 2020), so there is little current economic activity to disrupt. However, the potential of future threats does exist, as fisheries in the region are poised to grow—thus, the relative ease of protection now, with minimal disruption to

economic livelihoods, is not guaranteed to remain. For comparison, in Papahānaumokuākea, where fisheries effort was also low (though much higher than the proposed expansion areas around PRI), the closure appears to have caused only relatively minor economic impacts (Lynham et al. 2020).

Seabed Mining

Deep-sea mining is poised to become a potentially major threat to the Pacific Remote Islands marine ecosystems and the broader region. Mining activities are expected to target one of three different resource types: polymetallic nodules on the deep-sea floor, cobalt crusts on the slopes of seamounts, and seafloor massive sulfides on or near hydrothermal vents. While seabed mining is still in exploratory stages for all of these resource types, the increasing price of strategic minerals and elements is driving increased commercial interest and the likelihood that these activities will occur (Cuyvers et al. 2018) (Figure 4). The establishment of NMS represents a critical opportunity to proactively safeguard the biodiversity and functioning of the ecosystems within its waters against this emerging industry.

The deep seabed in and near the Pacific Remote Islands is among the highest-valued areas in the world by those interested in mining mineral-rich crusts and nodules. Both Kingman Reef and Palmyra Atoll are located near or in the prime Fe-Mn crust zone, and one that contains some deposits of nodules as well. Analysis of crusts in Howland and Baker Islands have displayed higher levels of Fe-Mn than adjacent seamounts along the Marshall, Gilbert, Tuvalu, and Samoan chains, drawing further mining interests to areas in the Pacific Remote Islands (Mizell et al. 2020, 2022).

Seabed mining involves the removal of the top layer of seafloor along with all organisms in it—causing complete mortality of organisms in the impacted areas. Moreover, as this crust is piped up to the surface and processed, the mining wastewater and tailings are expected to be released back into the marine environment. The environmental effects of these wastewater plumes may be even more harmful than the direct impact of mining seafloor communities.



Figure 4. Deep-sea mining machines, two for cutting and one for collection. For scale, note the people in yellow jackets next to the machine on the left. (Photo credit: Nautilus Minerals)

Potential negative effects include smothering of midwater species that are highly sensitive to sediment loading, reduced productivity and erosion of the forage base for midwater and pelagic communities, and the introduction of harmful toxins into the water column that could have deleterious effects on ecological communities (Jones et al. 2017, Cuyvers et al. 2018, Drazen et al. 2020, Levin et al. 2020, Smith et al. 2020).

Deep-sea biodiversity is likely to have very slow recovery times

given the very low rate at which biological processes occur in these food-, light-, and temperature-limited environments (Smith et al. 2008, McClain et al. 2012). With these concerns in mind, over 600 scientists have joined joint calls highlighting the risks posed by seabed mining to ecosystems like those of the proposed sanctuary.

Seabed mining may also have global impacts in terms of long-term carbon storage. Organic carbon stored in marine sediments can remain for millenia, but disturbing marine sediment can re-mineralize sedimentary carbon, likely reintroducing carbon into marine systems and increasing ocean acidification (Sala et al. 2021). For this reason, deep-sea mining is considered an emerging threat to sediment carbon pools (Sala et al. 2021).

Seabed mining would have catastrophic effects on directly impacted benthic communities, and likely severe indirect effects on downcurrent communities—pelagic, benthic and possibly coastal. In most instances, marine spatial protection is put in place to slow or reverse damage already done to marine ecosystems. However, especially in the case of low-resilience systems like these deep ocean communities with very long recovery times, enacting protections prior to disturbance is key to retaining the value of these resources (Wedding et al. 2015).

Climate Change

Climate change presents a major challenge to this region. Climate change is expected to increase sea surface temperature, ocean acidification, and wave height, storm intensity, and cause more frequent heat waves and sea level rise (IPCC 2020). Even in areas with strong management, the tropical Pacific is predicted to show dramatic declines in coral cover and pelagic diversity under current climate change scenarios (Bell et al. 2013, Yasuhara et al. 2020).

However, there is some evidence that coral reefs in PRI may be more resilient and resistant to climate change than those in more populated areas (Fox et al. 2019), likely due to their remote location protecting them from other anthropogenic threats and impacts that can weaken the integrity of the system. Additionally, it is possible that these areas offer an area of promise for climate change—the upwelling of cold, deep water and dynamic, mixing currents in the region may provide relative respite from warming ocean temperatures. A recent analysis showed these areas to be some of the best tropical MPAs in terms of being able to resist and persist through the projected effects of climate change (Bruno et al. 2018).

With regards to fisheries resources, in the short run, climate change is likely to cause an eastward movement of tuna populations into the region of the proposed expansion area—potentially increasing the relative importance of this area in the near term (Senina et al. 2018; Bell et al. 2013, 2021). This may increase pressure to fish these areas, making protection more important. However, this potential increased fishery value may not last, as longer-term models of some tuna suggest their range may shift even further eastward of these sites with time (Bell et al. 2013, 2021). This would in turn potentially exacerbate risks to seabirds and other species in the region that depend on tuna.

Consideration 4—A national marine sanctuary would provide unique conservation and management value for this area or adjacent areas.

Designation of the waters of the Pacific Remote Islands as a national marine sanctuary offers at least two unique conservation and management values. Firstly, sanctuary designation affords the opportunity to extend full protection of the water column and the seabed to the limit of the U.S. EEZ around Howland and Baker Islands, Palmyra Atoll and Kingman Reef. Secondly, it would provide comprehensive management of the marine waters of the sanctuary.

Most of the area of the proposed NMS is protected as the Pacific Remote Islands Marine National Monument. The Presidential Proclamation establishing the original, smaller monument (Proclamation 8336) assigned responsibility for management of the monument to the Department of the Interior, “in consultation with the Secretary of Commerce.” As a result, monument management largely occurs through the Fish and Wildlife Service, which manages the seven national wildlife refuges embedded within the monument. NOAA Fisheries manages fisheries in the offshore area, mainly through enforcement of the prohibition on commercial fishing and management of a recreational and sustenance fishing permit system, of which there are currently no active permits. NOAA also has jurisdiction over protection of marine mammals and sea turtles.

The administrative process for designating a marine sanctuary under the NMSA would allow the Secretary of Commerce to include all the waters of the existing marine national monument and also the currently unprotected waters from 50 to 200 nm off Howland and Baker Islands, Palmyra Atoll, and Kingman Reef within the proposed NMS. As outlined under significance criterion 1 above and in the PRI Coalition Case Statement included in the appendix, this area contains globally significant marine resources worthy of strong protection from extractive and destructive activities. Protecting all the marine waters and the seafloor around the Pacific Remote Islands would complete, as much as is legally feasible within national jurisdiction, protection of the entire PRI ecosystem and create the largest highly protected MPA on the planet.

The ability to create permanent and comprehensive MPAs under the NMSA is important, but not unique. This has been done in the PRI and elsewhere under the Antiquities Act. What is unique about the NMSA, is its *requirement* to develop and periodically update the status of the sanctuary through a condition report and a comprehensive management plan for the protection, maintenance and restoration for sanctuary resources. Establishment of the proposed NMS would ensure timely evaluation of sanctuary resources, encourage scientific exploration and discovery, and development of a comprehensive management plan for the region, which currently does not exist. The process for development and revision of sanctuary management plans under the NMSA is rigorous, transparent, and inclusive.

Management of the marine waters of the PRI as a national marine sanctuary would bring the full complement of NOAA’s expertise and responsibilities to bear on conservation of and public benefit from sanctuary resources. Under the proclamations establishing and expanding the existing marine national monument, NOAA’s regulatory authority is largely limited to fisheries management. Establishment of the proposed NMS would broaden NOAA’s mandate to include

measures to protect, maintain and restore the health of all marine fish and wildlife within the sanctuary, with regulatory and enforcement authority.

In addition to its mandate to protect and manage living marine resources, NOAA has a mandate under the NMSA to conserve, explore and interpret for the public, the maritime heritage and marine archaeological resources within the proposed NMS. Designation of the sanctuary would unlock resources and expertise to locate and conduct research on historic shipwrecks, collaborate with and support practitioners of traditional wayfinding, further elucidate the stories and heroism of the Hui Panalā'au and the World War II defenders of Wake Island, and promote knowledge and understanding of these features, histories, and practices among the general public. As evident from the establishment of Papahānaumokuākea, large scale marine protected areas can also result in cultural revitalization and connecting Pacific Island communities from across the region.

Consideration 5–The existing regulatory and management authorities for the area could be supplemented or complemented to meet the conservation and management goals for the area.

This nomination is intended to create an MPA that encompasses the full breadth of the EEZ surrounding the PRI and to provide strong and comprehensive protection of its living, cultural, and historical resources. As a result, some of the attributes described as unique under consideration 4 above also supplement and complement existing authorities. In other words, this nomination is intended to supplement and complement, not supplant, existing authorities and protections, and it will do so by bringing unique AND complementary aspects of resource management available under the NMSA to bear on the PRI ecosystem.

NOAA's current responsibilities within the existing marine national monument are limited to fisheries-related matters. Establishment of the proposed NMS would expand NOAA's responsibilities within the region to include addressing broader aspects of ecosystem health. It would apply the holistic philosophy of the NMSA to management of the sanctuary. Key elements of this approach include:

1. Protecting and, where appropriate, restoring natural biological communities, habitats, populations and ecological processes;
2. Enhancing public awareness and understanding of the marine environment and the natural, historical, cultural, and archaeological resources; and
3. Supporting, promoting, and coordinating scientific research on, and long-term monitoring of, the resources of [marine sanctuaries].

Sanctuary designation would bring the PRI into the National Marine Sanctuary System, thus fully benefiting from NOAA's enforcement, education, outreach, and marine research operational capabilities and expertise. NOAA has developed a well-defined process for evaluating the status and trends of sanctuary resources. These "condition reports" provide valuable information and insights to inform the periodic revision of management plans.

Consideration 6–There are commitments or possible commitments for partnership opportunities such as cost sharing, office space, exhibit space, vessel time, or other collaborations to aid conservation and management programs for the area.

The current PRI monument is supported by several critical partnerships and collaborations that allow for the long-term health, management, and ongoing research and monitoring of the area.

The PRI Community Group provides input to state and federal agencies on the management, proper care, and effective stewardship of the monument – aiding in the conservation and management for the area. The group also serves as a link to the Pacific Remote Islands for communities that recognize this place to be culturally and biologically important.

The Nature Conservancy owns and operates the only airstrip and inhabited dwelling in the Pacific Remote Islands MNM, and has recently established a new focus of a long-standing science commitment based on Palmyra Atoll called the the Climate Adaptation and Resilience Lab (CARL), which includes a focus on “blue water” species that heavily utilize the 50 to 200 nautical mile zone of the proposed expansion area. The greatest potential knowledge that may come from this effort and others like it depends on protecting the integrity of the system from other stressors.

In 2014, the Pacific Remote Islands Coalition formed to protect the cultural, natural, and historical legacy of these special islands, atolls, and reefs. The Coalition's diverse network of elders, fishers, educators, cultural practitioners, non-profits, community groups, scientists, religious organizations, veterans, and many others across the Pacific and beyond remain committed to the effective protection of PRI as well as the long-term success of the proposed NMS.

The PRI Coalition continues to work with allies to explore partnerships and opportunities to support the long-term vision of this place serving as an area where Pacific Communities can join together to care for the area, re-establish linkages, and promote the health of Moananuiākea (the vast Pacific). Potential partnership and collaboration opportunities and commitments to explore include:

- Working with Pacific communities focused on revitalizing traditional wayfinding practices to support voyaging to and within the waters of the sanctuary;
- Working with funders and partnerships to support the ongoing implementation and effectiveness of the sanctuary;
- Working with U.S. aquariums to support education and outreach efforts bringing the wonder of this special place to aquarium audiences and the general public; and
- Exploring opportunities for public/private partnerships with ocean exploration groups such as Ocean Exploration Trust and Schmidt Ocean Institute who have conducted expeditions to the area in the past or have upcoming expeditions with successful models of community engagement, education, and exploration opportunities.

Consideration 7– There is community-based support for the nomination expressed by a broad range of interests, such as: individuals or locally based groups (e.g., friends of group,

chamber of commerce); local, tribal, state, or national elected officials; or topic-based stakeholder groups, at the local, regional or national level (e.g., a local chapter of an environmental organization, a regionally based fishing group, a national-level recreation or tourism organization, academia or science-based group, or an industry association).

The PRI Coalition has conducted broad outreach for nearly a decade building and recognizing the communities connected to the Pacific Remote Islands. The sanctuary designation process supports the continuation of these efforts and the intent of the PRI Coalition to work with brothers and sisters across the Pacific to realize a shared vision of this place. The effort to expand protections has support from a diversity of groups and individuals, demonstrated by the letters found in the Appendix and forthcoming, including:

- Cultural and educational institutions
- Community-based groups and nonprofits
- Region-specific conservation organizations
- National conservation organizations
- Scientists
- Business owners
- Cultural practitioners across Oceania
- Pacific U.S. territories, continental U.S., and international citizens
- Oceanic region, state, and federal decision-makers
- Editorial Boards

Pacific Remote Islands National Marine Sanctuary Nomination Appendix

- I. References
- II. List of Supporters
- III. List of Supporters from 2014 effort seeking expanded protections to the full extent of U.S. EEZ for all units of PRI
- IV. Letters and Expressions of Support
 - A. Support Letters from Elected or Appointed Officials
 1. Congressman Ed Case - initial statement of support
 2. Congressman Ed Case - expression of continued support
 3. Former Governor of Hawai‘i David Ige
 4. Former Mayor of Maui County Michael Victorino of Maui
 5. 2014 - U.S. Senator Mazie Hirono
 6. 2014 - Governor of the State of Hawai‘i Neil Abercrombie
 7. 2014 - Maui County Mayor Alan Arawaka (former Wake resident)
 8. 2014 - State Senator Brickwood Galuteria (former Hokulea crew)
 9. 2014 - William Aila, Jr., Chairperson, Hawai‘i State Department of Land and Natural Resources (DLNR)
 10. 2014 - Frazer McGilvray, Administrator, Hawai‘i Division of Aquatic Resources, DLNR
 - B. Support Letters from Organizations
 1. Bishop Museum
 2. Hawaiian Monk Seal Preservation Ohana
 3. The Membership of Huamakahikina
 4. Kai Palaoa
 5. Mauna Kea Anaina Hou
 6. Papa Ola Lokahi
 7. Papahānaumokuākea Marine National Monument Native Hawaiian Cultural Working Group
 8. The Polynesian Voyaging Society
 9. The Nature Conservancy
 10. Letter of support from 60 national non-governmental organizations
 11. 2014 - *The Polynesian Voyaging Society*
 12. 2014 - *Ocean Elders: Nainoa Thompson, Dr. Sylvia Earle, Her Majesty Queen Noor, Sir Richard Branson, and more*
 13. 2014 - *Letter of support from more than 30 Hawai'i non-profits*
 14. 2014 - *Letter of support from more than 35 Hawai‘i businesses*
 15. 2014 - *Letter of support from more than 40 national foundations and non-governmental organizations*
 16. 2022 - *Letter of support from Mission Blue, signed by President and Founder, Sylvia Earle*
 - C. Citizens - over 13,000 signatures in support
 1. Change.org petition
 2. Only One petition
 3. PRI Coalition petition
 - D. Scientists and Cultural Practitioners

1. Letter of support from more than 400 Marine Scientists and Cultural Practitioners
 2. *2014 - Letter of support from more than 200 Pacific practitioners*
 3. *2014 - Letter of support from more than 200 Scientists*
 4. *2014 - Letter of support from Palmyra Atoll Research Consortium scientists*
- E. Editorial Board Support
1. Star Advertiser Editorial, “More Protection for Remote Isles”
- F. Supportive Op-Eds
1. Star Advertiser, “Extending protections to ‘rest’ ocean” by Hanohano Naehu, Native Hawaiian kia‘i loko (fishpond caretaker), community educator, and a member of the Pacific Remote Islands Coalition
 2. Star Advertiser, “Use origin names for Pacific Remote Islands” by Hōkū Pihana, Nā Wa‘a Mauō Marine Stewardship program, Cultural Working Group for Papahānaumokuākea, and a member of the Pacific Remote Islands Coalition
 3. Civil Beat, “Biden should expand Pacific Remote Islands Marine National Monument” by Dr. Sara Maxwell, Associate Professor at the University of Washington
 4. Civil Beat, “Expanded Pacific Remote Islands protections would safeguard nature, culture” by Sol Kaho‘ohalahala and Hoku Cody, members of the Pacific Remote Islands Coalition
 5. Civil Beat, “Restore the Hawaiian names of the remote Pacific Islands” by Catherine Takata, former UC Santa Barbara graduate student
 6. *2014 - Civil Beat, “Remote Islands expansion is a critical step toward healthy Pacific region” by Trisha Kehaulani Watson, a Kaimuki resident and small business owner*
 7. *2014 - Star Advertiser, “Expansion of Pacific marine sanctuary is consistent with Hawaiian practice” by Hannah Kihalani Springer, a resident of North Kona, member of the Kaupulehu Marine Life Advisory Committee, and a former Office of Hawaiian Affairs trustee.*
- V. PRI Coalition Case Statement

References

- Amon DJ, Kennedy BRC, Cantwell K, Suhre K, Glickson D, Shank TM, Rotjan RD. 2020. Deep-Sea Debris in the Central and Western Pacific Ocean. *Frontiers in Marine Science* **7**:369. Available from <https://www.frontiersin.org/article/10.3389/fmars.2020.00369/full>.
- Anderson O, Small C, Croxall J, Dunn E, Sullivan B, Yates O, Black A. 2011. Global Seabird Bycatch in Longline Fisheries. *Endangered Species Research* **14**:91–106. Available from <http://www.int-res.com/abstracts/esr/v14/n2/p91-106/>.
- Auscavitch S. 2021, June 17. Discovering Deep-sea Corals of the Phoenix Islands 2 - Mechanisms for Characterizing Deep-Sea Coral Biodiversity. Available from <https://schmidtocean.org/cruise-log-post/mechanisms-for-characterizing-deep-sea-coral-biodiversity/>.
- Auscavitch SR, Deere MC, Keller AG, Rotjan RD, Shank TM, Cordes EE. 2020. Oceanographic Drivers of Deep-Sea Coral Species Distribution and Community Assembly on Seamounts, Islands, Atolls, and Reefs Within the Phoenix Islands Protected Area. *Frontiers in Marine Science* **7**:42. Available from <https://www.frontiersin.org/article/10.3389/fmars.2020.00042/full>.
- Avila IC, Kaschner K, Dormann CF. 2018. Current Global Risks to Marine Mammals: Taking Stock of the Threats. *Biological Conservation* **221**:44–58. Available from <https://linkinghub.elsevier.com/retrieve/pii/S000632071731474X>.
- Balazs G. 1975. Marine Turtles in the Phoenix Islands. *Atoll Research Bulletin* **184**. Available from <https://repository.si.edu/bitstream/handle/10088/6052/00184.pdf>.
- Balazs G. 1985. Status and Ecology of Marine Turtles at Johnston Atoll. *Atoll Research Bulletin* **285**. Available from <https://repository.si.edu/bitstream/handle/10088/5814/00285.pdf>.
- Bautista JQ, Smith S. 2018. Early Cultural and Historical Seascape of the Pacific Remote Islands Marine National Monument. PIFSC special publication; SP-19-005. National Marine Fisheries Service; Pacific Islands Fisheries Science Center (U.S.). Available from <https://doi.org/10.25923/fb5w-jw23>.
- Bell JD et al. 2013. Mixed Responses of Tropical Pacific Fisheries and Aquaculture to Climate Change. *Nature Climate Change* **3**:591–599. Available from <http://www.nature.com/articles/nclimate1838>.
- Boerder K, Bryndum-Buchholz A, Worm B. 2017. Interactions of Tuna Fisheries with the Galápagos Marine Reserve. *Marine Ecology Progress Series* **585**:1–15. Available from <http://www.int-res.com/abstracts/meps/v585/p1-15/>.
- Bohnenstiehl DR, France SC, Cantwell K, White M. 2018. Mountains in the Deep: Exploration of the Seamounts of the Central Pacific Basin. *Oceanography* **31**:78–79. Available from <https://tos.org/oceanography/issue/volume-31-issue-01-supplement>.

- Bradley D, Conklin E, Papastamatiou YP, McCauley DJ, Pollock K, Pollock A, Kendall BE, Gaines SD, Caselle JE. 2017. Resetting Predator Baselines in Coral Reef Ecosystems. *Scientific Reports* 7:43131. Available from <http://www.nature.com/articles/srep43131>.
- Bradley D, Gaines SD. 2014. Counting the Cost of Overfishing on Sharks and Rays. *eLife* 3:e02199. Available from <https://elifesciences.org/articles/02199>.
- Brainard R et al. 2005. The State of Coral Reef Ecosystems of the U.S. Pacific Remote Island Areas. Pages 338-372. Available from https://www.researchgate.net/profile/Peter-Vroom/publication/253593214_Status_of_the_coral_reef_ecosystems_of_the_US_Pacific_Remote_Island_Areas/links/02e7e51f92970cbc8b000000/Status-of-the-coral-reef-ecosystems-of-the-US-Pacific-Remote-Island-Areas.pdf.
- Brainard R, Acoba T, Asher MAM. 2019. Coral Reef Ecosystem Monitoring Report for the Pacific Remote Islands Marine National Monument 2000 - 2017: Chapter 7 Howland Island. DOI: [10.25923/7K72-T460](https://doi.org/10.25923/7K72-T460). Pacific Islands Fisheries Science Center (U.S.). Available from <https://repository.library.noaa.gov/view/noaa/23426>.
- Bruno JF, Bates AE, Cacciapaglia C, Pike EP, Amstrup SC, van Hooidonk R, Henson SA, Aronson RB. 2018. Climate Change Threatens the World's Marine Protected Areas. *Nature Climate Change* 8:499– 503. Available from <http://www.nature.com/articles/s41558-018-0149-2>.
- Buente W, Baybayan CK, Hajibayova L, McCorkhill M, Panchyshyn R. 2020. Exploring the Renaissance of Wayfinding and Voyaging Through the Lens of Knowledge Representation, Organization and Discovery Systems. *Journal of Documentation* 76:1279–1293. Available from <https://www.emerald.com/insight/content/doi/10.1108/JD-10-2019-0212/full/html>.
- Burkholder DA, Heithaus MR, Fourqurean JW, Wirsing A, Dill LM. 2013. Patterns of Top-Down Control in a Seagrass Ecosystem: Could a Roving Apex Predator Induce a Behaviour-Mediated Trophic Cascade? *Journal of Animal Ecology* 82:1192–1202. Available from <https://onlinelibrary.wiley.com/doi/10.1111/1365-2656.12097>.
- Croll DA, Maron JL, Estes JA, Danner EM, Byrd GV. 2005. Introduced Predators Transform Subarctic Islands from Grassland to Tundra. *Science* 307:1959–1961. Available from <https://www.science.org/doi/10.1126/science.1108485>.
- Cuyvers L, Berry W, Kristina G, Torsten T, Caroline W. 2018. Deep Seabed Mining: A Rising Environmental Challenge, 1st edition. IUCN, International Union for Conservation of Nature. Available from <https://portals.iucn.org/library/node/47761>.
- Demopoulos AWJ, Auscavitch S, Sowers D, Pawlenko N, Kennedy BRC. 2018. Discovering the Deep: Exploring Remote Pacific Marine Protected Areas. *Oceanography* 31:76–77. Available from <http://pubs.er.usgs.gov/publication/70202535>.

- Di Piazza A, Pearthree E. 2001a. An Island for Gardens, an Island for Birds and Voyaging: A Settlement Pattern for Kiritimati and Tabyaeran, Two “Mystery Islands” in the Northern Lines, Republic of Kiribati. *The Journal of the Polynesian Society* **110**:149–170. Polynesian Society. Available from <https://www.jstor.org/stable/20706989>.
- Di Piazza A, Pearthree E. 2001b. Voyaging and Basalt Exchange in the Phoenix and Line Archipelagoes: The Viewpoint from Three Mystery Islands. *Archaeology in Oceania* **36**:146–152. Available from <https://onlinelibrary.wiley.com/doi/10.1002/j.1834-4453.2001.tb00488.x>.
- Di Piazza A, Pearthree E, Paillé F. 2014. Wind Tunnel Measurements of the Performance of Canoe Sails from Oceania. *The Journal of the Polynesian Society* **123**:9–28. The Polynesian Society. Available from <https://www.jstor.org/stable/43285177>.
- Drazen JC et al. 2020. Opinion: Midwater Ecosystems Must be Considered When Evaluating Environmental Risks of Deep-Sea Mining. *Proceedings of the National Academy of Sciences* **117**:17455–17460. Available from <http://www.pnas.org/lookup/doi/10.1073/pnas.2011914117>.
- Dulvy NK et al. 2014. Extinction Risk and Conservation of the World’s Sharks and Rays. *eLife* **3**:e00590. Available from <https://elifesciences.org/articles/00590>.
- Federal Register 2016. “Endangered and Threatened Wildlife and Plants; Final Rule To List Eleven Distinct Population Segments of the Green Sea Turtle (*Chelonia mydas*) as Endangered or Threatened and Revision of Current Listings Under the Endangered Species Act (Final Rule).” *Federal Register* 81:66 (April 6, 2016) p. 20058. Available from <https://www.govinfo.gov/content/pkg/FR-2016-04-06/pdf/2016-07587.pdf>.
- Finney BR. 1977. Voyaging Canoes and the Settlement of Polynesia. *Science* **196**:1277–1285. Available from <https://pubmed.ncbi.nlm.nih.gov/17831736/>.
- Finney BR. 1992. Voyaging into Polynesia’s Past: The Founding of the Polynesian Voyaging Society. Available from <http://archive.hokulea.com/finneyfounding.html>.
- Finney BR, Kilonsky BJ, Somsen S, Stroup ED. 1986. Re-Learning a Vanishing Art. *The Journal of the Polynesian Society* **95**:41–90. Available from <http://www.jstor.org/stable/20705973>.
- Fox MD, Carter AL, Edwards CB, Takeshita Y, Johnson MD, Petrovic V, Amir CG, Sala E, Sandin SA, Smith JE. 2019. Limited Coral Mortality Following Acute Thermal Stress and Widespread Bleaching on Palmyra Atoll, Central Pacific. *Coral Reefs* **38**:701–712. Available from <https://link.springer.com/article/10.1007/s00338-019-01796-7>.
- Gauthier AE et al. 2021. Deep-Sea Microbes as Tools to Refine the Rules of Innate Immune Pattern Recognition. *Science Immunology* **6**:eabe0531. Available from <https://www.science.org/doi/10.1126/sciimmunol.abe0531>.

- Gilman E, Chaloupka M, Fitchett F, Cantrell DL, Merrifield M. 2020. Ecological responses to blue water MPAs. *PLoS ONE* **15**(8):e0238558.
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0235129>.
- Gilman E, Chaloupka M, Peschon J, Ellgen S. 2016. Risk Factors for Seabird Bycatch in a Pelagic Longline Tuna Fishery. *PLoS ONE* **11**:e0155477. Available from <https://dx.plos.org/10.1371/journal.pone.0155477>.
- Goatley CHR, Hoey AS, Bellwood DR. 2012. The Role of Turtles as Coral Reef Macroherbivores. *PLoS ONE* **7**:e39979. Available from <https://dx.plos.org/10.1371/journal.pone.0039979>.
- Gove, J., McManus, M., Neuheimer, A. et al. Near-island biological hotspots in barren ocean basins. *Nat Commun* **7**, 10581 (2016).
<https://doi.org/10.1038/ncomms10581>.
- Gomez C, Lawson JW, Wright AJ, Buren AD, Tollit D, Lesage V. 2016. A Systematic Review on the Behavioural Responses of Wild Marine Mammals to Noise: The Disparity Between Science and Policy. *Canadian Journal of Zoology* **94**:801–819. Available from <http://www.nrcresearchpress.com/doi/10.1139/cjz-2016-0098>.
- Hawaiian Voyaging Traditions. 2009. Palmyra Training Voyage (2009). Available from <http://archive.hokulea.com/holokai/2009/palmyra.html>.
- Hernández CM, Witting J, Willis C, Thorrold SR, Llopiz JK, Rotjan RD. 2019. Evidence and Patterns of Tuna Spawning Inside a Large No-Take Marine Protected Area. *Scientific Reports* **9**:10772. Available from <http://www.nature.com/articles/s41598-019-47161-0>.
- IPCC. 2020. IPCC Special Report on the Ocean and Cryosphere in a Changing Climate. Available from <https://www.ipcc.ch/srocc/>.
- Irwin G, Flay RGJ. 2015. Pacific Colonization and Canoe Performance: Experiments in the Science of Sailing. *The Journal of the Polynesian Society* **124**:419–443. The Polynesian Society. Available from <https://www.jstor.org/stable/44012033>.
- IUCN. 2004, April 30. *Chelonia mydas*: Seminoff, J.A. (Southwest Fisheries Science Center, U.S.): The IUCN Red List of Threatened Species 2004: e.T4615A11037468. International Union for Conservation of Nature. Available from <http://www.iucnredlist.org/details/4615/0>.
- IUCN. 2008, June 30. *Eretmochelys imbricata*: Mortimer, J.A & Donnelly, M. (IUCN SSC Marine Turtle Specialist Group): The IUCN Red List of Threatened Species 2008: e.T8005A12881238. International Union for Conservation of Nature. Available from <http://www.iucnredlist.org/details/8005/0>.

- Jones DOB et al. 2017. Biological Responses to Disturbance from Simulated Deep-Sea Polymetallic Nodule Mining. *PLoS ONE* **12**:e0171750. Available from <https://dx.plos.org/10.1371/journal.pone.0171750>.
- Kennedy BRC et al. 2019. The Unknown and the Unexplored: Insights Into the Pacific Deep-Sea Following NOAA CAPSTONE Expeditions. *Frontiers in Marine Science* **6**:480. Available from <https://www.frontiersin.org/article/10.3389/fmars.2019.00480/full>.
- Kennedy BRC, Hakam L, Witting J, Milani R, Tai S, Smith T, Taylor E, Teemari T, Rotjan RD. 2021. Historical Trends of Sperm Whale (*Physeter macrocephalus*) Distribution in the Phoenix Archipelago. *Frontiers in Marine Science* **7**:583326. Available from <https://www.frontiersin.org/articles/10.3389/fmars.2020.583326/full>.
- Kerr J et al. 2016. Pu‘uhonua A Place of Sanctuary: The Cultural and Biological Significance of the Proposed Expansion for the Papahānaumokuākea Marine National Monument. DOI: [10.13140/RG.2.1.3455.3845](https://doi.org/10.13140/RG.2.1.3455.3845). Unpublished. Available from <http://rgdoi.net/10.13140/RG.2.1.3455.3845>.
- Kekuewa K, Friedlander AM, Wilhelm A, Lewis N, Quioco K, 'Āila W, Kaho'ohalahala S. 2017. Papahānaumokuākea: Integrating Culture in the Design and Management of one of the World's Largest Marine Protected Areas. *Coastal Management* **45**:6, 436-451, DOI: [10.1080/08920753.2017.1373450](https://doi.org/10.1080/08920753.2017.1373450)
- Kikiloi K. 2010. Rebirth of an Archipelago: Sustaining a Hawaiian Cultural Identity for People and Homeland. *Hūlili: Multidisciplinary Research on Hawaiian Well-Being* **6**. Available from https://www.researchgate.net/publication/228496140_Rebirth_of_an_archipelago_sustaining_a_Hawaiian_cultural_identity_for_people_and_homeland.
- Kim S-S, Wessel P. 2011. New Global Seamount Census from Altimetry-Derived Gravity Data: New global seamount census. *Geophysical Journal International* **186**:615–631. Available from <https://academic.oup.com/gji/article-lookup/doi/10.1111/j.1365-246X.2011.05076.x>.
- Leitner, A.B., Neuheimer, A.B. & Drazen, J.C. Evidence for long-term seamount-induced chlorophyll enhancements. *Sci Rep* **10**, 12729 (2020). <https://doi.org/10.1038/s41598-020-69564-0>
- Letessier TB et al. 2019. Remote Reefs and Seamounts are the Last Refuges for Marine Predators Across the Indo-Pacific. *PLOS Biology* **17**:e3000366. Available from <https://dx.plos.org/10.1371/journal.pbio.3000366>.
- Levin LA et al. 2016. Defining “Serious Harm” to the Marine Environment in the Context of Deep-Seabed Mining. *Marine Policy* **74**:245–259. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0308597X1630495X>.

- Levin LA, Amon DJ, Lily H. 2020. Challenges to the Sustainability of Deep-Seabed Mining. *Nature Sustainability* **3**:784–794. Available from <http://www.nature.com/articles/s41893-020-0558-x>.
- Lewis D. 1974. Voyaging Stars: Aspects of Polynesian and Micronesian Astronomy. *Philosophical Transactions of the Royal Society of London: Series A, Mathematical and Physical Sciences* **276**:133–148. Available from <https://www.jstor.org/stable/74280>.
- Lynham J, Nikolaev A, Raynor J, Vilela T, Villaseñor-Derbez JC. 2020. Impact of Two of the World’s Largest Protected Areas on Longline Fishery Catch Rates. *Nature Communications* **11**:979. Available from <https://doi.org/10.1038/s41467-020-14588-3>.
- MacNeil MA et al. 2020. Global Status and Conservation Potential of Reef Sharks. *Nature* **583**:801–806. Available from <http://www.nature.com/articles/s41586-020-2519-y>.
- Magier S, Morgan L. 2012. A Brief History of Human Activities in the U.S. Pacific Remote Islands. Marine Conservation Institute, Seattle, WA. Available from <http://www.npshistory.com/publications/usfws/pacific-remote-islands/human-history.pdf>.
- Martin C, Entrup N. 2021, November 21. Underwater noise: The Hidden Danger of Deep-Sea Mining. Available from <https://www.oceancare.org/en/underwater-noise-the-hidden-danger-of-deep-sea-mining/>
- Maxwell S, Morgan L. 2013. Foraging of Seabirds on Pelagic Fishes: Implications for Management of Pelagic Marine Protected Areas. *Marine Ecology Progress Series* **481**:289–
- McCauley DJ, McLean KA, Bauer J, Young HS, Micheli F. 2012. Evaluating the Performance of Methods for Estimating the Abundance of Rapidly Declining Coastal Shark Populations. *Ecological Applications* **22**:385–392. Available from <http://doi.wiley.com/10.1890/11-1059.1>.
- McClain CR, Allen AP, Tittensor DP, Rex MA. 2012. Energetics of Life on the Deep Seafloor. *Proceedings of the National Academy of Sciences* **109**:15366–15371. Available from <http://www.pnas.org/lookup/doi/10.1073/pnas.1208976109>.
- Mehdoff S, Lynham J, and Raynor J. 2022. *Science* 378 (6617): 313-316. <https://www.google.com/url?q=https://www.science.org/doi/10.1126/science.abn0098&sa=D&source=docs&ust=1677365974997782&usg=AOvVaw0uvzLapPb61TUN5hgaiKxw#:~:text=https%3A//www.science.org/doi/10.1126/science.abn0098>.
- Mizell K, Hein JR, Au M, Gartman A. 2022. Estimates of Metals Contained in Abyssal Manganese Nodules and Ferromanganese Crusts in the Global Ocean Based on Regional Variations and Genetic Types of Nodules. Pages 53–80 in Sharma R, editor. *Perspectives on Deep-Sea Mining: Sustainability, Technology, Environmental Policy and Management*. Springer International Publishing, Cham. Available from https://doi.org/10.1007/978-3-030-87982-2_3.

- Mizell K, Hein JR, Lam PJ, Koppers AAP, Staudigel H. 2020. Geographic and Oceanographic Influences on Ferromanganese Crust Composition Along a Pacific Ocean Meridional Transect, 14 N to 14S. *Geochemistry, Geophysics, Geosystems* **21**. Available from <https://onlinelibrary.wiley.com/doi/10.1029/2019GC008716>.
- Myers RA, Worm B. 2003. Rapid Worldwide Depletion of Predatory Fish Communities. *Nature* **423**:280– 283. Available from <http://www.nature.com/articles/nature01610>.
- Nadon MO, Baum JK, Williams ID, Mcpherson JM, Zgliczynski BJ, Richards BL, Schroeder RE, Brainard RE. 2012. Re-Creating Missing Population Baselines for Pacific Reef Sharks. *Conservation Biology* **26**:493–503. Available from <https://onlinelibrary.wiley.com/doi/10.1111/j.1523-1739.2012.01835.x>.
- Naro-Maciel E, Holmes K, Ersts P, Mcfadden K, Bynum N, Sterling E. 2009. Globally Endangered Sea Turtles of the Palmyra Atoll National Wildlife Refuge: A Focus on Scientific Analysis. Network of Conservation Educators and Practitioners. Available from https://www.researchgate.net/publication/259266003_Globally_endangered_sea_turtles_of_the_Palmyra_Atoll_National_Wildlife_Refuge_A_Focus_on_Scientific_Analysis.
- NOAA Fisheries. 2022. Sea Turtles in a Sea of Sound. <https://www.fisheries.noaa.gov/feature-story/sea-turtles-sea-sound#:~:text=Recent%20research%20indicates%20that%20sea,to%20most%20species%20of%20fish>.
- Papastamatiou YP, Caselle JE, Friedlander AM, Lowe CG. 2009. Distribution, Size Frequency, and Sex Ratios of Blacktip Reef Sharks (*Carcharhinus melanopterus*) at Palmyra Atoll: A Predator- Dominated Ecosystem. *Journal of Fish Biology* **75**:647–654. Available from <https://onlinelibrary.wiley.com/doi/10.1111/j.1095-8649.2009.02329.x>.
- Pierce R et al. 2008. Operational Work Undertaken to Eradicate Rats and Rabbits in the Phoenix Islands, Kiribati, May-June 2008. Page 74 Pacific Expeditions report for NZAID. Available from https://www.researchgate.net/publication/242331060_Operational_work_undertaken_to_eradicate_rats_and_rabbits_in_the_Phoenix_Islands_Kiribati_May-June_2008.
- Pitcher TJ, Morato T, Hart PJB, Clark MR, Haggan N, Santos RS, editors. 2007. *Seamounts: Ecology, Fisheries & Conservation*. Blackwell Publishing Ltd, Oxford, UK. Available from <http://doi.wiley.com/10.1002/9780470691953>.
- Queen Lili‘uokalani. 1897. *The Kumulipo*. Independently published. Available from <https://www.sacred-texts.com/pac/lku/index.htm>.
- Ramani V. June 2020. Addressing Climate as a Systemic Risk: A call to action for U.S. financial regulators. Ceres, The Ceres Accelerator for Sustainable Capital Markets. For more information visit: ceres.org/accelerator.

- Rauzon MJ, Forsell DJ, Flint EN, Gove JM. 2011. Howland, Baker and Jarvis Islands 25 Years After Cat Eradication: The Recovery of Seabirds in a Biogeographical Context. Available from https://www.researchgate.net/publication/269764699_Howland_Baker_and_Jarvis_Islands_25_years_after_cat_eradication_the_recovery_of_seabirds_in_a_biogeographical_context/citation/download.
- Roark EB, Guilderson TP, Dunbar RB, Fallon SJ, Mucciarone DA. 2009. Extreme Longevity in Proteinaceous Deep-Sea Corals. *Proceedings of the National Academy of Sciences* **106**:5204–5208. Available from <http://www.pnas.org/cgi/doi/10.1073/pnas.0810875106>.
- Roff G, Doropoulos C, Rogers A, Bozec Y-M, Krueck NC, Aurellado E, Priest M, Birrell C, Mumby PJ. 2016. The Ecological Role of Sharks on Coral Reefs. *Trends in Ecology & Evolution* **31**:395–407. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0169534716000598>.
- Rotjan R. 2021, July 19. Discovering Deep-sea Corals of the Phoenix Islands 2—244 Coral Samples, 14 Seamounts, and 2 Glass Octopuses. Available from <https://schmidtocean.org/cruise-log-post/244-coral-samples-14-seamounts-and-2-glass-octopuses/>.
- Sala E et al. 2021. Protecting the Global Ocean for Biodiversity, Food and Climate. *Nature* **592**:397–402. Available from <http://www.nature.com/articles/s41586-021-03371-z>.
- Sandin SA et al. 2008. Baselines and Degradation of Coral Reefs in the Northern Line Islands. *PLoS ONE* **3**:e1548. Available from <https://dx.plos.org/10.1371/journal.pone.0001548>.
- Senina I, Lehodey P, Calmettes B, Dessert M, Hampton J, Smith N, Gehlen M. 2018. Impact of Climate Change on Tropical Pacific Tuna and Their Fisheries in Pacific Islands Waters and High Seas Areas. 14th Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission.
- Sibert J, Hampton J. 2003. Mobility of Tropical Tunas and the Implications for Fisheries Management. *Marine Policy* **27**:87–95. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0308597X0200057X>.
- Širović A, Wiggins SM, Oleson EM. 2013. Ocean Noise in the Tropical and Subtropical Pacific Ocean. *The Journal of the Acoustical Society of America* **134**:2681–2689. Available from <http://asa.scitation.org/doi/10.1121/1.4820884>.
- Smith CR et al. 2020. Deep-Sea Misconceptions Cause Underestimation of Seabed-Mining Impacts. *Trends in Ecology & Evolution* **35**:853–857. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0169534720301828>.
- Smith CR, De Leo FC, Bernardino AF, Sweetman AK, Arbizu PM. 2008. Abyssal Food Limitation, Ecosystem Structure and Climate Change. *Trends in Ecology & Evolution*

23:518–528. Available from
<https://linkinghub.elsevier.com/retrieve/pii/S0169534708001900>.

Smith TD, Reeves RR, Josephson EA, Lund JN. 2012. Spatial and Seasonal Distribution of American Whaling and Whales in the Age of Sail. *PLoS ONE* **7**:e34905. Available from <https://dx.plos.org/10.1371/journal.pone.0034905>.

Studds CE, Kendall BE, Murray NJ, Wilson HB, Rogers DI, Clemens RS, Gosbell K, Hassell CJ, Jessop R, Melville DS. 2017. Rapid Population Decline in Migratory Shorebirds Relying on Yellow Sea Tidal Mudflats as Stopover Sites. *Nature communications* **8**:1–7. Available from <https://www.nature.com/articles/ncomms14895.pdf?origin=ppub>.

Takata C. 2021, August 26. Papahānaumokuākea Is A Model For Our Future. Available from
<https://www.civilbeat.org/2021/08/Papahānaumokuākea-is-a-model-for-our-future/>.

Tengan TPK. 2008. Re-memembering Panalā‘au: Masculinities, Nation, and Empire in Hawai‘i and the Pacific. *The Contemporary Pacific* **20**:27–53. Available from
<http://hdl.handle.net/10125/14054>.

The Kumulipo. 1981. University of Hawaii Press. Available from
<https://ulukau.org/elib/cgi-bin/library?e=d-0beckwit2-000Sec--11haw-50-20-frameset-book--1-010escapewin&a=d&d=D0&toc=0>.

Thompson N. (n.d.). On Wayfinding. Hawaiian Voyaging Traditions. Polynesian Voyaging Society. Available from http://pvs.kcc.hawaii.edu/ike/hookele/on_wayfinding.html.

Villagomez A. 2018. Connecting Conservation and Culture in Oceania. Available from
<http://www.taotaotasi.com/2018/01/connecting-conservation-and-culture-in.html>.

Villagomez A, McGuire G. 2021. Our National Monuments: Pacific Remote Islands. Available from
<https://www.angelovillagomez.com/2021/11/our-national-monuments-pacific-remote.html>.

Wabnitz C, Balazs G, Beavers S, Bjorndal K, Bolten A, Christensen V, Hargrove S, Pauly D. 2010. Ecosystem Structure and Processes at Kaloko Honokohau, Focusing on the Role of Herbivores, Including the Green Sea Turtle, *Chelonia mydas*, in Reef Resilience. *Marine Ecology Progress Series* **420**:27–44. Available from
<http://www.int-res.com/abstracts/meps/v420/p27-44/>.

WCPFC. 2019. Oceanic Whitetip Shark (*Carcharhinus longimanus*) Stock Status and Management Advice. <https://www.wcpfc.int/doc/12/oceanic-whitetip-shark>.

Wedding LM et al. 2015. Managing Mining of the Deep Seabed. *Science* **349**:144–145. Available from <https://www.science.org/doi/10.1126/science.aac6647>.

- Weilgart LS. 2007. The Impacts of Anthropogenic Ocean Noise on Cetaceans and Implications for Management. *Canadian Journal of Zoology* **85**:1091–1116. Available from <http://www.nrcresearchpress.com/doi/10.1139/Z07-101>.
- Weinning A. 2021, June 29. Discovering Deep-sea Corals of the Phoenix Islands 2—Illuminating Coral Environments from Shallow to Deep. Available from <https://schmidtocean.org/cruise/discovering-deep-sea-corals-of-the-phoenix-islands-2/>
- White TD, Ong T, Ferretti F, Block BA, McCauley DJ, Micheli F, De Leo GA. 2020. Tracking the Response of Industrial Fishing Fleets to Large Marine Protected Areas in the Pacific Ocean. *Conservation Biology* **34**:1571–1578. Available from <https://onlinelibrary.wiley.com/doi/10.1111/cobi.13584>.
- Yasuhara M et al. 2020. Past and Future Decline of Tropical Pelagic Biodiversity. *Proceedings of the National Academy of Sciences* **117**:12891–12896. Available from <http://www.pnas.org/lookup/doi/10.1073/pnas.1916923117>.
- Young HS, McCauley DJ, Dunbar RB, Dirzo R. 2010. Plants Cause Ecosystem Nutrient Depletion Via the Interruption of Bird-Derived Spatial Subsidies. *Proceedings of the National Academy of Sciences* **107**:2072–2077. Available from <http://www.pnas.org/lookup/doi/10.1073/pnas.0914169107>.
- Young HS, McCauley DJ, Dunbar RB, Hutson MS, Ter-Kuile AM, Dirzo R. 2013. The Roles of Productivity and Ecosystem Size in Determining Food Chain Length in Tropical Terrestrial Ecosystems. *Ecology* **94**:692–701. Available from <http://doi.wiley.com/10.1890/12-0729.1>.

List of Supporters

Elected Officials

Congressman Ed Case
Former Governor of Hawai‘i David Ige
Former Mayor of Maui County Michael Victorino of Maui

Pacific-based Organizations

Bishop Museum
Hawaiian Monk Seal Preservation Ohana
The Membership of Huamakahikina
Hui Maka‘ainana o Makana
Kai Palaoa
The Kiamanu Project
Mauna Kea Anaina Hou
Moana ‘Ohana
Nā Kia‘i Nihokū
Papa Ola Lokahi
Papahānaumokuākea Marine National Monument Native Hawaiian Cultural Working Group
The Polynesian Voyaging Society
The Nature Conservancy

National Organizations

Aquarium of the Pacific
Azul
Blue Nature Alliance
Cabrillo Marine Aquarium
California Academy of Sciences
California Marine Sanctuary Foundation
Californians for Western Wilderness
Center for Biological Diversity
Coastal Quest
Conservation International
Conservation Lands Foundation
Conservation Law Foundation
Conservation Minnesota
Creation Justice Ministries
EarthEcho International
Earthjustice
GreenLatinos
Greenpeace USA
Healthy Ocean Coalition
Hispanic Access Foundation
Hispanic Federation
Inland Ocean Coalition
Jenkinson's Aquarium

Kansas City Zoo
League of Conservation Voters
Marine Conservation Institute
Mission Blue
Mystic Aquarium
National Aquarium
National Audubon Society
National Marine Sanctuary Foundation
National Ocean Protection Coalition
National Parks Conservation Association
National Wildlife Federation
National Wildlife Refuge Association
Northern Chumash Tribal Council
Nuestra Tierra Conservation Project
Oceana
Ocean Defense Initiative
Only One
Patagonia
Point Defiance Zoo & Aquarium
Restore America's Estuaries
Sachamama
San Diego Zoo Wildlife Alliance
Santa Barbara Zoo
SeaLegacy
Seattle Aquarium
Sedgwick County Zoo
Shedd Aquarium
Surfrider Foundation
The Chaparral Lands Conservancy
The Ocean Project
The Pew Charitable Trusts
Virginia Aquarium & Marine Science Center
Virginia Zoo
Waitt Foundation
Waitt Institute
Waterway Advocates
WILDCOAST
Xerces Society for Invertebrate Conservation

U.S. and International Marine Scientists and Cultural Practitioners

440 signatures as of 2.27.2023

U.S. and International Citizens

13,201 signatures of support as of 2.28.2023



2014 - Supporters List for the expansion of the Pacific Remote Islands Marine National Monument

- Elected leaders:
 - U.S. Senator Mazie Hirono
 - Governor of the State of Hawai'i Neil Abercrombie
 - Maui County Mayor Alan Arawaka (former Wake resident)
 - State Senator Brickwood Galuteria (Native Hawaiian, former Hokulea crew)
- Hawai'i State Department of Land and Natural Resources (DLNR):
 - William Aila, Jr. --- Chairperson, DLNR
 - Frazer McGilvray --- Administrator, Hawai'i Division of Aquatic Resources
- Hawai'i residents – more than 1,500 submitted letters and petitions in support.
- More than 200 scientists who have worked in the Pacific signed---on to a group letter in support (e.g. Dr. Alan Friedlander, Dr. Robert Richmond, Dr. Mark Hixon).
- More than 200 Pacific practitioners, from Hawai'i, Commonwealth of the Northern Mariana Islands, Vanuatu, Samoa, Cook Islands, Aotearoa, Fiji and more, signed-on to a group letter in support (e.g. Jonathan Osorio of Hawai'i).
- More than 30 Hawai'i non---profits such as the Sierra Club Hawai'i, Conservation Council for Hawai'i, Conservation International Hawai'i, KAHEA: The Hawaiian---Environmental Alliance, and many more, signed---on to a group letter in support.
- More than 35 Hawai'i businesses, from watersports outfitters to local artists signed---on to a group letter in support (e.g. C4 Waterman).
- Ocean Elders: Nainoa Thompson, Dr. Sylvia Earle, Her Majesty Queen Noor, Sir Richard Branson, and more.
- More than 40 foundations and non---governmental organizations, such as Ocean Conservancy, National Geographic Society, Waitt Foundation, Oceana---signed-on to a group letter in support.
- More than 135,000 US citizens submitted letters in support.
- More than 1 million letters and petition signers internationally in support.

ED CASE

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Washington, DC 20515-1101

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COMMERCE, JUSTICE, SCIENCE AND
RELATED AGENCIES
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COMMITTEE ON NATURAL RESOURCES

SUBCOMMITTEES:
NATIONAL PARKS, FORESTS AND PUBLIC LANDS
WATER, OCEANS AND WILDLIFE
INDIGENOUS PEOPLES OF THE UNITED STATES

May 31, 2022

The President
The White House
Washington, D.C.

Dear Mr. President,

I write to express my very strong support for expanding and renaming the Pacific Remote Islands Marine National Monument (PRIMNM) as proposed by the Pacific Remote Islands Coalition and others.

Our world's oceans are at mortal risk, a breaking point precipitated by unsustainable overfishing and other resource extraction, debris and land-based pollution, exacerbated and compounded by the devastating and pervasive marine effects of climate change. The solutions to this human-caused crisis are comprehensive and integrated, but include at least the reservation of large portions of our world's oceans and associated environments to ecosystems in their natural form and operation, free of all but a bare minimum of human alteration, able to generate sustainability beyond their borders.

This goal has been increasingly pursued by the countries and peoples of the world, especially those most dependent on healthy and sustainable oceans. They look to the United States to join them and lead by example in actions to protect our oceans which are in scope and extent at least equal to our own presence as a maritime and marine country and our own ability to commit the resources necessary to lead. And our own fellow citizens increasingly understand and support these actions.

The maximum possible expansion of PRIMNM would represent a major contribution by our country to the protection and preservation of our world's oceans, a major example of our own commitment to lead in this critical area for our planet. It would affirm your commitment to tackling the climate crisis at home and abroad. It would further have the specific result of advancing your goal to protect at least 30 percent of America's land and waters by 2030 in an equitable way as outlined in your *America the Beautiful* initiative.

PRIMNM was established on January 6, 2009 by President George W. Bush under the Antiquities Act, and expanded to its current size on September 25, 2014 by President Barack Obama. This further proposed expansion under the Antiquities Act would be the culmination of a bipartisan effort to build off these efforts to protect and preserve the marine environment around Wake, Baker, Howland and Jarvis Islands; Johnston and Palmyra Atolls; and Kingman Reef.

This proposed expansion would fully extend the Monument's boundaries from 50 to 200 nautical miles around these remote and largely uninhabited U.S. possessions to the full extent of the 200-nautical mile Exclusive Economic Zone, creating one of the largest highly protected marine protected area in the world. The proposed expansion area is home to thriving wildlife populations including coral, fish, sharks, turtles, rays, whales, dolphins, birds and other invertebrates. Many of these species are endangered or threatened and need to be protected. The wildlife in this area are intricately connected to the nearshore and island ecosystems already within PRIMNM, and an expansion would help ensure that the full ecosystem remains healthy and resilient to the effects of climate change.

PRIMNM is a safe haven for Central Tropical Pacific biodiversity and represents one of the last frontiers of scientific discovery in the world. The deep seabed in the proposed expansion area has 98 seamounts, which are ecological hotspots for biodiversity and remain largely unexplored. With new species being cataloged on every dive, the ocean floor in the expansion area is rich with opportunities for discovery of unique species. We cannot lose this opportunity, if not obligation, to achieve the fullest possible protection.

Additionally, I applaud your administration's commitment to create a working group or commission to evaluate naming practices for marine national monuments and national marine sanctuaries, with a particular emphasis on PRIMNM. Names are an incredibly important part of our identity, and the Monument deserves a name that reflects its significance, history and character. I especially encourage you to engage with Native Hawaiians and other indigenous communities in the Pacific in the renaming process so that the importance of this place can be articulated and deeper connections to this place can be forged. Renaming the monument will help people to connect with it through an understanding of its cultural and historic importance.

Our ocean must be protected for our keiki (children) and for future generations, which why I urge you to use your authority under the Antiquities Act to expand and rename PRIMNM as you move to make your vision for *America the Beautiful* a reality. Expanding PRIMNM would not only protect the marine environment from commercial exploitation but also be a meaningful step towards climate resilience and help preserve one of the last wild and healthy marine ecosystems in the world.

Please be assured that I stand ready in Congress, through my memberships on the Appropriations and Natural Resources Committees, the Pacific Islands Caucus and other means, to provide the fullest possible support of full PRIMNM expansion. I deeply appreciate your consideration of this proposal and my request.

With aloha,



Congressman Ed Case
Hawai'i -First District

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NATIONAL PARKS, FORESTS AND PUBLIC LANDS
WATER, OCEANS AND WILDLIFE
INDIGENOUS PEOPLES OF THE UNITED STATES

October 31, 2022

The President
The White House
Washington, D.C.

Dear Mr. President,

I write in continued strong support of your expanding and renaming the Pacific Remote Islands Marine National Monument (PRIMNM) as proposed by the Pacific Remote Islands Coalition and other organizations and communities.

As I noted in my initial June 1, 2022 letter to you, expanding the PRIMNM will protect at least some of our endangered marine environment from unsustainable exploitation, act as a meaningful step towards climate resilience, and help preserve one of the last wild and healthy marine ecosystems in the world. The expansion is also a tremendous opportunity to fully meet your marine conservation goals outlined in *America the Beautiful*, and it will align with commitments our nation made to the world at the United Nations Ocean Conference and the Our Ocean Conference earlier this year.

Over the last few months, I've personally reached out to and have been contacted by stakeholders throughout the Pacific and beyond to address the merits of the proposal. While the responses have been overwhelmingly positive, there are pockets of expressed concern falling into three categories: potential impacts on communities reliant on fishing, the inclusion of concerns from indigenous communities; and perceived impacts on further extractive industry. I wish to address each of these concerns and outline why none is of serious merit nor should serve as an obstacle to expansion of the PRIMNM as proposed.

Impact on Fishing Communities

In evaluating the actual impact of expansion on communities reliant on a fishing industry, I urge your administration to look past simple assertion to actual existing economic analysis and fisheries data.

Attention in this area has focused on American Samoa and its cannery, which is the only community even arguably impacted by expansion. While individuals associated with the cannery have outwardly pointed to the fishing regulations related to PRIMNM as a primary factor in a reduced supply from U.S. flagged purse seine vessels, fisheries data shows that despite monument designation and later expansion under the Bush and Obama administrations, U.S. based fishing has been largely unaffected. As shown in the chart below, fishing catch and effort

taking place in the unprotected, proposed expansion area of PRIMNM are very low, both historically and over the past 5 years.

Purse Seine Catch By US-Flagged Purse Seiners by Metric Ton and Value In Western and Central Pacific							
Pre-Monument Designation							
Year	2003	2004	2005	2006	2007	2008	Average
Total Catch Inside US EEZ	4,220	4,913	3,553	6,410	1,560	683	3,556
Total Catch	87,456	67,419	86,127	68,410	88,736	209,323	101,245
Percent Catch in US EEZ	4.82%	7.29%	4.12%	9.37%	1.76%	0.33%	5%
Value Inside US EEZ	\$3,378,015	\$4,693,459	\$3,568,075	\$6,544,493	\$2,168,006	\$1,186,205	\$3,589,709
Total Value	\$72,186,228	\$63,400,140	\$83,218,019	\$69,482,766	\$123,155,468	\$363,974,151	\$129,236,129
Percent in US EEZ	4.68%	7.40%	4.29%	9.42%	1.76%	0.33%	5%
PRIMN Original Boundaries (Bush-Era)							
Year	2009	2010	2011	2012	2013	2014	Average
Total Catch Inside US EEZ	2,834	589	764	5,765	4,731	7,811	3,749
Total Catch	281,589	245,495	203,225	259,760	254,347	312,952	259,562
Percent Catch in US EEZ	1.01%	0.24%	0.38%	2.22%	1.86%	2.50%	1%
Value Inside US EEZ	\$3,312,296	\$746,104	\$1,309,788	\$12,652,825	\$9,977,057	\$11,960,372	\$6,659,740
Total Value	\$332,527,832	\$316,392,390	\$356,043,221	\$562,833,288	\$534,289,835	\$468,211,729	\$428,383,049
Percent in US EEZ	1.00%	0.24%	0.37%	2.25%	1.87%	2.55%	1%
Obama-Era Expansion							
Year	2015	2016	2017	2018	2019	2020	Average
Total Catch Inside US EEZ	983	4,033	5,189	2,879	1,485	6,241	3,798
Total Catch	238,164	201,152	165,135	197,451	165,703	137,206	174,706
Percent Catch in US EEZ	0.41%	2.00%	3.14%	1.46%	0.90%	4.55%	2.93%
Value Inside US EEZ	\$1,197,730	\$5,814,536	\$9,779,918	\$5,067,752	\$2,130,266	\$8,686,257	\$5,446,076
Total Value	\$294,044,719	\$292,014,023	\$303,393,796	\$333,924,965	\$243,777,184	\$191,333,418	\$276,414,684
Percent in US EEZ	0.41%	1.99%	3.22%	1.52%	0.87%	4.54%	2%

Source: Value of WCPFC CA Tuna Fisheries, Forum Fisheries Agency. Available at: <https://www.ffa.int/node/425>

The waters around the Pacific Remote Islands (PRIs) are most commonly fished by the U.S. tuna purse seine fleet, but this fleet’s presence is minimal – no more than 9 vessels have visited the proposed expansion area each year for the past 6 years. The fleet is primarily fishing areas in the high seas and in fishing grounds closer to their home port. U.S. tuna purse seine vessels also fish in the Eastern Pacific Ocean and deliver to Latin America – this was preferred so much in 2021 that these vessels went several months without delivering to the cannery in American Samoa.

The fishing effort that does take place in the area around the PRIs represents a small fraction of the fleet’s total effort. In 2021, fishing within the unprotected area represented less than 4% of the U.S. tuna purse seine fleet’s total effort in the Western and Central Pacific Ocean. From 2016 to 2019, fishing in the unprotected area represented less than 1% of the U.S. tuna purse seine fleet’s total effort. Fishing effort in the unprotected area by the Hawai‘i-based longline fleet has been negligible to nonexistent (less than 0.05% of the fleet’s total effort) over the past 6 years.

The total catch coming from this area is also very low. Tropical tuna catch from the unprotected area represented 4.5% of the U.S. tuna purse seine fleet’s total catch in 2020, and less than 3% of total catch from 2017 to 2019. The waters surrounding the PRIs have historically been only lightly fished by Hawai‘i-based long liners. Before 2014, the catch from these waters accounted for less than 5% of long liners’ total annual harvest.

Further, the Government Accountability Office found that the economic viability of the of tuna canning industry in American Samoa is affected by a number of compounding factors including: increases in minimum wage, legal fines imposed on the owner of the remaining cannery as a result of its role in a price fixing conspiracy and violations of U.S. federal environmental laws,

increasing international competition from lower wage nations, in addition to decreased access to tuna supply.

On the other hand, studies have shown that the fishing industry has benefited from marine protected areas in the Pacific. One study, focused on the Papahānaumokuākea Marine National Monument, assessed catch per unit effort—which measures the number of fish caught as a factor of the effort and cost expended to catch them—for the Hawai‘i-based longline fishery found increased profitability following the 2014 expansion. A follow-up study using revenue per unit effort found that profitability especially increased for the two most commercially important species for the fishery, yellowfin and bigeye tuna. Another recent study published by researchers out of the University of Hawai‘i found that the Hawai‘i longline fleet has benefited from increased catch rates for bigeye and yellowfin tuna outside the monument boundaries following its expansion.

Addressing Indigenous Communities

Some stakeholders have expressed hesitancy with what has been to this point a primarily Native Hawaiian-driven effort to protect the cultural heritage of the PRIMNM expansion zone. To address the concerns voiced by stakeholders throughout the Pacific, I especially encourage you to continue to engage with all indigenous communities tied to the PRIs throughout the renaming process so that the importance of this unique ecosystem place can be articulated and deeper connections to this place can be forged.

While many of the most active voices in protecting the cultural seascape of the PRIs are Native Hawaiian, protection of these islands must be inclusive of Micronesian and Polynesian indigenous communities, including American Samoans, Chamorros and Native Hawaiians. The expanded monument’s proposed boundaries contain key areas in which the diverse indigenous peoples of the Pacific can connect with their shared culture and history. We must consider its cherished cultural history along with its ecological importance and scientific value.

The waters of the PRIs are a cultural seascape for traditional open-ocean navigation practices, have been the inspiration of long cherished oral histories, played a unique role in the years preceding World War II and are at the center of indigenous values which cherish the sea, the skies and all of creation as one interconnected web. Prior to Western influence, Pacific Island voyagers were documented traversing the ocean surrounding the PRI for cultural practice and exchanges. Polynesian and Micronesian oral history describes voyaging to PRI for cultural duties and traditions, such as the Marshallese voyaging to Wake Atoll for seabird bones utilized in tattooing. Polynesian and Micronesian voyaging practices, nearly lost following colonization of the islands, are still being reclaimed in the waters of the Pacific today. Efforts to reinvigorate voyaging traditions throughout the Pacific, including in currently unprotected areas of the PRIs by cultural organizations such as the Polynesian Voyaging Society, are critical to the long-term preservation the region’s culture and history.

Your administration has already shown its commitment to putting indigenous communities in the Pacific at the fore by announcing a working group or commission to evaluate naming practices for marine national monuments and national marine sanctuaries, with a particular emphasis on PRIMNM. Names are an incredibly important part of a place’s identity, and the proposed monument deserves a name that reflects its significance, history and character. Renaming the

monument will help people to connect with it through an understanding of its cultural and historic importance.

Future Extractive Industries

Finally, some have voiced concerns with closing off the expansion zone to future activities by the extractive industry, in particular deep seabed mining. While I fully appreciate the need for our nation to further secure our critical minerals supply chain, scientists agree that deep seabed mining poses a serious risk to our overall marine health, and further that in any event there is a low level of potential for such extraction in the expansion areas.

We still do not understand the range of impacts mining operations would have on our ocean. The scientific community is only now conducting the rigorous science needed to fully understand how deep-sea ecosystems are connected to the rest of the marine environment. As noted by the National Oceanic and Atmospheric Administration, “[the] deep seafloor of the Pacific Ocean is one of the most poorly explored regions on Earth with very little known about the benthic animals that live beyond 1,000 meters...It is clear that crucial baseline information is needed in order to gain a better understanding of the communities that are at risk and put measures in place to mitigate the impacts of mining and help preserve these unique communities.”

Mining will likely result in the direct loss of biodiversity in the largely unexplored deep ocean ecosystem, could interrupt pelagic fisheries and effect ability for our deep ocean to act as an effective carbon store. Scientists have noted that the deep seabed is home to dense collections of newly discovered, fragile life which would be easily disturbed and effected by mining operations. Furthermore, current proposed mining techniques will result in massive sediment plumes which could have wide reaching effects on both benthic and pelagic ocean environments. For these reasons, hundreds of marine scientists, conservationists and indigenous community members have already called for a moratorium on seabed mining in both the U.S. exclusive economic zone and the high seas.

Further, existing mineral surveys have shown the highest extraction value for such mining appears to lie in and around various seamounts, which in the Pacific are clustered not in the expansion areas but in a mostly high seas zone further east and west of the PRIs. Thus, the expansion areas do not fit into any must-mine scenario.

The merits of the PRIMNM stand regardless of the overarching debate of how our nation addresses deep seabed mining. As a nation, we have a duty to ensure the long-term survival of the PRIs’ scientific, ecological and cultural value. The mere presence of valuable minerals is no reason to forgo protecting one of our last wild and healthy marine ecosystems. As such, I strongly urge you to reject the short-sighted proposition that your administration should not expand the PRIMN for the promise of possible mining operations in the future.

Thank you again for your continued efforts to conserve and restore the lands, waters and wildlife that support and sustain our nation. I stand ready in Congress to provide the fullest possible support of full PRIMNM expansion as you move to make your vision for *America the Beautiful* a reality.

With aloha,

A handwritten signature in blue ink that reads "Ed Case". The letters are bold and slightly slanted, with a casual, personal feel.

Congressman Ed Case
Hawai'i -First District



EXECUTIVE CHAMBERS
HONOLULU

DAVID Y. IGE
GOVERNOR

May 27, 2022

The Honorable Joseph R. Biden, Jr.
President of the United States of America
The White House
1600 Pennsylvania Avenue, N.W.
Washington, D.C. 20500

Dear Mr. President:

I am writing to convey my support for the expansion of the Pacific Remote Islands Marine National Monument (PRIMNM) as proposed by local leaders in Hawai'i and the broader Pacific.

Throughout my tenure as Governor of Hawai'i, I have engaged with stakeholders to understand the most effective ways to ensure a healthy, thriving ocean for our future generations. In 2016, I announced at the IUCN World Conservation Congress Hawai'i's commitment to effectively manage 30 percent of our nearshore waters by 2030. In the same year, I also conveyed my support for the expansion of the Papahānaumokuākea Marine National Monument.

I understand that large-scale marine protected areas are critical to maintaining climate change resilience, protecting biodiversity, and enhancing fisheries. We know that a healthy ocean provides countless benefits to our Earth and people, from the air we breathe to the food we eat.

I believe the proposal to expand the PRIMNM boundaries around Howland and Baker Islands, Palmyra Atoll, and Kingman Reef from 50 nautical miles to 200 nautical miles balances the social and economic needs of today with the future health of our ocean.

Expanding protection around the waters of Howland and Baker Islands, Palmyra Atoll, and Kingman Reef will safeguard areas of open ocean ecosystems that are intricately connected to nearshore and terrestrial ecosystems. Expansion would also protect meaningful habitats for endangered and threatened species, such as sharks and birds, who are traveling well beyond the current boundaries to breed, forage, and rest.

Additionally, the expansion will protect 98 undersea mountains, or seamounts, which serve as ecological hotspots for biodiversity. In the 2014 Presidential Proclamation for the expansion

The Honorable Joseph R. Biden, Jr.
May 27, 2022
Page Two of Two

of PRIMNM, it states that 15 to 44 percent of the species on a seamount or seamount group are found nowhere else on Earth. Roughly 5 to 10 percent of invertebrates found on each survey of a seamount are new to science. The 98 seamounts that are currently unprotected provide the opportunity for identification and discovery of many species not yet known to humans, with possibilities for research, medicines, and other important uses.

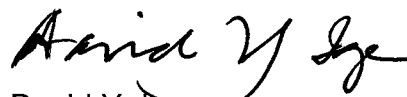
While there is no deep-sea mining currently occurring around the PRIMNM, mining interests have identified these waters as a high value area. Deep-sea mining for increasingly difficult-to-find minerals threatens to accelerate species extinction and the fisheries that depend on healthy ecosystems. Expanding PRIMNM now will ensure that future deep-sea mining will not occur in this wild and biodiverse marine ecosystem.

Mahalo to your administration for your commitment at the 2022 Our Oceans conference to launch a working group or commission to evaluate naming practices for existing and future marine national monuments and national marine sanctuaries, with particular emphasis on the Pacific Remote Islands Marine National Monument.

I was fortunate to witness the renaming of Papahānaumokuākea Marine National Monument and see the effect it had on the people of Hawai'i. The Northwest Hawaiian Islands have deep cosmological and traditional significance in the Native Hawaiian culture, and the name Papahānaumokuākea helped people to recognize its significance and create a connection with it. Many people now recognize that the area is as an ancestral environment, that it is an embodiment of the Hawaiian concept of kinship between humans and the natural world, and that it is believed to be the place that life originates and to where the spirits return after death. The Pacific Remote Islands deserves a name of equal importance and I urge you to involve Pacific Islanders in the renaming process to ensure that the name chosen has a similarly transformative effect.

Mr. President, mahalo for your consideration of the request to expand and rename the Pacific Remote Islands Marine National Monument. We invite you and members of your administration to visit Hawai'i so that you can solicit input from Native Hawaiian cultural practitioners, scientists, conservationists, commercial and recreational fishers and others interested in the proposal.

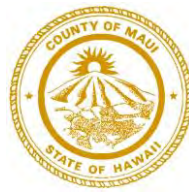
With warmest regards,

A handwritten signature in black ink that reads "David Y. Ige". The signature is fluid and cursive, with a large, sweeping flourish at the end.

David Y. Ige
Governor, State of Hawai'i

MICHAEL P. VICTORINO
Mayor

SANANDA K. BAZ
Managing Director



COUNTY OF MAUI
OFFICE OF THE MAYOR
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

September 23, 2022

The Honorable Joseph R. Biden, Jr.
President of the United States of America
The White House
1600 Pennsylvania Avenue, N.W.
Washington, D.C. 20500

Dear Mr. President,

I write to express my strong support for protecting the Pacific Remote Islands Marine National Monument (PRIMNM). I stand with the Pacific Remote Islands (PRI) Coalition and respectfully urge you to expand the PRIMNM boundaries to the full extent of the United States' Exclusive Economic Zone, to rename the monument to reflect its cultural and historic significance, and to create a new form of co-management that allows indigenous people from throughout the Pacific to help steward the monument's lands and waters.

As Mayor of Maui County, I know that the health of our ocean and the health of our islands are deeply intertwined. I have seen firsthand how manmade threats such as over-extraction, pollution, and climate change are impacting communities that rely on the ocean to sustain their lifestyles and livelihoods. I have also seen how impactful large scale Marine Protected Areas (MPAs), such as Papahānaumokuākea Marine National Monument, can improve the health of our island communities. Therefore, I support expanding the PRIMNM boundaries to the full extent of the United States' Exclusive Economic Zone and creating the largest highly-protected MPA in the world. I believe this proposal is a win for our people and the planet.

Additionally, I appreciate your administration's commitment to creating a working group or commission to evaluate naming practices for marine national monuments and national marine sanctuaries, with a particular emphasis on PRIMNM. Names hold a lot of meaning, and this monument deserves to have a name that reflects its unique history and character. I encourage you to engage with Pacific Islanders in the renaming process to ensure that the significance of

September 23, 2022
Page 2

this place is properly expressed and people are able to create deeper connections to this special place through its name.

Finally, I can attest to the benefits of integrating indigenous knowledge into policymaking, and am confident that establishing a new form of indigenous co-management will allow for PRIMNM to receive the best possible care. Pacific Islanders have intimate knowledge of the region's natural and cultural resources, an understanding of its needs, and a history of sustainable stewardship. I support the PRI Coalition's request to ensure that Pacific Islanders are properly represented at the highest levels of management and decision-making for PRIMNM.

Mr. President, thank you for your commitment to safeguard our ocean for future generations and consideration of this request to protect the PRI Marine National Monument.

With Aloha,

A handwritten signature in black ink that reads "Michael P. Victorino". The signature is written in a cursive style with a horizontal line at the end.

MICHAEL P. VICTORINO
Mayor

MPV: tkm: lnm



Resources Available for Hawaii Residents Impacted by Natural Disasters

September 25, 2014

HIRONO APPLAUDS PRESIDENT OBAMA'S EXPANSION OF PACIFIC REMOTE ISLAND MARINE NATIONAL MONUMENT

HONOLULU – Senator Mazie K. Hirono released the following statement applauding President Barack Obama's proclamation to significantly expand the Pacific Remote Island Marine National Monument. The expansion will create the largest marine reserve in the world. The President's directive aims to protect close to 490,000 square miles from overfishing and other unsustainable practices.

"President Obama's executive order to protect a greater expanse of the Pacific Remote Island Area illustrates his commitment to preserve our planet's natural resources. Research has shown that when marine environments are protected, the overall health of the ecosystem is enhanced, including an increase in fish populations and improved health of coral reefs," said Senator Hirono. "As we continue to understand the impact of human activity including climate change on oceans and natural resources, it is clear that we must work to mitigate impacts. Today's proclamation by the

President moves us toward responsible stewardship."



(//www.facebook.com
(//www.instagram.com
(//www.twitter.com
(//www.hirono.senate.gov)

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Governor of the State of Hawai'i

Neil Abercrombie (<http://archive2014.abercrombie.hawaii.gov>)

Home (<http://archive2014.abercrombie.hawaii.gov>) » Latest News (<http://archive2014.abercrombie.hawaii.gov/blog/category/newsroom/latest-news/>) , Newsroom (<http://archive2014.abercrombie.hawaii.gov/blog/category/newsroom/>) , Press Releases (<http://archive2014.abercrombie.hawaii.gov/blog/category/newsroom/press-releases/>) » Governor's Statement on the President's Expansion of the Pacific Marine Reserve

GOVERNOR'S STATEMENT ON THE PRESIDENT'S EXPANSION OF THE PACIFIC MARINE RESERVE

Posted on Sep 25, 2014 in Latest News (<http://archive2014.abercrombie.hawaii.gov/blog/category/newsroom/latest-news/>) , Newsroom (<http://archive2014.abercrombie.hawaii.gov/blog/category/newsroom/>) , Press Releases (<http://archive2014.abercrombie.hawaii.gov/blog/category/newsroom/press-releases/>)

HONOLULU – Gov. Neil Abercrombie today issued the following statement on President Barack Obama's proclamation expanding protections for the Pacific Remote Islands Marine National Monument, creating the largest marine reserve in the world:

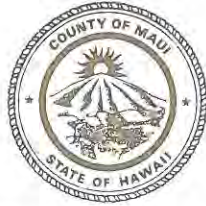
“The Obama administration is dedicated to protecting our environment for our future generations. I commend the president's recognitions of traditional fishing opportunities and expanded protections of the Pacific Remote Islands Marine National Monument.

“This action strikes a good balance between protecting our ocean resources, along with traditional and recreational fishing, since they are such an important part of Hawaii's unique history and culture.

“As a kamaaina himself, the president shares our sincere respect and affinity for our precious ocean. This welcomed act will provide a gift to our keiki, allowing them to enjoy the benefits of a healthy and thriving ocean ecosystem.”

###

ALAN M. ARAKAWA
MAYOR



200 South High Street
Wailuku, Hawai'i 96793-2155
Telephone (808) 270-7855
Fax (808) 270-7870
e-mail: mayors.office@mauicounty.gov

OFFICE OF THE MAYOR

Ke'ena O Ka Meia
COUNTY OF MAUI – Kalana O Maui

September 12, 2014

President Barack Obama
1600 Pennsylvania Avenue NW
Washington, D.C. 20500

RE: SUPPORT FOR EXPANSION OF PACIFIC REMOTE ISLANDS NATIONAL MONUMENT

Aloha President Obama;

I am writing to express my strong support for your proposal to expand the Pacific Remote Islands Marine National Monument. As you know, these largely uninhabited islands (Wake, Jarvis, Howland, Baker) and atolls (Johnston, Palmyra) are home to some of the richest areas on earth for marine life, including seabirds, marine mammals, fish, sea turtles, corals, and more.

While born and raised on Maui, my family moved to Wake Island for two years of my childhood. There I witnessed the marvels of a healthy, robust eco-system, with countless schools of fish stretching out to the reef and to the deep waters beyond. As I lifelong diver, I now can say I have witnessed a severe decline in the coral reef habitats in Maui County and throughout Hawaii. The stressors on coral reefs and their inhabitants are numerous and well-known, but are extremely challenging to control or reverse.

Thus, it is vitally important that we extend protection of these locales that have been minimally impacted by human presence, to insure the survival and abundance of many species that may be threatened elsewhere. For these reasons, I believe protection for these remote Pacific islands and atolls should be expanded to the full 200 nautical miles of their Exclusive Economic Zones.

There will be those who claim we cannot afford to expand our protection in this fashion, and that we do not have the ability for enforcement. To those I would say, we can't afford NOT to execute this expansion, and that by doing so we are collaboratively leaving a legacy of marine conservation for our children and grandchildren.

I know that scientists, cultural practitioners, and many ecologically-minded citizens stand in strong support for your proposal, as I do as well. My hope is that my memories of Wake Island from my childhood may not just be a piece of the past, but an experience that through expansion of the Pacific Remote Islands National Monument may be shared with generations to come.

Sincerely,

A handwritten signature in black ink that reads "Alan Arakawa". The signature is fluid and cursive, with the first name "Alan" being larger and more prominent than the last name "Arakawa".

Alan M. Arakawa, Mayor
County of Maui



The Senate
State of Hawaii

STATE CAPITOL
HONOLULU, HAWAII 96813

The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Aloha President Obama:

As a Native Hawaiian State Senator, it gives me great pleasure to write this letter of strong support of the proposed expansion of the Pacific Remote Islands Marine National Monument to the full 200-nautical-mile United States Exclusive Economic Zone (EEZ). Currently, the Pacific Remote Islands consists of seven islands and atolls (Howland, Baker and Jarvis Islands; Johnston, Wake and Palmyra Atolls; and Kingman Reef), the nearest of which is Palmyra Atoll, located approximately 1,000 miles southwest of the main Hawaiian Islands. With a Monument expansion out to 200 nautical miles, these refuges and the waters that surround them would protect some of the richest areas on Earth for sea life, with irreplaceable natural resources.

As a descendant of the original people that first settled these islands, I understand the interconnectedness between the land and the sea, and the dependency we as island people have on our natural resources. As an old Hawaiian adage states, "he ali'i ka 'āina; he kauwā ke kanaka," or "the land is a chief; man is its servant."

Through the Mālama Hōnua Worldwide Voyage, our Polynesian voyaging canoes, Hōkūle'a and Hikianalia, are joining the growing global movement toward a more sustainable world. As a former sailing member of Hōkūle'a during its 1992 No Nā Mamo ("For the Children") voyage to Tahiti, Ra'iatea, and Rarotonga, I realized how precious tiny islands, like Hawai'i, are in the vast Pacific Ocean to both human civilization and plant and animal life. Like the voyage, expanding the Monument's boundaries for preservation is the right thing to do for all future generations. Your proposed action will provide a gift to posterity, allowing them to enjoy the benefits of a healthy and thriving ocean ecosystem.

At some point on their journey, both the Hōkūle'a and Hikianalia will sail within the Monument's protected waters. I kindly request that for the duration of their time spent in these waters, members of both designated canoes be allowed to fish, since that is their primary means of sustenance throughout the voyage. As a former member I can attest to the physical hardship of sailing Hōkūle'a in the right direction and the necessity to nourish one's mind, body, and soul with a healthy cooked meal straight from the ocean.

Should you have any questions, please call my office at (808) 586-6740.

Malama Pono,

Brickwood M. Galuteria
State Senator, Senate District 21
Waikīkī, McCully, Mō'ili'ili, Makiki, Ala Moana, Kaka'akō

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 12, 2014

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

JESSE K. SOUKI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

President Barack Obama
The White House
1600 Pennsylvania Avenue
NW Washington, DC 20500

Aloha Mr. President:

As the Chairperson of the Hawaii State Department of Land and Natural Resources and a Native Hawaiian who cares about the future of our Pacific home, I enthusiastically support your initiative to expand protection of the Pacific Remote Island Marine National Monument. I strongly urge you to extend the Monument to the full 200 nautical-mile United States Exclusive Economic Zone (EEZ).

The Department of Land and Natural Resources is committed to enhance, protect, conserve and manage Hawaii's unique and limited natural, cultural and historic resources held in public trust for current and future generations of the people of Hawaii Nei.

The Pacific Remote Island consists of five uninhabited island or atoll complexes (Wake, Jarvis, Howland and Baker Islands, Johnson Atoll, Kingman Reef and Palmyra Atoll), the nearest of which is Palmyra Atoll, located approximately 1,000 miles southwest of the Hawaiian Islands. At one point in our history, Palmyra was a part of the Hawaiian Kingdom. This Monument expansion, out to 200 miles, would protect some of the richest areas on Earth for sea life, with irreplaceable natural resources.

The Pacific Remote Islands are a local treasure that support and help maintain the productivity of Hawaii's ocean ecosystem on which we all depend; they also are a vital link in ensuring the health of the broader Central Pacific ecosystem.

Students of Kamehameha Schools, played a major role in occupying Jarvis, Howland and Baker Islands for the State of Hawaii as well as the United States. The 130 men, many of whom were Kamehameha School for Boys students and graduates who occupied the uninhabited Line Islands of Baker, Howland, and Jarvis. This was done continually in three-month shifts of four men per island, in an attempt to help the United States assert territorial jurisdiction crucial to air supremacy in the Pacific.

President Barak Obama
September 12, 2014
Page two

Now the Hokule'a and Hikianalia, our Polynesian voyaging canoes are sailing across Earth's oceans to join and grow the global movement toward a more sustainable world. Covering 47,000 nautical miles, 85 ports and 26 countries. The Malama Honua Worldwide Voyage will highlight diverse cultural and natural treasures and the importance of working together to conserve and protect them. The United States should do its part to complement these Marine Conservation Initiatives and protect a measurable portion of its own ocean territory.

As a kama'aina, you have proposed an initiative that will prove to be a unique moment in history. No president before you has shared your unique affinity and respect for the ocean. We appreciate your intent to designate a Pacific treasure as your first ocean monument and believe this welcomed act will provide a gift to our future generations, allowing them to enjoy the benefits of a healthy and thriving ocean ecosystem.

Inasmuch as residents of the Hawaiian Islands are all connected to the ocean for our food, our recreation, our culture, our peace and our home. Mr. President, with your lead we can pass this heritage on to our children and to their children.

We respectfully urge you to expand the Monument to the full 200 nautical-mile U.S. EEZ and we have one additional request to be added to this initiative and that is to allow all Hawaiian sailing canoes to fish while sailing through the Pacific Remote Islands Marine National Monument, since that is their only means of sustenance.

We also ask you to consider any impacts to the Hawaii Long line fishery, as Pacific Tuna are managed via International Treaties. Thank you for your attention to this letter, aloha aina and a hui hou.

Sincerely,



WILLIAM J. AILA, JR.
Chairperson

c: Governor Neil Abercrombie

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES
1151 PUNCHBOWL STREET, ROOM 330
HONOLULU, HAWAII 96813

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

JESSE K. SOUKI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

September 11, 2014

The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear President Obama:

I write to commend your leadership to safeguard one of the world's most pristine marine areas, the Pacific Remote Islands Marine National Monument, doubling the area of Pacific Ocean waters under full protection. It returns the United States to the forefront of protecting large areas of ocean, which started with the declaration of the Papahānaumokuākea Marine National Monument. You are to be congratulated for continuing the efforts of your predecessors in recognizing the importance of protecting large areas of the world's oceans.

As you are very aware, the oceans face greater challenges now than at any point in human history. Overfishing, pollution, sedimentation, extraction, climate change and ocean acidification are threatening oceans and human well-being, and the expansion of the Pacific Remote Islands Marine National Monument is an excellent step to counter some of these threats.

Many people in Hawaii depend on the ocean for their livelihoods and their well-being, but it has become increasingly apparent that protected areas are necessary to ensure the ecosystem services provided by the oceans are available for future generations. Short-term gain cannot be as important as long term security, and healthy economies are intrinsically linked with healthy ecosystems.

The Hawaii Division of Aquatic Resources supports your proposal to expand the Pacific Remote Islands Marine National Monument to the full 200 mile US EEZ, and looks forward to the benefits it will bring to current and future generations of not just those who live in the Pacific, but the residents of our blue planet.

Sincerely,

A handwritten signature in blue ink, appearing to read "Frazer McGilvray".

FRAZER MCGILVRAY
Administrator

May 27, 2022

President Joe Biden
The White House
1600 Pennsylvania Avenue NW
Washington, DC. 20500

Dear President Biden,

Bishop Museum, located in Honolulu, is the premier natural and cultural history institution in the Pacific, recognized throughout the world for its research, collections and public programs. Perpetuating the natural and cultural heritage of Hawai'i and the Pacific is central to our Museum's mission, and its collections, together with their associated data serve as a deep-time resource of both biological and ancestral knowledge.

Sitting at the center of the Pacific and actively engaged in work across the ocean, we are acutely aware of the global crisis posed by climate change, massive biodiversity loss and ecosystems under stress. Expanding the boundaries of the Pacific Remote Islands Marine National Monument/PRIMNM will help to protect the threatened, endangered and critically endangered species that inhabit unprotected areas of the ocean. Our lives depend on the health of our oceans, and our oceans' health is dependent on the security and maintenance of biodiversity and functioning ecosystems. We need to act now to protect our future.

Bishop Museum is in support of expanding the boundaries of the PRIMNM to include Howland Island and Baker Island, Kingman Reef and Palmyra Atoll out to 200 nautical miles, the full extent of the United States Exclusive Economic Zone.

Thank you for your leadership and addressing the stressors we face as a global community.

Aloha,



Melanie Y. Ide
President & Chief Executive Officer
Bishop Museum



May 25, 2022

President Joe Biden
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear President Biden,

I have been working for the protection and perpetuation of the Hawaiian Monk Seal species for nearly two decades. Our organization started out as a volunteer program in 2006 and grew over the years to nearly 200 volunteers. We did everything from teach in the school's pre-K through high school to rescue, surgery, & rehab of sick or injured animals. Our organization was responsible for changing Hawaii State Laws from a misdemeanor to a Class C felony for anyone harming or killing a Hawaiian Monk Seal.

Habitats in the Main Hawaiian Islands have always been challenged and we have a very small population of monk seals in the human inhabited MHI. The perpetuation of the species and the survival of this critically endangered animal I fear will rely solely on any habitat that can be protected from overfishing and mankind. It has been said that the Hawaiian Monk Seal is the canary of the sea. I truly believe that. We saw and experienced some of the positive side effects of COVID here in Hawaii. The ocean was in a renewal stage and monk seals were hauling out in places never visited before. Fish and wildlife returned to the reefs in a very short period and the water cleared up like we were in a private aquarium. The monk seals tended to thrive in that environment without humans constantly interfering. Their existence is imperative to the balance (pono) of the ocean and the feats that these creatures accomplish by being on this planet and in our oceans need to be protected with extended habitats. Our eco system is fragile in these islands and each creature plays an intricate part in the health of the sea.

My organization would like to ask for your support in the expansion of the boundaries of the PRIMNM to include Howland Island and Baker Island, Kingman Reef and Palmyra Atoll out to 200 nautical miles, the full extent of the United States Exclusive Economic Zone. This expansion would help to ensure that this species survives with its Hawaiian brothers and sisters. The USA would be able to be in front of the World in creating a fresh perspective and respect for the people and animals of the Pacific and restore pono (balance) to the islands and atolls of PRIMNM.

Respectfully with Aloha,

Dana Jones
Executive Director
Hawaiian Monk Seal Preservation Ohana
808-393-5043



May 22, 2022

President Joseph R. Biden
The White House
1600 Pennsylvania Avenue
Washington, DC 20500

**RE: STRONG SUPPORT FOR THE EXPANSION & RENAMING OF THE PACIFIC REMOTE ISLANDS
MARINE NATIONAL MONUMENT**

Aloha pumehana, e President Biden,

Huamakahikina is a coalition of Kumu Hula (*traditionally trained Hula teachers*), open to all Kumu Hula and representing the breadth of Hula Lineages, standing together for the purpose of organizing and advocating on behalf of Kumu Hula and the profession of Hula itself.

Huamakahikina formed and ratified the “Huamakahikina Declaration on the Integrity, Stewardship, and Protection of Hula” on August 21-22, 2021, at the Kupukalālā Kumu Hula Convention, which brought together 201 lineally acknowledged Kumu Hula from across the the Hawaiian Archipelago, 10 states of the United States of America, and the countries of Japan, New Zealand, French Polynesia, France, and Spain. The Huamakahikina Declaration has since been adopted by the County of Maui (21-484), the County of Hawai‘i (362-22), and Hawai‘i Senate Concurrent Resolution 121 urges the State of Hawai‘i and its counties to work with Huamakahikina and Kumu Hula for the protection of Hula.

Article 1.1 of the Huamakahikina Declaration reads: “Hula is the multiplex of artistic, intellectual, and spiritual practices, perspectives, and products centered around the expression of Mele (*lyric*) through the bodies of formally trained dancers.” This “multiplex” of practices thoroughly covers “a wide breadth of knowledge of Hawaiian history, the Hawaiian language, traditional lore . . . the natural environment . . . as only acquired through detailed, formal education in Hula.” Through this multiplex, knowledge of the importance of the region to be covered in the PRI expansion to Kanaka Maoli (*Hawaiian*) culture and our voyaging ancestors continues to be actively transmitted intra- and inter-generationally amongst Hula practitioners.

Article 2.8 reads: “In 2003, the ‘Īlio‘ulaokalani Coalition organized Ka ‘Aha Pono Native Hawaiian Intellectual Property Rights Conference at which Kumu Hula and other cultural practitioners created the Paoakalani Declaration and set forth statements against ‘exploitative use and commercialization of our . . . natural and biological resources . . .’” To this day, Kumu Hula continue to honor and benefit from the natural and biological resources from the region to be covered in the PRI expansion. As such, we support all measures that would protect against the exploitation and depletion of any of the natural and biological resources of the PRI expansion region.

Article 4.1 reads: “As it has been for countless generations, Hula continues to serve as a means by which a wealth of Kanaka Maoli knowledge, practices . . . exist into the present day, and through which this knowledge and these practices will be perpetuated into the future.” These knowledge bases and practices continue to inform our traditional practices of environmental stewardship, as well as our regard for the region to be included in the PRI expansion. Through our practices, Members of Huamakahikina and our students – along with masters and

practitioners of other traditional Kanaka Maoli professions – still research, internalize, and embody knowledge of the islands and waters to be covered in the PRI expansion.

Additionally, Kumu Hula have been critical in the formation, naming, maintenance of, and advocacy for the Papahānaumokuākea Marine National Monument which was formally established by President George W. Bush in 2009, and which was expanded by President Barack Obama in 2014.

Therefore, we, the Membership of Huamakahikina, respectfully ask that you expand the Pacific Remote Islands Marine National Monument. We also urge you to support a process respectful of the Indigenous Peoples of the Pacific to rename the monument, and which will restore the traditional and customary names of the islands, atolls, and waters therein.

Thank you for your time and consideration.

Me ka ‘oia‘io,

The Membership of Huamakahikina





President Joe Biden
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Aloha Pumehana President Biden,

My name is Kealoha Pisciotta. I am the founder of the Native Hawaiian marine protection organization, Kai Palaoa. We are comprised of Hawaiian Ocean Cultural Practitioners, scientists, artists, grass roots activists, inventors, advocates, surfers, divers, fishers, educators and entrepreneurs who believe change in the world is possible and are dedicated to creating a clean, healthful, sustainable, beautiful and just world for our future generations.

The United Nations recently declared this the decade of the Ocean. The Ocean makes up more than 70 percent of our planet, regulates our weather and produces 70 percent of the oxygen contained in our atmosphere. The deep sea is home to nearly 85 percent of the world biodiversity. The Moananuiakea (great Pacific) as largest Ocean on our planet and is doing some of the heavy lifting against Climate Change.

Kai Palaoa is apart of numerous conservation and Indigenous Peoples networks, working in Hawai'i and across Moananuiakea. We the peoples of Moananuiakea are often referred to as the tiny island nations of the Pacific but we are better defined as the large ocean nations of the Pacific. The Indigenous People of Moananuiakea are connected genealogically, through our common voyaging heritage and a common cosmology via our oral histories and stories of creation.

The Indigenous Peoples of the Moananuiakea also continue to suffer ongoing threats of sea level rise and the potential loss of their land territories. They also face extreme exploitive industrial extraction activities in their ocean territories ranging from large scale fishing industries (longliners) to the threat of deep sea mining.

To help protect the Moananuiakea and our Planet our membership participated in the efforts to expand the Papahānaumokuākea Marine National Monument. Today, we are asking you to support expanding the Pacific Remote Islands Marine National Monument (PRIMNM) and specifically to expand the boundaries of the PRIMNM to include Howland Island and Baker Island, Kingman Reef and Palmyra Atoll out to 200 nautical miles, the full extent of the United States Exclusive Economic Zone.



We are calling upon you President Biden to join former President Bush and President Obama to continue the US ocean protection legacy by expanding the Pacific Remote Islands Marine National Monument.

The Ocean connects the Indigenous Peoples of the Moananuiakea to all of humanity and the more we protect the Ocean the more we are connected and can together begin to heal ourselves and our planet!

In Aloha We Remain,

/s/ Kealoha Pisciotta



25 May 2022

President Joseph Biden
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Aloha and Prayerful Greetings President Biden,

We write to you in support of expanding the boundaries of the Pacific Remote Islands Marine National Monuments (PRIMNM) to include Howland Island and Baker Island, Kingman Reef and Palmyra Atoll out to 200 nautical miles, the full extent of the United States Exclusive Economic Zone.

Mauna Kea Anaina Hou, is a Kanaka Maoli (Native Hawaiian) organization, made up of cultural and lineal descendants of the burials of Mauna Kea. We are also traditional and customary cultural and religious practitioners of Mauna Kea.

Mauna Kea is one of Hawai'i's most sacred Wahi Pana (sacred and revered) places. Mauna Kea is located on the island of Hawai'i and is the tallest mountain on earth when measured from the bottom of the sea.

According to our traditions and the Hawaiian chant of creation there are special and sacred places where creation is said to still continue. Like Papahānaumokuākea (PMNM) Mauna Kea is one of these places, as it is an entranceway to the Po (or the great realm of creation); where all living things great and small are made manifest (or birthed) into existence and into the time of Ao (when light and humans enter the world as we know it).

These sacred and special places are culturally significant but are also globally significant because they often contain much of the necessary biodiversity that can empower our planet to be more resilient so that may survive the ravages of Climate Change.

Further, the PRIMNM, is apart of the Kanaka Maoli's traditional ocean scape and is connected to our voyaging traditions and connects us to our larger Pacific Family.

We are in support of providing maximum protection for the PRIMNM and for opening the way for our people and our Pacific Family to contribute to restoring the traditional names of the Pacific Remote Islands.



In conclusion, President Biden, we are so grateful for your leadership in facing climate change head on and for seeking pathways forward for Indigenous Peoples such as the Kanaka Maoli to help to do so also.

Aloha and much gratitude,

A handwritten signature in black ink, appearing to read "Keomailani Von Gogh". The signature is written in a cursive, flowing style.

Keomailani Von Gogh

Vice President of Mauna Kea Anaina Hou

May 25, 2022

The Honorable Joseph R. Biden, Jr.
President of the United States of America
The White House
1600 Pennsylvania Avenue, N.W.
Washington, D.C. 20500

Welina mai e Mr. President,

The Papahānaumokuākea Marine National Monument (PMNM) Native Hawaiian Cultural Working Group (CWG) applauds the commitments made by the United States at the seventh Our Ocean Conference to protect our ocean's health and security. We are especially pleased to hear about both the forthcoming expansion proposal as well as the corresponding request to rename the Pacific Remote Islands (PRI) Marine National Monument. We, the PMNM cultural working group, support the PRI Coalition's request to President Joseph Biden that the protection boundaries of the PRI Marine National Monument be expanded to the full extent of the US Exclusive Economic Zone. Furthermore, we enthusiastically support the request to rename the PRI Marine National Monument through a process that designates a name reflective of the area's significance within Pacific Islander cultures.

The CWG—an affiliated advisory group to the Monument Management Board for PMNM—acknowledges the PRI Marine National Monument to be an area of vast importance to many Pacific Island nations and cultures, including Native Hawaiian. In this advisory capacity, the CWG has represented our native Hawaiian families and communities and, through the advocacy for Papahānaumokuākea's protections and management frameworks, has been instrumental in the establishment, the naming, the designation as well as the expansion of Papahānaumokuākea Marine National Monument.

In addition to the expansion proposal, we endorse the request to rename PRI Marine National Monument. For over 10 years, the CWG nomenclature subcommittee has worked alongside co-managing partners to have contributed to the naming designation of numerous flora, fauna, and geological features “discovered” within the monument. We recognize this worthwhile endeavor as an avenue for indigenous communities to strengthen present-day oceanic responsibilities in a way that also rebuilds genealogical relationships to our “sea of islands” for future generations. Likewise, we encourage that the naming process seek input from all peoples whose history and kinship are interwoven with the monument's constituent islands, atolls, reefs, and waters.

To that end, we humbly offer ourselves as a resource for and in assistance to the appointed working group and/or commission throughout this endeavor.

We greatly appreciate your consideration of our support in the expansion and renaming of the Pacific Remote Islands Marine National Monument. Should you have any questions or require additional information, please don't hesitate to contact Hōkū Cody (hokucody@gmail.com).

With Aloha,

Hui Manamana (CWG leadership)

Hoku Cody

Hoku Cody



[kaipulaumakaniolono baker \(May 24, 2022 18:41 HST\)](#)

Kaipu Baker

Hokū Pihana

Hoku Pihana

H. Kalama'ehu Takahashi

[H. Kalama'ehu Takahashi \(May 25, 2022 10:03 HST\)](#)

Kalamaehu Takahashi

Pelika Andrade

[Pelika Andrade \(May 25, 2022 10:11 HST\)](#)

Pelika Andrade

CC: Keone Nakoa

Deputy Assistant Secretary for Insular and International Affairs



POLYNESIAN VOYAGING SOCIETY



November 4, 2022

The Honorable Joseph R. Biden, Jr.
President of the United States of America
The White House
1600 Pennsylvania Avenue, N.W.
Washington, D.C. 20500

Dear Mr. President,

The Polynesian Voyaging Society writes to express its strong support for protecting the Pacific Remote Islands Marine National Monument. We respectfully urge you to expand the monument boundaries to the full extent of the United States' Exclusive Economic Zone, to rename the monument to reflect its cultural and historic significance, and to engage with Indigenous communities to create a new form of co-management that spans the Pacific region, bringing people together around a shared history and future.

The ocean is in need of urgent care. Compounding threats including over-extraction, pollution, and climate change are causing the decline of some of Earth's most precious and significant marine habitats. As ocean navigators, we have witnessed firsthand how these changes cause a lasting impact on marine biodiversity as well as the lives and livelihoods of communities that rely on the ocean for sustenance.

The proposed expansion offers an opportunity to create the largest highly-protected marine protected area in the world, which would help to protect biodiversity and maintain climate change resilience in the Central Pacific.

Renaming the monument and establishing a new form of co-management for the islands, atolls, reefs, and waters within its boundaries represent an opportunity to reaffirm the great heritage Pacific Islanders share and renew the spirit of who we are as Indigenous Peoples today. We urge you to act on these requests, and to engage with our brothers and sisters from throughout Oceania to realize the full potential that this opportunity affords.

Hōkūleʻa, our Star of Gladness, began as a dream of reviving the legacy of exploration, courage, and ingenuity that brought the first Polynesians to the archipelago of Hawaiʻi. This dream brought together people of diverse backgrounds to protect our most cherished values and places from disappearing. In that spirit, we join the Pacific Remote Islands Coalition and urge you to protect these islands. They are a natural treasure that supports the ocean ecosystem on which we all depend.

Sincerely,
Nainoa Thompson

President
Polynesian Voyaging Society



December 2, 2022

The Honorable Debra Haaland
Secretary of the Interior
1849 C Street, NW
Washington, DC 20240

The Honorable Gina Raimondo
Secretary of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230

Dear Secretaries Haaland and Raimondo,

The Nature Conservancy (TNC) supports efforts to expand the Pacific Remote Islands Marine National Monument (PRIMNM) surrounding Palmyra Atoll and Kingman Reef. We encourage the Administration to initiate an inclusive public engagement process to advance this important ocean conservation issue.

As a landowner with a conservation science facility located within the current Palmyra Atoll and Kingman Reef unit of the PRIMNM, we have seen firsthand the powerful impact of protection on the linked island/ocean ecosystem. Through our presence and conservation programs within a fully protected area, the link between pelagic ecosystems, atolls, and nearshore waters is now better understood than when we began our work at Palmyra in 2000.

Given its remote location, away from human development pressures, and extremely limited commercial fishing activity, this expansion provides a unique opportunity to preserve one of the last intact marine ecosystems in the Pacific with minimal economic impact. It provides a natural laboratory to learn about changing ocean conditions and apply those lessons to other areas. Expansion would provide an opportunity to increase federal resources to manage and conduct research in the Monument to ensure that adequate conservation measures can be implemented and that more research can be conducted to fully understand this vital ecosystem.

As the Administration determines whether and how to proceed with the proposed expansion, we offer the following comments for the Administration's consideration:

Stakeholder Engagement

Transparent marine spatial planning processes with ample stakeholder engagement has been used in previous marine monument designations and expansions, and results in more effective and durable solutions. We encourage the Administration to actively engage all stakeholders, including the U.S. purse seine tuna fishery to understand their interests and concerns regarding the impact of expansion and additional fishing restrictions. Our conservation experience assures us that approaches that exclude impacted stakeholders can end up costing more in terms of enforcement, education, unintended social and/or economic impacts, and legal settlements without addressing the root threats to ecosystems.

Supporting Partnerships

Public-private partnerships are critically important to achieve large-scale conservation objectives which require action by various sectors and industries. For more than 20 years TNC has partnered with the U.S. Fish and Wildlife Service through the Palmyra Atoll National Wildlife Refuge, and has an emerging conservation partnership with the U.S. Pacific Purse Seine Tuna Fleet through our drift Fish Aggregating Device (dFAD) program. TNC's non-confrontational approach has helped us succeed by leveraging the support and conservation action of diverse industries and sectors. If the Monument is expanded, we would

like to continue our current partnerships and look to expand efforts to increase conservation and science.

Supporting Science

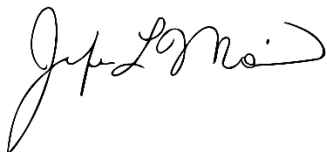
The Palmyra Atoll and Kingman Reef Unit of the PRIMNM is a well-suited site for measuring the impacts of protection through many conservation strategies. TNC is currently leading an effort in Monument waters, that includes work with the U.S. purse seine industry to track and intercept fishing gear (dFADs) before they impact sensitive coral reef ecosystems. We also encourage the National Oceanic and Atmospheric Administration (NOAA) to continue exploring the deep seafloor ecosystem, and where appropriate TNC welcomes partnering with NOAA to link that research to the pelagic and coastal waters where our research is focused. Together, we can understand more and manage better, as we welcome a path forward that utilizes the best lessons learned from sustainable fisheries while safeguarding ecosystems against the emerging threat of seafloor mining. We hope expanding the Monument will lead to more opportunities and resources for science and research.

Recognizing Fishing Impacts

We recognize expanding fishing protections in this area will likely have an impact on the U.S. tuna fleets, including American Samoa-based fishery operations, that secure wild seafood for domestic consumption. As a result of restrictions, U.S. commercial purse seine fishing would likely be displaced, at additional expense, into the adjacent high seas waters. It is in these areas that catch compositions can negatively change, having detrimental impacts on broader fishery conservation efforts. Engagement with these stakeholders is imperative to better ensure mitigating and minimizing unintended economic and social impacts.

In closing, healthy oceans support healthy fisheries, which are necessary to sustain healthy oceanic island communities. We remain committed to keeping Palmyra Atoll a Hope Spot for the Pacific through our ongoing conservation actions and research studying climate adaptation and resilience above and below the waters of the ocean, connecting Palmyra to the PRIMNM and ocean environments beyond. Thank you for the opportunity to express support for Monument expansion, and please consider TNC a partner to support and lead next steps to improve ocean management in the United States.

Sincerely,



Jennifer L. Morris
Chief Executive Officer



Ulalia Woodside Lee
Executive Director, Hawai'i and Palmyra



October 19, 2022

President Joseph R. Biden
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear President Biden,

The Pew Charitable Trusts supports the elders, fishers, educators, cultural practitioners, non-profits, community groups, scientists, religious organizations, veterans and others across the US Pacific community calling for the expansion of the Pacific Remote Islands Marine National Monument (PRIMNM) as proposed by the [Pacific Remote Islands Coalition](#).

The Pacific Remote Islands and the surrounding waters are home to a unique diversity of life including many threatened, endangered, and depleted species such as giant clams, coconut crabs, and hawksbill turtles. Several species of shark, marine mammals, and seabirds, live, hunt, reproduce, and migrate throughout this region utilizing critical habitat in its unprotected waters, including nearly 100 seamounts. Expanding the two remaining areas of the Pacific Remote Islands Marine National Monument—Howland and Baker Island, and Kingman Reef and Palmyra Atoll—out to the 200 nautical mile extent of the United States Exclusive Economic Zone (from the current limit of 50 nautical miles) would better safeguard the interconnected near and offshore ecosystems of the region and the many vulnerable species that rely on them. Due to its abundance of life and remoteness, the area also serves as a modern baseline for assessing climate impacts to ocean ecosystems.

The Pacific Remote Islands were first discovered and understood by Indigenous Pacific communities, whose customary practices of marine resource management included setting aside ocean spaces for preservation and recovery of species. Protecting these culturally significant waters from destructive human activities such as deep-sea mining and industrial fishing can continue this rich tradition of protection in the Pacific. Furthermore, renaming the PRIMNM to indigenous and traditional names will reaffirm the rich cultural history of the region showing honor and respect to the islanders who utilized those islands and navigated those waters prior to colonialization.

The United States has long played a leadership role in the region's conservation efforts. PRIMNM and Papahānaumokuākea Marine National Monument were early adopters of large scale MPAs and their designations catalyzed a global conservation movement. In a time when conservation legacies in the region are being challenged, such as in Kiribati's Phoenix Islands Protected Area, the United States is once again poised to play a critical leadership role. Through the expansion and renaming of PRIMNM, the Biden Administration has the opportunity to protect one of the few remaining pristine marine ecosystems on earth while honoring the cultural heritage of the region. Taking action will leave a legacy of environmental and cultural stewardship by protecting the healthy, but vulnerable, waters in the US Pacific and ensuring scientific and cultural practices continue to serve the region and its people for generations to come.

Sincerely,

Thomas C. Dillon
Senior Vice President, Head of Environment
The Pew Charitable Trusts

The Honorable Joseph R. Biden, Jr.
President of the United States of America
The White House
1600 Pennsylvania Avenue, N.W.
Washington, D.C. 20500

February 27, 2023

Dear President Biden,

On behalf of the 60 undersigned organizations representing local, regional, and national interests, we write to express our strong support for expanding the boundaries of the Pacific Remote Islands (PRI) Marine National Monument to include Howland Island and Baker Island, Kingman Reef and Palmyra Atoll out to 200 nautical miles—the full extent of the United States Exclusive Economic Zone (EEZ). We also encourage you to honor the cultural and historical significance of the area by renaming the islands and atolls to respect the Indigenous peoples and cultures of the Pacific, and by engaging a co-management framework to include a broader spectrum of oceanic Indigenous communities.

Today, the world's ocean faces a biodiversity and climate crisis. Nature is declining globally at rates unprecedented in human history, and the window of opportunity to halt and reverse the worst impacts of climate change is closing. Intact natural ecosystems such as the Pacific Remote Islands are more resilient to the effects of climate change, and can help in the fight against biodiversity loss. It is therefore imperative not only to the Pacific region, but to all of us, that we act on this opportunity to preserve and sustain nature so that it may continue to sustain us.

Further, the Pacific Remote Islands have connected nature and culture since time immemorial. These islands served as stopping points during cross-Pacific migration and voyaging for Indigenous Pacific Islanders before and since colonization, and for commercial and military interests in the modern era. Their distance from populated land and minimal human impact to their ecosystems uniquely positions them as a critical location in the Pacific for the learning and practice of traditional voyaging, which is dependent on healthy ecosystems with intact biological indicators such as animal movements and behaviors. Expanding PRI's boundaries to the legal limit of the U.S. EEZ is an important commitment to the preservation and prosperity of Indigenous cultures, traditional voyaging, and to Pacific Island Nations and neighbors.

The waters of PRI also contain some of the last relatively pristine ocean wilderness on the planet. They are home to threatened and endangered species including sharks, turtles, seabirds, whales, manta rays, and more. The current protections afforded by PRI are inadequate for sensitive, long-ranging wildlife that use the U.S. waters beyond 50 nm to hunt, feed, and breed. In addition, the health of the protected, nearshore ecosystems within the current boundaries of PRI rely heavily on that of the unprotected offshore ecosystems. The value of expanding PRI to protect our ocean's biodiversity and unique Pacific habitats is immense, while also ensuring the continued health of the precious coral reef ecosystems within the existing boundaries of PRI by managing these areas as a whole.

As organizations from across the United States, we stand in support of the vision of the local leaders and Pacific Island peoples spearheading this effort, who have intimate knowledge of this region's needs and cultural and biological importance. We support their request to ensure Pacific Islanders are engaged in the process to give this area a name that better reflects its

identity, individuality, and importance, as well as their request to ensure that Pacific Island communities are properly represented at the highest levels of the management and decision-making processes for PRI.

President Biden, you have the opportunity to honor Indigenous cultures and practices, bolster the resilience of these important ocean ecosystems in the face of climate change, and protect marine biodiversity from threats poised to grow in the future. Expanding the two remaining areas of PRI to the full extent of the EEZ would serve as a gift to future generations, and ensure the U.S. continues its strong record of ocean conservation leadership.

Sincerely,

Aquarium of the Pacific
Azul
Blue Nature Alliance
Cabrillo Marine Aquarium
California Academy of Sciences
California Marine Sanctuary Foundation
Californians for Western Wilderness
Center for Biological Diversity
Coastal Quest
Conservation International
Conservation Lands Foundation
Conservation Law Foundation
Conservation Minnesota
Creation Justice Ministries
EarthEcho International
Earthjustice
GreenLatinos
Greenpeace USA
Healthy Ocean Coalition
Hispanic Access Foundation
Hispanic Federation
Inland Ocean Coalition
Jenkinson's Aquarium
Kansas City Zoo
League of Conservation Voters
Marine Conservation Institute
Mission Blue
Mystic Aquarium
National Aquarium
National Audubon Society
National Marine Sanctuary Foundation
National Ocean Protection Coalition
National Parks Conservation Association
National Wildlife Federation

National Wildlife Refuge Association
Northern Chumash Tribal Council
Nuestra Tierra Conservation Project
Oceana
Ocean Defense Initiative
Only One
Patagonia
Point Defiance Zoo & Aquarium
Restore America's Estuaries
Sachamama
San Diego Zoo Wildlife Alliance
Santa Barbara Zoo
SeaLegacy
Seattle Aquarium
Sedgwick County Zoo
Shedd Aquarium
Surfrider Foundation
The Chaparral Lands Conservancy
The Ocean Project
Virginia Aquarium & Marine Science Center
Virginia Zoo
Waitt Foundation
Waitt Institute
Waterway Advocates
WILDCOAST
Xerces Society for Invertebrate Conservation



Dear Senator Schatz,

I hope that you and your family are doing well. I am writing to ask for your strong support in the proposed expansion of the Pacific Remote Islands Marine National Monument.

Our president has a relationship and respect for the ocean unlike any other president before him. He possesses a genuine understanding that all of us in the Pacific have a strong connection to the ocean, whether from our heritage, for our nourishment, for our lifestyle, or for our economies that need to be preserved for generations far beyond our lifetimes. I commend the Obama Administration's leadership to safeguard some of the last remaining near pristine areas in the world, and appreciate that the first marine monument he has proposed is located in the Pacific.

The ocean is in need of urgent action. Compounding threats including overfishing, extraction, pollution, ocean acidification, and climate change are causing the decline of some of the most precious and significant marine habitats on earth. Global climate change is an emerging threat that only intensifies this crisis. Despite these threats, only one percent of the global ocean is fully protected in marine reserves. President Obama's proposed expansion is a step in the right direction to increase this percentage worldwide.

The proposed protections of the Pacific Remote Islands offer an opportunity to create a large, fully protected marine reserve, which have been proven to help maintain the health and resilience of ocean ecosystems. In addition, recent studies have shown that fully protected marine reserves benefit fish populations and commercial fisheries outside of a protected area.

This expanded marine monument would provide a safe haven for irreplaceable natural resources, including almost 250 seamounts, or undersea mountains, which are hotspots of biodiversity, and a home to countless unrecorded species. An estimated 14 million seabirds representing 19 species use these areas as feeding and breeding grounds. It is an important habitat for protected species of sea turtles and marine mammals, some of which are critically endangered, and remarkably rich coral ecosystems, including some deep water corals up to 5,000 years old.

The Pacific Remote Islands are a natural treasure that support and help maintain the productivity of Hawai'i's ocean ecosystem on which we all depend. They also are a vital link in ensuring the health of the broader central Pacific ecosystem.

I respectfully urge you to support the expansion of the Monument to the full 200 nautical mile US EEZ. Thank you for your time and consideration.

Aloha Pau'ole,

Nainoa Thompson

President
Polynesian Voyaging Society



August 11, 2014

President Barack Obama
The White House
1600 Pennsylvania Ave. NW
Washington, DC 20500

Dear President Obama,

We, the Ocean Elders, write to you in strong support of your proposal to expand the Pacific Remote Islands Marine National Monument. We urge you to expand the Monument out to the full 200 nautical mile boundary of the United States Exclusive Economic Zone (EEZ) to protect one of the world's last remaining pristine marine ecosystems.

Our planet is an ocean planet, and the global ocean has been sending very clear signs that it is in urgent need of greater protection. The threats facing the ocean such as overfishing, habitat destruction, pollution, and acidification are intensifying and driving dramatic changes in marine ecosystems. With less than one percent of the ocean designated as fully protected, very few areas are safeguarded from these threats. Large and fully protected areas are critical in maintaining the ocean's overall health and resilience, both within country waters and on the high seas.

The western Pacific marine environment is home to some of the most biologically rich tropical waters in the world. The ecosystems of the Pacific Remote Islands provide important habitats for a substantial number of endangered, threatened, or over-exploited species that migrate well beyond the current 50 nautical mile boundary including sea turtles, marine mammals, seabirds, and large predatory fish. Beyond the current Monument boundary, the ecosystem is also rich in deep sea corals and seamounts; areas which act as hotspots of biodiversity not found elsewhere.

We warmly commend the steps that the U.S. and many world leaders took at the State Department's *Our Ocean* Summit to address the challenges facing the ocean. The expansion of the Pacific Remote Islands Marine National Monument provides an essential opportunity for the U.S. to demonstrate its commitment to protect ocean health in the region and its leadership in marine conservation in the Pacific and around the world. Expansion of the Monument to the full 200 nautical mile boundary of the U.S. EEZ would nearly double the area of ocean that is fully protected globally, safeguarding this unique ocean ecosystem from the nearshore to the deep sea.

It is not too late to restore the ocean to its former abundance. Your leadership will ensure the protection of one of the richest ecosystems globally. We hope that the expansion of the Monument can serve as an important step toward continuing to protect the ocean for this and future generations.

Sincerely,
Ocean Elders

Her Majesty Queen Noor

Sir Richard Branson

Jackson Browne

James Cameron

Dr. Sylvia Earle

Jose Maria Figueres

Graeme Kelleher

Nainoa Thompson

Captain Don Walsh

Hawai'i non-profit organizations in support of Pacific Remote Islands Marine National Monument expansion

August 15, 2014

Dear President Obama:

As representatives of Hawai'i's non-profit community interested in the environmental, economic, and social health of our islands, we write in strong support of your intention to expand the Pacific Remote Islands Marine National Monument. We urge you to expand the Monument to the full 200-nautical-mile United States Exclusive Economic Zone (EEZ). We believe this protection will help ensure that future generations are able to continue to enjoy the benefits provided by a healthy, clean, and productive environment.

The Pacific Remote Islands area consists of five uninhabited island or atoll complexes (Wake, Jarvis, Howland and Baker Islands, Johnston Atoll, Kingman Reef and Palmyra Atoll). These refuges and the waters that surround them provide essential habitat for:

- 14 million seabirds of 19 species (e.g. Hawaiian petrel)
- 22 marine mammal species, seven of which are endangered (e.g. sperm whale)
- 5 species of threatened and endangered sea turtles (e.g. leatherback)
- Expansive shallow and deep water coral reefs—with some corals up to 5,000 years old
- Almost 250 seamounts, or undersea mountains, within the US EEZ, which are hotspots of biodiversity. Some widely ranging species, including dolphins, use these seamounts as stopovers on trips between the Hawaiian Islands and other Pacific areas.

The Pacific Remote Islands are a local treasure that support and help maintain the productivity of Hawai'i's ocean ecosystem; they also are a vital link in ensuring the health of the broader central Pacific. We understand that fish caught within the proposed Monument expansion accounts for less than 5% of the US tuna catch in the central and western Pacific. However, we believe that the benefits of protecting these uninhabited ocean jewels far transcend the value of what can be removed for short-term commercial gain.

We are all connected to the ocean, whether through our work or in our personal lives. We believe a productive, thriving marine environment is of critical importance for sustaining Hawai'i's natural environment for our current and future generations.

As non-profit organizations committed to a healthy and sustainable future for our islands, we urge you to expand the Monument to the full 200-nautical-mile US EEZ.

Sincerely,

Conservation Council for Hawai'i

Marjorie Ziegler
Executive Director
State-wide

Conservation International Hawai'i

John N. (Jack) Kittinger, PhD
Director
State-wide

Maui Cultural Lands, Inc.

Edwin Lindsey
President
Maui

National Tropical Botanical Garden

Chipper Wichman
Director and CEO
State-wide

Sustainable Coastlines Hawai'i

Kahi Pacarro
Executive Director
State-wide

American Bird Conservancy

Chris Farmer
Science Coordinator
Hawai'i Island

National Wildlife Federation

Les Welsh
Pacific Region Associate Director
State-wide/National

The Snorkel Bob Foundation

Robert Wintner
Executive Director
State-wide

KAHEA: The Hawaiian-Environmental Alliance

Bianca Isaki
Board secretary
O'ahu

Moloka'i Community Service Council

Karen M. Holt
Executive Director
Moloka'i

Pacific Whale Foundation

Lauren Campbell
Marine Conservation Program Manager
Maui

Blue Planet Foundation

Catharine Lo
Communications Director
State-wide

Project S.E.A.-Link

Liz Foote
Executive Director
Maui

Maui Huliau Foundation

Malia Cahill
Executive Director
Maui

Hawai'i Wildlife Fund

Hannah Bernard
President
Maui and Hawai'i Islands

Mauli Ola

Kala Alexander
Vice President
State-wide

Sierra Club Hawai'i Chapter

Scott Glenn
Chapter Chair
State-wide

Hawai'i Reef Fish Recovery

Rene Umberger
Director
Maui

Hawaiian Islands Land Trust

Janet Britt
Hawai'i Island Director
Hawai'i

The Surfrider Foundation-Hawai'i Chapters

Stuart Coleman
Hawai'i Manager
State-wide

The Trust for Public Land

Lea Hong
Hawai'i State Director
State-wide

Malama Pupukea-Waimea

Denise Antolini
President
O'ahu

Hawai'i's Thousand Friends

Donna Wong
Executive Director
State-wide

Windward Ahupua'a Alliance

Shannon Wood
President
State-Wide

Monk Seal Foundation

Dana Jones
Volunteer Coordinator
O'ahu

American Reef Coalition

Terry Hunt
Executive Director
State-wide

Ahahui Malama i ka Lokahi

Waimea Williams
Field Supervisor, Na Pohaku o Hauwahine
O'ahu

Hawai'i Conservation Alliance Foundation

Randy Kennedy

President

State-wide

Turtle Bay Endangered Species

Angela Huntmer

Coordinator

O'ahu

Hawai'i National Marine Sanctuary Foundation

Lynette Poncin

President

State-wide

Manta Pacific Research Foundation

Keller Laros

Founder

Pacific Whale Foundation

John Gaskins

Sales & Customer Care GM

Maui

Hawai'i businesses in support of Pacific Remote Islands Marine National Monument expansion

August 15, 2014

Dear President Obama:

As members of Hawai'i's business community who are intrinsically connected to our ocean, we write to you in strong support of expanding the Pacific Remote Islands Marine National Monument to the full 200-nautical-mile United States Exclusive Economic Zone (EEZ).

As you know, the waters around the five uninhabited island or atoll complexes (Wake, Jarvis, Howland and Baker Islands, Johnston Atoll, Kingman Reef and Palmyra Atoll) are some of the richest areas on Earth for sea life. These pristine ocean ecosystems provide essential habitat for 14 million seabirds of 19 species (e.g. Hawaiian petrel), 22 marine mammal species, seven of which are endangered (e.g. sperm whales), five species of threatened and endangered sea turtles (e.g. leatherback), and much more. The almost 250 seamounts, or undersea mountains, within the US EEZ are hotspots of biodiversity. Some widely ranging species, including dolphins, use these seamounts as stopovers on trips between the Hawai'ian Islands and other Pacific areas.

The Pacific Remote Islands are not only a local treasure; they are an essential part of the broader global oceans. We the undersigned are all connected to the ocean, whether through our businesses or in our personal lives. A healthy, thriving Pacific marine environment is of primary importance both for our customers and for ourselves.

As businesses committed to environmental responsibility and sustainability, we urge you to expand the Monument to the full 200 nautical-mile US EEZ. This act would fully protect one of the last remaining pristine ecosystems on earth.

Sincerely,

Vans Triple Crown of Surfing

Randy Rarick
Executive Director
O'ahu

Freesurf Magazine

Mike Latronic
Publisher, Owner
O'ahu

Ocean Promotion, LLC

Jodi Wilmott

Owner

O'ahu

Trilogy Excursions

Jim Coon

Owner

Lana'i, Maui

Manuheali'i Inc.

Danene Lunn

Owner

O'ahu

Ali'i Kula Lavender

Koa Chang

Owner

Maui

Island Connect Consulting LLC

Jennifer Barrett

Owner

O'ahu

Health, Humor & Hospitals, Inc

Hob Osterlund

President

Kaua'i

Silver Moon Art & Design

Geoffrey T Moore

Owner

Maui

Lauren Roth Art

Lauren Roth

Owner

O'ahu

Splash Productions

Ananda Stone

Owner

Maui

Happy Garden

Susan Hopps

Owner

Waihona Aina Corp.

Victoria S. Creed

President

O'ahu

USCE

Dean Friedman

Owner

Kamanu Composites, LLC

Luke Evslin

Member

O'ahu

Hawai'i Ocean Rafting

Mark Robinson

Owner

Maui

Variables

Justin Turkowski

Owner

O'ahu

Land And Water Planning and Consulting

Maria N Isotov

Owner and Land Planner and Licensed Realtor (S) State of Hawai'i

Maui

Nahiku art glass

Ruth Billings Canham

Owner

O'ahu

Oiwi Television Network

O'ahu

Honua Consulting

O'ahu

Oiwi Ocean Gear

O'ahu

Ki Concepts LLC

O'ahu

C & C Consulting

Maui

Asp Hawai'i

Faith Wenzl

Administrator

O'ahu

Natural Investments

Michael Kramer

Managing Partner

Hawai'i

C4 Waterman

Todd Bradley

Founder

O'ahu

Mindful Touch LLC

Mary A. Guinger

Owner

O'ahu

Carbon Drawdown Solutions

Charlotte O'Brien

CEO

Maui

Maui Nutritional Therapy

Nicole Brown

Owner

Maui

Pacific Boats & Yachts, LLC

Rick Gaffney

Owner

Hawai'i

D. Jones & Associates

Dana Jones
President
O'ahu

Makalii Group

Sarah McLane
Owner
Maui

Waimea Williams, Editorial Services

Waimea Williams
Owner
O'ahu

Snorkel Bob's

Robert Wintner
Owner
Maui, Hawai'i, Kaua'i, O'ahu

REEF

Mike Matey
Vice President, Marketing

Pasifika Artists

Karen Fischer
Owner
Maui

Jeff Mull INC

Jeff Mull
Owner
O'ahu



August 15, 2014

Dear President Obama:

On behalf of our millions of members and supporters, we thank you for your commitment to expand the current Pacific Remote Islands Marine National Monument. As the nation with the largest Exclusive Economic Zone (EEZ) in the world, it is incumbent on the United States to be a global leader in protecting our oceans. We urge you to expand the monument, and all its protections from extractive activities, to the full 200-nautical mile limit of U.S. jurisdiction. Your leadership will ensure that we conserve one of the world's last frontiers and havens for ocean wildlife and one of the richest collections of coral reef, seabird, and shorebird areas under any single nation's jurisdiction.

The five interconnected protected areas that make up the Pacific Remote Islands Marine National Monument and the waters around them are an ecological treasure unlike anything else in the U.S. They are some of the richest areas on Earth for sea life, and some of the least disturbed. They are of global and regional importance for large predatory fishes, seabirds, marine mammals and turtles. Expanding the boundary of the monument out to 200 nautical miles provides protection for an entire ecosystem, from near shore to the deep sea.

The expanded monument would protect a treasure trove of unique and irreplaceable natural resources including:

- Almost 250 seamounts, or undersea mountains—the majority of which are unexplored;
- Large numbers of new marine species yet to be discovered;

- An estimated 14 million seabirds representing 19 species that use these areas as feeding and breeding grounds, including the endangered Phoenix Petrel and the near-threatened Black-footed Albatross;
- Important habitat for protected species of sea turtles and marine mammals, like the Leatherback and Green sea turtle species, as well as the Sei Whale and Blue Whale; and
- Remarkably rich coral ecosystems, with the oldest corals up to 5,000 years old.

These areas are immensely valuable to science and to our understanding of how healthy marine environments function. In the view of government experts who have studied them, they also represent the last refuge for many fish and wildlife species that are rapidly vanishing from the planet.

There is relentless pressure for extractive activities even in the most distant places under U.S. jurisdiction. Fully protecting these remote ocean wilderness areas, with their rich biodiversity and unexplored beauty, is an opportunity to ensure that they are not lost forever. Research shows that fully protected marine reserves are essential to rebuilding species abundance and diversity, and increasing resilience to climate change. Hundreds of leading scientists agree that fully protected —or “no-take”— reserves are a powerful tool for reversing the decline of the marine environment and restoring it to health.

Again, we thank you for your passion and commitment to ocean conservation. If you expand the Pacific Remote Islands Marine National Monument out to the full extent of U.S. jurisdiction, you will leave an important legacy for future generations of Americans.

Very truly yours,

American Bird Conservancy
 Blue Frontier
 The Campbell Foundation
 Center for American Progress
 Center for Biological Diversity
 Code Blue Foundation
 Conservation International
 Conservation Law Foundation
 EarthJustice
 Earth Trust
 Environmental Defense Fund
 Greenpeace
 Humane Society International
 Humane Society of the United States
 International Fund for Animal Welfare
 League of Conservation Voters
 Marine Conservation Institute
 National Aquarium
 National Geographic Society
 National Marine Mammal Foundation
 Natural Resources Defense Council

National Wildlife Federation
 New England Aquarium
 Ocean Connectors
 Oceana
 Ocean Conservancy
 Oceans Five
 The Ocean Foundation
 PangeaSeed
 The Pew Charitable Trusts
 San Diego Coast Keepers
 Sierra Club
 The Summit Charitable
 Foundation, Inc.
 The Surfrider Foundation
 The Tiffany & Company
 Foundation
 Waitt Foundation
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 The Walton Family Foundation
 Waterkeeper Alliance
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**THE HUMANE SOCIETY
OF THE UNITED STATES**



IFAW

International Fund for Animal Welfare



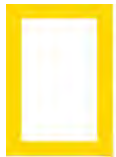
LEAGUE OF CONSERVATION VOTERS



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WALTON FAMILY
FOUNDATION





September 13, 2022

President Joe Biden
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear President Biden,

Since our founding in 2010, Mission Blue has worked to unite a global coalition of over 300 ocean conservation groups, multinational companies, scientific teams, and individuals to inspire awareness of, improve access to, and increase support for areas deemed scientifically critical to the health of our oceans. These areas represent a global network of over 145 'Hope Spots' spanning 69 countries and covering over 57 million square kilometers of ocean, including some of the Pacific Remote Islands and their surrounding waters. Our advocacy through ocean expeditions and outreach through in-person and digital media has aided in encouraging commitments to expanding protections for various Hope Spots, such as the Cocos Island National Park in Costa Rica, Coiba and Cordillera de Coiba in Panama and the Galapagos Islands in Ecuador during 2021 alone. With increasing threats of overexploitation and habitat destruction, the governments of these countries have elevated themselves as Blue Leaders in the global effort to improve ocean management within their territorial waters and work towards meeting goals to protect 30% of the world's oceans by 2030. As 2030 fast approaches, the US can join others and further cement its role as a Blue Leader through the expansion of the Pacific Remote Islands Marine National Monument (PRI) in 2022.

PRI's remote location and spectacular marine seascape is brimming with color and life and is a testament to what our ocean and reefs should look like. Its vast protected waters stand as a place of refuge for ecological recovery and restoration, and serve as a natural laboratory for the study of intact, healthy marine habitats. Areas like these are becoming rarer and provide hope for the revitalization of crashing populations across the marine food web, as a cavalcade of ships pushes further and deeper into our oceans to drain it of its resources faster than they can naturally replenish. However, many of the threatened and interconnected marine mammals, sharks, seabirds, and fish that flourish within PRI are highly migratory species that venture far beyond its standing borders. Unprotected waters within the EEZ surrounding Howland and Baker Islands, Kingman Reef, and Palmyra Atoll are alive with these thriving animals as they feed, reproduce, and travel across the waves and seamounts dotting the region. We must act now to protect these vast expanses of ocean and permit them to continue to flourish while human impacts within this region are still minimal.

We stand in support of the Pacific Island peoples spearheading this effort in their attempt to better celebrate and care for PRI with a new name and management structure. As people who have intimate knowledge of the region's natural and cultural richness, we encourage you to engage with them and create a name that better reflects the monument's identity, individuality,



and cultural significance. Additionally, we urge you to create a co-management structure that ensures Indigenous communities are properly represented at the highest levels decision-making for stewardship of these lands and waters.

By expanding PRI to the full extent of the US EEZ, you send a message to the world that the United States stands among other Blue Leaders in protecting critical ocean habitat. Further, as we continue to witness the degradation of marine ecosystems around the world, your actions in expanding, renaming, and creating a new co-management structure for PRI will act as a beacon of hope in preserving one of the largest expanses of spectacular, healthy ocean in the world. It is our duty to protect the beating blue heart of this Earth and meet our goals of expanding protections to 30% of its waters by 2030. We stand together in this effort and cannot succeed without your support.

Thank you,

A handwritten signature in black ink that reads "Sylvia A. Earle". The signature is fluid and cursive, with the first letters of each name being capitalized and prominent.

Sylvia A. Earle
President/Founder Mission Blue

Protect the Pacific Remote Islands

[LINK](#)



1,705 have signed. Let's get to 2,500!

At 2,500 signatures, this petition is more likely to get picked up by local news!

Kolomona Kaho'ohalahala signed this petition

Émilienne TABAL signed this petition

Claudia Labrousse signed this petition

[Kolomona Kaho'ohalahala](#) started this petition

In the central Pacific Ocean lies one of the last wild and healthy marine ecosystems on this planet with reef sharks, giant clams, hundreds of species of coral, and deep-sea life found nowhere else on Earth.

My name is Kolomona Kaho'ohalahala, a seventh generation native Hawaiian descendent from the small island of Lāna'i. **I am writing to you on behalf of our Pacific Remote Islands (PRI) Coalition** which includes elders, fishers, educators, cultural practitioners, non-profits, community groups, scientists, and many others across the Pacific and beyond.

We understand how important it is to preserve the health of land and seas for the generations that will follow us. We know that we need to protect places abundant with life so that they may continue to be a refugia in the face of climate change and other threats. It's a unique blessing that such places still exist today. Our hope is that our collective effort to ask President Biden to expand the protections for the Pacific Remote Islands will support the health of these islands and atolls in perpetuity.

Deep-sea mining interests have identified PRI's waters as a high value, and therefore high interest area. Deep-sea mining involves heavy-duty machinery

that completely removes the top layer of sediment, resulting in total mortality of deep-sea benthic organisms and the creation of toxic wastewater tailings with widespread impacts. Protecting this area now will ensure that this scenario will not occur.

As stopping points for resources, temporary shelter, and cultural practice, the islands of PRI have a deep legacy of voyaging and the potential to perpetuate its practice into the future. Teaching and practicing traditional voyaging require seascapes like those of PRI – low-lying islands within intact oceanic ecosystems. **Protecting PRI not only honors and preserves the history of its lands, waters, and the people who crossed them, but allows for continued exploration, discovery, and perpetuation of culture.**

As Pacific Island peoples, the ocean has always held a special place for us as the source from where life begins. We have a profound duty and privilege to mālama — care for — these precious places that give life. We ask for your support in this effort.

Please join me in signing the petition to urge President Biden to support the health of our ocean and Pacific communities, by expanding protections for the Pacific Remote Islands Marine National Monument for Palmyra Atoll, Kingman Reef, and Howland and Baker Island to the full extent of the U.S. Exclusive Economic Zone. We also ask that President Biden support a process to rename the area to reflect its cultural and historic significance, and to engage Indigenous communities in a new form of co-management that spans the Pacific region, bringing culture, communities, and people together around a shared history and future.

Go to www.ProtectPRI.com to learn more.

★ Top petition

Urge the U.S. government to protect the Pacific Remote Islands

↗ 9,610 signed. Let's get to 30K.



with Pacific Remote Islands Coalition (PRI Coalition)

Expand marine protections and honor Native Hawaiian and Pacific Islander culture.

The Pacific Remote Islands (PRI) contain some of the last wild and healthy ecosystems in the world's ocean. PRI is home to resilient coral reefs, threatened and endangered wildlife, endemic species found nowhere else on Earth, and the waterways of ancient and modern Indigenous voyagers.

PRI is a complex and interconnected ecosystem that highlights the interdependence of pelagic, nearshore, and terrestrial species, including sharks, rays, whales, turtles, sea birds, and fish. In order to ensure the continued health of the land and nearshore areas that are already a part of PRI, we must expand the protection to the deeper waters on which they depend.

Only One is joining forces with the community-driven Pacific Remote Islands Coalition (PRI Coalition) to call on US President Joseph Biden to expand and protect some of the last wild and healthy ecosystems in the world's ocean. The expansion would also bring the US to successfully secure 30% of their ocean before 2030.



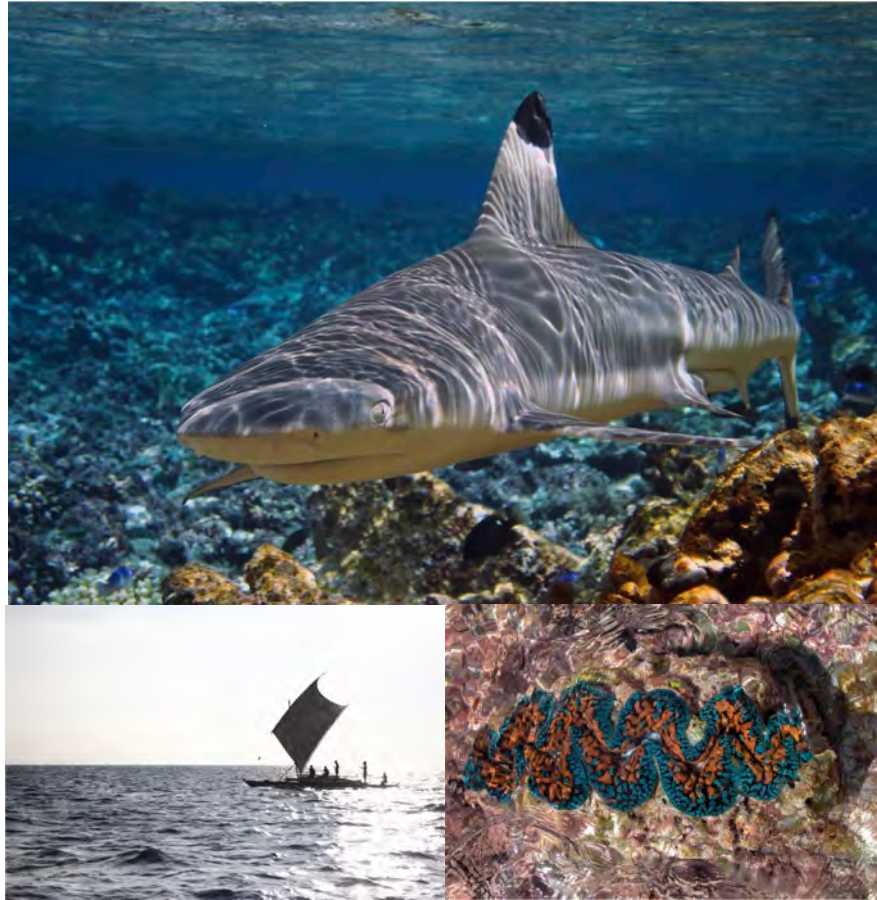
Lauren M. Beauregard
Andrew S. Wright
Andrew S. Wright

Secure PRI's healthy ecosystem and defend the area from industrial fishing and deep sea mining.

Expanding PRI would honor the memory and sacrifice of the members of Hui Panala'au, 130 mostly Native Hawaiian young men who were sent to Howland, Baker and Jarvis from 1935-1942 and enabled the U.S. to claim jurisdiction of this area.

Currently, Papahānaumokuākea serves as the only intact cultural voyaging seascape within the Hawaiian Islands. Expanding protection could likewise preserve PRI as a premier classroom for ancestral voyaging, preserving and promoting the culture and history of Pacific seafaring peoples.

Honor and secure the cultural and biological legacies of the Pacific Ocean by telling President Biden to expand the PRI.



Kydd Pollock
Sheila Sarhangi
US Fish and Wildlife Service

Together we can protect our precious ocean and secure the way of life for Pacific Islander cultures.

The Pacific Remote Islands Marine National Monument was originally established in 2009 by President George W. Bush, and was expanded in 2014 by President Barack Obama under the Antiquities Act. The PRI coalition is requesting that President Joseph Biden expand the monument boundaries around Howland and Baker Islands, Palmyra Atoll, and Kingman Reef to 200 nautical miles, from the current 50 nautical miles of protection, making PRIMNM the largest highly protected marine protected area in the world.

Add your name and urge President Biden to expand the Pacific Remote Islands Marine National Monument.



PACIFIC REMOTE ISLANDS COALITION

Pacific Remote Islands Coalition

Sign the petition to protect the Pacific Remote Islands Marine National Monument. Mr. President, We the undersigned, respectfully urge you to protect the Pacific Remote Islands Marine National Monument by expanding the boundaries for Palmyra Atoll, Kingman Reef, and Howland and Baker Island to the full extent of the U.S. Exclusive Economic Zone, to rename the area to reflect its cultural and historic significance, and to engage Indigenous communities in a new form of co-management that spans the Pacific region, bringing culture, communities, and people together around a shared history and future.

Privacy Notice We are collecting digital signatures as a broad indicator of public support for protecting the Pacific Remote Islands Marine National Monument and may reference individual names or locations in communications to demonstrate the support for this effort. For any questions please contact protectpri@gmail.com.

First Name*

Your answer

Last Name*

Your answer

Email*

Your answer

City

Your answer

Island (If Applicable)

Your answer

State/Territory

Your answer

Country

United States

Other:

Signatures

Name		State/Territory	Country	Island (If Applicable)
Kauanoë	Batangan	Hawaii	United States	Maui
Sarah	Salisbury	Hawaii	United States	Maui
Evan	Trotzuk	Hawaii	United States	Maui
Sarah	Winter Whelan	MA	United States	
Margaret	Webb	CA	United States	
Michele	Novoa	CA	United States	
Sarah	Hameed	CA	United States	
Keith	Shattenkirk	CA	United States	
Michelle	Scobie	Trinidad & Tobago	St. Augustine	
Donna	Musgrove	Washington	United States	
Pauline	Gebauer	HI	United States	Oahu
Erin	Eastwood	CA	United States	
Mariko	Powers	CA	United States	
Jessica	Maccarthy	Virginia	United States	
Missy	Stehley	Pa	United States	
Lisa	Harper Henderson		United States	
Kristin	Thomas	TX	United States	
Elizabeth	Flint	Hawaii	United States	O'ahu
Kier	Delaney	Colorado	United States	
Norm	Sajovie	Oregon	United States	
Stephanie	Borrelle		Pacific	Fiji
Kathy	Van Dame	UT	United States	
Margarita	Shishkina	город Москва	Russia	
Jeni	Higginbotham	Hawaii	United States	Kauai
Jake	Setnicka	CA	United States	
Saffron	Bryant	VIC	Australia	
Jack	Bennett	HI	United States	Oahu
Alison	Peel		Australia	
Thea	Gessler	Iowa	United States	
Noenoe	Barney- Campbell	Hawaii	United States	Oahu
Cindy	Stewart	California	United States	
Kaylee	Prince	Western Australia	Australia	
Darin	Robertson	HI	United States	Oahu
Kyle	Robertson	IA	United States	
Paul	Johnston	SD	United States	
Ian	Robertson	IA	United States	
Aarron	Robertson		United States	
Lorinda	Myers	MN	United States	

Matthew	Muzacz	HI	United States	Oahu
Brian	Kennedy	NC	United States	
Heather	Spalding	SC	United States	
Meghan	Wolf	Nevada	United States	
Adi	Khen	CA	United States	
Dawnne	Nance	Louisiana	United States	
Jackie	Algas-Sasaki	HAWAII	United States	Oahu
Jay	Jacobs	CA	United States	
James	Anderson	Colorado	United States	
Marla	Dilts	Texas	United States	All
Jamie	Hoskins	FL	United States	NA
S	Praetorius		United States	
Betsy	Carter	NC	United States	
Gillian	Mccloskey	Queensland	Australia	
Hilde	Hoogwaerts		The Netherlands	
Judith	Wadson			Bermuda
Lori	Barrett	California	United States	
Pam	Simonsson		Sweden	
Kaila	Narciso	California	United States	
Sean	Russell	Florida	United States	
Steve	Smith	Dorset	UK	Isle of Purbeck
Andy	Parsons	United Kingdom		British Isles
Dave	Helliar	Somerset	United Kingdom	
Henry	Cook	Suffolk	United Kingdom	
Kristin	D'Agostino	ohio	United States	
Colleen	Ronan	NJ	United States	
Michelle	Smith	Hawaii	United States	Oahu
Steve	Meyers	VA	United States	
Barb	Block	California	United States	
Susan	Thompson	South Carolina	United States	
Mary	Line	Ga	United States	
Marisa	Thompson	NM	United States	
Clinton	Ferrara	Hawaii	United States	Hawaii
Mary June	Page	Hawaii	United States	Hawaii
Cynthia	Vanderlip	Hawaii	United States	Hawaii island
David	Reynolds	FL	United States	
Andrianna	Dowell	Pennsylvania	United States	
Tom	Van't Hof		Dutch Caribbean	Saba
Herb	Wilson	ME	United States	
Julie	Wettstein	Hawaii	United States	Hawaii
Gwen	Woltz	CA	United States	
Linda	Laporte	Hawaii	United States	Hawaii

Jodie	Tonita	hawai'i	United States	O'ahu
Ann	Lentz	Hawaii	United States	Maui
Ronald	Fujiyoshi	Hawaii	United States	Hawaii
Barbara	Passmore		United Kingdom	Uk
Brian	Shmaefsky	TX	United States	
Nathaniel	Jue	CA	United States	
Elizabeth	Baach	IN	United States	
Chelsey	Hunts	California	United States	
Marshall	Mccall	Idaho	United States	
Stephen	Ferguson	WI	United States	
Michelle	Cawthorn	GA	United States	
Dana	Jones	Hawaii	United States	Oahu
Santiago	Salinas	Michigan	United States	
Aaron	Rice	NY	United States	
Vijayan	Sundararaj	MI	United States	
Lisa	Whitten	HI	United States	Maui
Luis	Garcia Falcon	FL	United States	
Irith	Aloni		Israel	
Ann	Wassick	Florida	United States	
Denise	Perez	Puerto Rico	United States	Puerto Rico
Nikola	Rodriguez	Hawaii	United States	Hawaii Island
Jamie	Caldwell	NJ	United States	
Matthew	Pintar		United States	
Julie	Shapiro		Israel	
Bryce	Izlar		United States	
Brian	Battaile	California	United States	
Roberta	D'Camp	Iowa	United States	
Esaac	Mazengia	Conneticut	United States	
Berit	Batterton	Texas	United States	
Andrea	Wagner	Hawaii	United States	Oahu
Madison	Willert		United States	
Joy	Franks	HI	United States	Kauai
Mike	Baach	Indiana	United States	
Timothy	Andrews	CO	United States	
Emily	Moran	CA	United States	
Christie	Numazawa	Hawaii	United States	Kauai
James	Meenan	PA	United States	
Keith	Shattenkirk	CA	United States	
Meghan	Wolf	NV	United States	
Dennis	Conetta	Rhode Island	United States	
Grégoire	Perez		France	
John	Burns	HI	United States	Hawaii

Michael	Gravitz	Maryland	United States	
Lisa	Mason	HI	United States	Hawaii
Carla	Sharp	Hawaii	United States	Oahu
Ltjg Harrison	Tassopoulos, Usn	Hawai'i	United States	O'ahu
Jenna	Valente	Maine	United States	
Mallory	Bacon	California	United States	
Briana	Sebastian	Pennsylvania		
Crislyn	Mckerron	CA	United States	
Myriam	Pailler	Loir et cher	France	
James	Bush	WI	United States	
Sarah	Martin	Hawai'i	United States	Kaua'i
Myriam	Pailler	Loir et Cher	France	
Stephane	Chanthapanya	Ile de France	France	
Lendi	Slover	Ca	United States	
Ilona	De Brum	AZ	United States	
Jensen	Fiskin	California	United States	
Grace	Reville		United States	
Virginia	Grieve	Oregon	United States	
Emerson	Ashby	California	United States	
Larry	Welch	CA	United States	
Katherine	Magoulick	California	United States	
David	Anderson	North Carolina	United States	
Ayana	Melvan	RI	United States	
Lori	Buchanan	Hawaii	United States	Molokai
Katherine	Cook	Washington	United States	Oahu

President Joseph R. Biden
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

December 19, 2022

Dear President Biden,

We, the undersigned marine scientists and Indigenous cultural practitioners from across the US and Pacific, write to express our strong support for the expansion of the Pacific Remote Islands Marine National Monument. Our research, Indigenous ecological knowledge, and broader engagement have afforded us the opportunity to monitor our changing ocean from the coasts to the deepest depths and to document the causes and effects on humankind. The continuing impacts of biodiversity loss, climate change, overexploitation, pollution and other stressors place us at the front lines of witnessing what may be irreparable, long-term damage to the very ecosystems we study and on which all of humanity depends. These problems also negatively affect those of us with generational, Indigenous knowledge and heritage within this region, as these losses and changes also threaten our cultural identity. As such, we firmly support expanding protections for the Pacific Remote Islands (PRI) as an important and timely action in response to the damage we are currently witnessing, that which is projected to accelerate in the future, and to expand protections for the areas of healthy ocean that still exist.

The diversity and abundance of life that the PRI supports is clearly worth protecting. Hundreds of species, including threatened or endangered sharks, manta rays, other fishes, marine invertebrates, turtles, seabirds, and marine mammals, reside in and transit through the PRI and the surrounding region. These species contribute to an efficient biological machine, working in tandem to feed and redistribute nutrients throughout ocean ecosystems, fostering textbook examples of healthy pelagic, reef, and deep-sea communities. Foraging seabirds, for example, rely on pelagic tunas, sharks, and other fish to drive prey to the surface for feeding, in return depositing nutrient-rich guano once ashore. This fertilization contributes to adjacent reefs growing up to four times faster than those lacking seabird nutrient input, providing additional habitat for larval and juvenile pelagic fish species that will go on to continue this self-replenishing cycle. The lack of protections afforded to offshore and deep-sea areas weakens the overall health of their nearby interconnected, protected nearshore environments by uncoupling this biological web. Further, many of these animals have natural habitat ranges that extend beyond the current protected PRI boundaries and face high amounts of negative pressures, species including yellowfin tunas, grey reef sharks, manta rays, red-footed boobies, frigatebirds, sooty terns, melon-headed whales, and countless deep-sea organisms. Expansion of the PRI affords vital protections for these animals as they hunt, reproduce, and migrate through this region.

The area proposed for expansion also contains 98 currently unprotected seamounts, which are unique habitats that serve as biological hotspots for diversity and endemism, and can act as undersea stepping stones for various pelagic species transiting these waters. Exploration of these and other seamounts within the region have resulted in discovery of some of the oldest living

organisms on Earth, new genera and species, and compounds that have the potential to accelerate the development of novel and more effective treatments for human diseases. Without expanded protection, these habitats are at risk for additional exploitative practices that may wipe-out ancient animals, new species, and our next breakthroughs in medical science before we have the chance to even realize they exist.

Indigenous Pacific peoples were the original explorers and scientists of this ocean. Transiting the waters of the Pacific with their sailing canoes, Indigenous ancestors observed and recorded biotic and abiotic patterns in chants and protocols, passing them down through generational succession. This living oral guide informed Pacific peoples of principles by which to live responsibly with nature, including mating and reproductive cycles of food species, predator and prey interactions to instruct catch limits, and even wind, current, and species associations with direction and land in order to travel large expanses of open ocean. Setting aside areas of the ocean for the preservation and recovery of species is a native practice of the Pacific and foundational to the existence of ocean people. Expansion of the current monument not only affords additional protections for the continuation of cultural practices and duties, but also applies traditional regulatory lessons used by Indigenous peoples throughout the Pacific to meet global conservation ambitions and foster responsible management and recovery of various species.

Finally, and equally important, the impacts of climate change are occurring now around the world and will continue to accelerate. Biodiversity loss, habitat degradation, and overexploitation threaten the overall health of our global ocean ecosystems, and reduce their ability to withstand climatic changes and other impacts caused by humanity. Research shows us that relatively healthy and undisturbed ecosystems, such as those in and around the PRI, are better able to resist and rebound from disturbances in their systems. The PRI's unique position far from current human impacts makes it an ideal candidate for expanded protection. The region can serve as a safe haven for marine life and provide a biological baseline for a diversity of central Pacific marine habitats in the face of continued global biodiversity loss and the growing climate crisis. Expanded protection would not only inform refuge managers, scientists, and other stakeholders of the capacity for climate resilience and adaptation in these 'intact' and healthy waters, but also the rates at which unprotected areas of the central Pacific are degrading and what management actions may need to be taken.

Through the expansion of the PRI to the full extent of the U.S. EEZ, the Biden Administration has the opportunity to build upon the successes of its predecessors and protect this invaluable diverse and healthy marine ecosystem as a whole. Though the impacts of climate change will continue to provide challenges for all marine ecosystems, expansion of PRI will limit compounding factors that could otherwise overwhelm the ability of this region and its peoples to remain resilient to such effects.

Through your leadership, we can act now to preserve these distant and healthy waters before they are depleted and degraded, establishing an expanded monument as a biological and cultural oasis and legacy for generations to come. We stand ready to support these efforts.

Sincerely,

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Pacific Practitioner support for expanding Pacific Remote Islands Marine National Monument

August 15, 2014

Dear President Obama:

We, the undersigned peoples of the Pacific, strongly support the proposal to expand the Pacific Remote Islands Marine National Monument, known to us as Moananui among many ancestral names. Greater protections of our beloved ocean are long overdue; we welcome these acts that protect our sea from misuse and abuse while honoring and protecting the subsistence and cultural traditions that have been a part of our livelihoods and seafaring traditions since the beginning of time.

While there are many conservation-based reasons for protecting this resource, we are confident others have fully articulated them and so we offer to you these ancestral and cultural justifications based on the indigenous sciences of the Pacific in addition to the justifications based on the sciences of the west.

These atolls, the great oceans that surround them and the many creatures that inhabit them are part of our greater ocean family in the Pacific. For too long, these resources have been over-exploited. We support the expansion of the Monument to the full 200-nautical-mile United States Exclusive Economic Zone (EEZ) in order to preserve the ecological and cultural integrity of one of the last remaining pristine ecosystems on earth. We believe that this region of the ocean has substantial conservation and cultural value and unique heritage qualities that require strong protection.

These areas are part of the ancestral pathways that bind the Pacific and its many peoples to each other. It is a longstanding heritage and one regenerating and reemerging into a beautiful, powerful Pacific region. And as a Pacific family, it is our ancestral honor to protect the endangered, threatened and over-exploited species currently insufficiently protected by the current boundaries. We call on you to protect the migratory birds and other species that call this area home.

We also strongly support an end to over-fishing and destructive fishing practices that harm the delicate balance of healthy ocean ecosystems. We urge any activities that would allow pelagic fish stocks to replenish and regain balance in our seas. We are also strongly opposed to any mining activities on or near the approximately 250 seamounts, or undersea mountains, which are hotspots of biodiversity, and likely home to thousands of ancient or undiscovered species.

We urge practices consistent with ancestral knowledges, practices and sciences of the Pacific that ensure ecological connectivity from the tropical rainforests and coral reefs surrounding these islands and atolls to the rich pelagic environments and seamounts that extend out to the full US EEZ. These linkages are critical to sustaining the biodiversity and ecological function of this unique region.

We understand the importance of preserving our ocean heritage for the benefit of future generations across the Pacific, and beyond. Expansion of the Monument provides the opportunity to double the area of ocean that is fully protected globally from 1% to 2% and as the blessed ancestors of the Pacific, we are honored to make this gift to the world.

As Epeli Hau'ofa once wrote: "... the sea is as real as you and I, ... it shapes the character of this planet, ... it is a major source of our sustenance, ...it is something we all share in common wherever we are in Oceania.... the sea is our pathway to each other and to everyone else, the sea is our endless saga, the sea is our most powerful metaphor, the ocean is in us."

We urge you to act now.

Respectfully submitted,

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Kihei de Silva, Hawai'i

Honorable Gilbert Kahele, Hawai'i

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Gregorio A. Deleon Guerrero, Commonwealth of the Northern Mariana Islands

Kent Fonoimoana, (Samoa / Hawaii)
Aroha Te Pareake Mead, Aotearoa
Jenny Mauger, Aotearoa
Dale-Maree Morgan, Aotearoa
Hera Johns, Aotearoa
Hera Johns, Aotearoa
Jef Murupaenga Ikenn, Aotearoa
Hoturoa Kerr, Aotearoa
Terissa Busby, Aotearoa (NZ)
Duncan Morrisoin, Aotearoa-New Zealand
Portia Hackett, australia
John Dunn, Australia
Natasha Hardy, Australia
Stephen Hull, Australia
troy coyle, Australian
Nishtha Arora, Chennai
Cristino Cabrera, CNMI
LUZ BELTRAN, COLOMBIA
Norberto Osbelio Giraldo Ossa, Colombia
numa mackenzie, Cook islands
Kelvin Passfield, Cook Islands
Carol Loria, Costa Rica
manuela wolter, costa-rica
Kawika Perreira, Ewa Beach, Hawaii
Beverly Sadole, Fiji

Beverly Sadole, Fiji

Colin Philp, Fiji

Talaite Petrowski, Fiji

makelesi danford, fiji

Albert Manuel, Fiji

Mele Fong, Fiji

Betty Tora, Fiji Islands

Alexandre de Brousse, French polynesia

Laura Gonzalez, Guatemala

Miriam Polak, Haida Gwaii

Chiew min Wong, Malaysia

Joseph Ngamelubun, Maluku Indonesia

Deo Keju, Marshall Islands

Tony Debrum, Marshall Islands

Tonie Kattil-de Brum, Marshall Islands

Marie Maddison, Marshall Islands

Benetick Maddison, Marshall Islands

sally ann de brum, marshall islands

Dolores deBrum Kattil, Marshall Islands

Ernesto Hevia del Puerto, Mexico

Juan Carlos Reyes Valerio, México

Gorman booth, Micronesia

Kaimi Kaupiko, Milolii

Marianne George, Mohawk Nation NE USA

Tutavae AMIOT, Moorea

Toapere AMIOT, Moorea

Tehea Tramier, Moorea

Claude CARLSON, Moorea

Ruci Mafi Botej, Nakawaga, Mua-na-ira

Judy Dronzek, Native America - New York

Andrea Anixt, Native American

Dean Aldridge, New Zealand

Merrin Pearse, New Zealand

Brice Martin, New-calédonien

Sam Jackson, Ngāti Whātua, Aotearoa

Damien Snell, Norfolk Is.

Greg Magri, Norfolk Island

Mohiyuddin Gilani, Nusantara archipelago (Malaysia and Indonesia)

Christine Welch, NZ

Elmer Kaai, Olowalu

Catherine Datuin, Philippines

Ferdinand Rondilla, Philippines

Gelena Asis-Dimpas, Philippines

Juan Torres, Philippines

Justine Losinio, Philippines

Richelle Ann Agpoon, Philippines

Jamie Umanzor, Philippines & El Salvador

Ana Tiraa, Rangiatea

de zordo charles, Reunion Island

Tafale Matafeo, Samoa

Fatu Tauafiafi, Samoa

Pene Lafale, Samoa / Aotearoa

Leafa Wilson, Samoa/ Aotearoa

Sailiemanu Lilomaiava-Doktor, Samoa/Hawaii

Jurgen Ulonska, Sverige

Diana Teriierooiterai, TAHITI

Rereao AMIOT, Tahiti

Gerard AMIOT, Tahiti

Eliane Garganta, Tahiti

Dora Fourcade, Tahiti

Beetero Bureete, Tarawa

Taholo Kami, Tonga

Latai Taumoepeau, Tonga

Tēvita Ō. Ka'ili, Tonga / Hawai'i

Jennifer Ha, Tumon

Honorable Ralph Regenvanu, Vanuatu

Dorah (Dee) Wilson, Vanuatu

Michelle Barany, Venezuela

Ana Motamayor, Venezuela

Hien Tranthingoc, Vietnam

Kevin Robinson

Jillian Morris

Ron Bartosh

Dan Short

Mary Adams

Ron Silver

Lorraine Barrie

Jason Hall

Roy Adsit

Roz Light

James Peterson

Martha Noyes

Nancy Cullen

Georgia Bell

Richard Miranda

Judy Edwards

Laurel Rohrer

Reuben Stapells

Nicole Herras

Fernando Campos Merino

Dionne Miller

Jaina Ko

Matthew Ko

Jeffrey Ko

Camille Ko

Wayne Black

Douglas Miller

Tannis Tataryn

Daniel Talbot

Sarah Fisk

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Marion Antoine

Andrew Otwell

Ralph Young

Fernando Ramos

Andrew Hardin

Sharon Sage

Deborah Aguirre

Regina Winn

Caroline Oliver

Fernando M. Garces

Carla Kaili

Christine Humphreys

Joseph Dronzek

Joe Orrego

Vanessa Viele

Jaap Barendrecht

Brett Fielding

Michelle Ramirez

Josh Handt

Lily Mejia

Chris Zaborowicz

Dawn Mason

Amber Stonik

Melissa Campana

Yvonne Padilla

Maria Procalla

Marcos Carrillo

Karlos Simon

Dragos Danila

Jonathan Hahn

Pere Rubio

Karen Kalmenson

Dear President Obama,

As you saw from the letter recently signed by nearly 500 scientists, the scientific community strongly supports establishing no-take marine reserves in waters of the United States.

As marine, natural and social scientists, we would like to express our strong support for your proposal to expand the boundaries of Pacific Remote Islands Marine National Monument to the edges of the US Exclusive Economic Zone (EEZ), as is your right under the Antiquities Act of 1906.

The existing protected areas extending 50 miles around the islands were not established using any scientific guidelines. The latest science strongly supports protecting large areas that provide for all major needs of marine species (e.g., protecting both the nesting and feeding areas for seabirds). Highly migratory species such as endangered Pacific leatherback sea turtles traverse this region along with rare species such as beaked whales and melon-headed whales. The near-pristine islands and atolls, seamounts and surrounding waters are among the world's healthiest and most intact ocean ecosystems, and provide stepping stones for species moving across the central Pacific. They are an irreplaceable area of significant scientific interest as a baseline for how intact tropical ecosystems function.

We heartily support your executive action to give permanent, strong protection for biodiversity in the waters surrounding these islands by excluding all commercial fishing and mineral extraction, and any other activities that would degrade the largely intact marine ecosystems in them. Given this history-making opportunity, we strongly recommend extending existing protections throughout the expanded Monument to 200 nautical miles.

We applaud you Mr. President for understanding the importance of expanding the boundaries of Pacific Remote Islands Marine National Monument to the edges of the US EEZ and giving strong protection to these marine ecosystems. By doing so you demonstrate global leadership and send a strong message to countries around the world that are deciding whether to protect their own marine environments.

We will be pleased to celebrate the historic day when you designate the largest strongly protected place on Earth.

Sincerely,

Enric Sala, PhD National Geographic Society

Sylvia Earle, PhD Mission Blue and National Geographic Society

Alan Friedlander, PhD University of Hawaii

Elliott Norse, PhD Marine Conservation Institute

Lance Morgan, PhD Marine Conservation Institute

Kirsten Grorud-Colvert, PhD Oregon State University

Will McClintock, PhD University of California Santa Barbara

John Guinotte, PhD Marine Conservation Institute

Sara Maxwell, PhD Stanford University

William Cheung, PhD The University of British Columbia

Callum Roberts, PhD University of York

Peter Auster, PhD University of Connecticut/ Sea Research Foundation

Jerry R. Schubel, PhD Aquarium of the Pacific

Beth Pike, MEM Marine Conservation Institute

Katelin Shugart-Schmidt, MS Marine Conservation Institute

Eduardo E. Inigo-Elias, PhD Cornell University

Samantha Oester, PhD Student Society for Conservation Biology/ International Union for Conservation of Nature/George Mason University

Gail Osherenko, JD Marine Science Institute/ University of California, Santa Barbara

Jason Hall-Spencer, PhD Professor of Marine ne Biology

Erdal Ozhan, PhD Mugla University, Turkey/ President of Mediterranean Coastal Foundation

Lisa Suatoni, PhD Natural Resource Defense Council

Nichole Price, PhD Bigelow Laboratory for Ocean Sciences

Jennifer Caselle, PhD University of California Santa Barbara

Thomas Shirley, PhD University of Alaska Fairbanks/ Texas A&M University

Peter Abrams, PhD University of Toronto

Andrea Saenz-Arroyo, PhD Colegio de la Frontera Sur

Cynthia Barbosa da Silveira, MS San Diego State University

Anna Zivian, PhD Ocean Conservancy

Ayana Elizabeth Johnson, PhD Waitt Institute

Anca Segall, PhD San Diego State University

Cotton Rockwood, MS Scripps Institution of Oceanography

Diva Amon, PhD University of Hawaii

Stuart Sandin, PhD Scripps Institution of Oceanography

David K. Mellinger, PhD Oregon State University

Jenna Stolfi, BA The Beach Review

Lynne Hinkey, PhD University of Maryland

Bob Steneck, PhD University of Maine

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Mark Tetrick, MAS University of Washington

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Matthew Forrest, PhD Scripps Institute of Oceanography

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Jennifer Smith, PhD Scripps Institution of Oceanography

Laurence Romeo, MA Scripps Institute of Oceanography

Phil Bouchet, MRes University of Western Australia

Melissa Roth, PhD University of California Berkeley

Yan Wei Lim, BS San Diego State University

Merry Youle, PhD Rainbow Rock

Patricia McKenna MSW

Vienna Saccomanno, BS Marine Conservation Institute

Jacqueline Padilla Gamino, PhD California State University Dominguez Hills

Jeffrey O'Hara, PhD Union of Concerned Scientists

Allison Randolph, BS Birch Aquarium at Scripps Institution of Oceanography

Shelley Dahlgren, PhD

Kevin Warren, BA

8-12-14

Dear President Obama:

As a collective of scientists that have been conducting research throughout the Pacific Remote Islands Marine National Monument (PRIMNM) for over a decade we are writing to strongly commend and add our support to your proposal to expand the Monument to the 200-mile extent of U.S. sovereignty. This is a visionary action that will make the United States a leader in marine conservation and will establish a lasting legacy of protection for some of our country's most important ocean biodiversity.

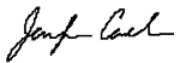
The undersigned scientists represent six major research institutions and are all members of the Palmyra Atoll Research Consortium (PARC; <http://www.palmyraresearch.org/research>), a group focused on understanding more about the biodiversity and ecology contained within Palmyra Atoll and other core sites in the PRIMNM. **[A list of the Pacific Remote Islands research can be found attached as Exhibit 1.]** Since 2001, when The Nature Conservancy purchased Palmyra Atoll and the U.S. Fish and Wildlife Service established the National Wildlife Refuge, we have dedicated our time and resources to increasing our understanding of this 'jewel' in the ocean – one of the last remaining intact marine ecosystems in the entire Pacific. Based on the results of years of research and observation we fervently believe the entire Exclusive Economic Zones of the atolls in the Monument should be preserved for the benefit of science and future generations. The proposed expansion would do an immense amount to preserve the ecological integrity of the valuable marine biodiversity in this area. We submit for your consideration three major benefits of that would be conferred by an expansion of PRIMNM:

1. Many of the most valuable and unique marine species in PRIMNM move beyond the current 50-mile border of the Monument and as such remain in peril. This includes PRIMNM's flagship species: sharks, sea turtles, seabirds, marine mammals, and manta rays. Many of these species are either endangered, threatened, or are commercially over-exploited. Members of our consortium have tracked species in each of these groups and conclusively determined that they move more than 50 miles from some of the atolls of PRIMNM and that this proposed expansion would substantially improve their protection.
2. The pristineness of the ecosystems in PRIMNM arguably make it America's most valuable natural marine laboratory. This is one of the last sites in the world where researchers can learn how marine ecosystems functioned prior to human disturbance. The study of uniquely intact systems like this is absolutely essential to determining how to more effectively manage and recover more impacted marine ecosystems in the US.
3. This proposed expansion would ensure vital sources of ecological connectivity that tie the habitats and species of PRIMNM together. These connections have been well studied by our group and are known to extend beyond the current 50-mile limit of protection. This includes connections between blue water pelagic ecosystems and coral reefs, between seabirds and tropical forests, and between PRIMNMs deep ocean/seamounts and coral reefs.

We understand and applaud your desire to hear from local communities that might be impacted by a monument designation or expansion. We consider our consortium scientists and NGO partners as the only non-governmental, “local” residents of the Monument. As residents in PRIMNM our consortium of scientists and NGO partners are major local stakeholders in this decision and we appreciate the consideration given to our position.

PRIMNM is a truly unique and special place, of global significance for conservation. It contains some of the last pristine tropical ecosystems that remain intact and undisturbed by humans. Our years of research in this area suggest that the significance of increased protection for the marine biodiversity in this area cannot be underestimated. There are only a handful of other places in the world, such as Chagos Island in the Indian Ocean, where this type of protection currently occurs. Just as the establishment of Yellowstone National Park was an ambitious action in its time that created a legacy of protection for wide-ranging terrestrial species like bison, grizzly bear, and elk – so will the establishment of PRIMNM serve as a lasting monument for protecting America’s sharks, marine mammals, sea turtles, manta rays, tuna – and many more.

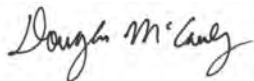
Thank you for providing us with the opportunity to comment on this historic proposal to create the largest marine protected area in the world. As scientists who are directly and significantly impacted by the proposal – for the better – we strongly support expanding the protections to the fullest extent. We believe it is in the best interest of science and future generations of the American public to preserve this unique and pristine ecosystem forever.



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Stanford University
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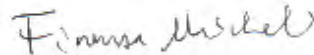
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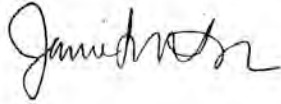
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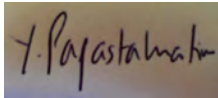
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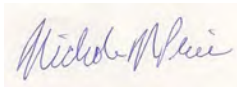
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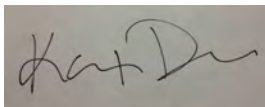
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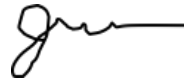
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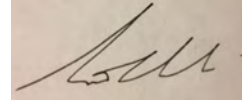
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Editorial: More protection for remote isles

Gov. David Ige has joined a growing call to extend boundaries around atolls and reefs about 900 miles south of Hawaii, adding another 425,639 square miles of protection to the Pacific Remote Islands Marine National Monument.

President Joe Biden should answer this call to expand environmental protections in the central Pacific. An expanded preserve would become the nation's largest, encompassing 755,000 total square miles, and would be a praise-worthy aspect of the president's legacy.

In these times, when oceans are threatened by global warming and acidification from an overwhelming carbon load, an expanded monument would be a warranted investment that can pay off in both environmental and economic benefits.

The expansion would be timely. A global consensus is forming that it would be advantageous to set aside 30% of the Earth's habitats, both land- and ocean-based, to provide a sanctuary against extinction and to potentially "seed" areas degraded by climate change and human overuse. Biden has formally endorsed the effort, and pledged to expand preserves within the U.S. sphere of influence.

The Pacific Remote Islands Coalition — which includes researchers, educators, deep-sea voyagers, native and community leaders — leads the way on this initiative, and has petitioned the president to act.

The action would be bold, but it is not radical.

An expanded Pacific Remote Islands Marine National Monument would add to protected federal waters around the uninhabited Howland and Baker islands, Kingman Reef and Palmyra Atoll, designating the entirety of the U.S.-controlled waters around these locations as within monument boundaries. As previous presidents have, Biden can use his executive authority under the Antiquities Act to take the action.

Expanded, the monument would grow from the existing boundary, 50 nautical miles around the atolls and reefs, out to 200 nautical miles around the sites. At that size, it would surpass the Papahānaumokuākea Marine National Monument in the Northwestern Hawaiian Islands — currently the world's largest protected area, as expanded by President Barack Obama in 2016.

Column: Extending protections to ‘rest’ ocean

 protectpri.com/column-extending-protections-to-rest-ocean

Originally published in Hawai‘i Star Advertiser

By Hanohano Naehu

I am a born and raised Moloka‘i boy. I come from generations of native people who lived on this Hawaiian island as far back as creation. That means I’m guided by ‘aina: everything that feeds us and gives us life. It is nature and humans together in harmony.

I am also guided by the action of aloha ‘aina: to protect ‘aina, which encompasses living and nonliving things — the ocean, wind, plants, animals, dirt, rocks. Everything was made before humans, so in the chain of life we need to take care of our older siblings. We must protect this harmony, which is the balance of nature itself.

At this moment, we are out of tune. Our ocean faces threats, including harmful commercial fishing and the growing impacts of climate change.

But if you let nature rest, she bounces back. That’s why we must finish the work we started and expand the Pacific Remote Islands Marine National Monument.

Parts of the Pacific Ocean are currently within the monument’s boundaries and protected from harms like deep-sea mining and commercial fishing. I was part of the work in 2014 that, on this day eight years ago, successfully expanded protections around three of the monument’s management areas to their full range within U.S. waters — 200 nautical miles.

But two management areas — Palmyra Atoll and Kingman Reef, and Howland and Baker Island — did not receive protection to that full range, creating patchwork gaps open to exploitation.

Today, I am still fighting to protect these wild places by asking President Joe Biden to extend the monument’s boundaries like we asked so long ago.

Our ocean needs all of the rest she can get. She is being polluted and depleted. I listen to what the coral, the fish, all of nature is saying — and they’re crying. They’re hurt. They want to be rescued. They want to be left alone.

Marine national monument protections would provide that rest, allowing fish populations to recover and create resilience to climate change. But our request is for more than expanded boundaries: We also believe that Pacific Island communities should be part of decisions about the monument’s management.

I have seen how successful this can be through my work on the Keawanui Fishpond on my island of Moloka'i. It was the first successful restoration of an 800-year-old Hawaiian fishpond, where we rebuilt the rock wall of this aquacultural marvel of engineering, allowing fish and oysters to thrive. The fishpond structure sees the connection between land, ocean, and reef. It is one of the many ways my people understood how to live with the smallest footprint.

We need more ancient Hawaiian practices in our ocean management, and there is no time to lose. To me, it's an all out battle. Powerful players in destructive industries and lax politicians are causing too much harm to delay. Shame on them for their greed, and shame on politicians who wait too long to protect our ocean.

I'm passionate about confronting the challenges ahead of us, despite the politics that stand in the way of protecting our planet. I know it will take heart, grit and love. I know that we will move one person at a time, one protection at a time.

I can see a better tomorrow for our ocean. To create this future, we must take action now.

Today is the eight-year anniversary of the Pacific Remote Islands Marine National Monument expansion, proclaimed by President Barack Obama on Sept. 25, 2014.

Column: Use origin names for Pacific Remote Islands

By Hōkū Pihana

An ‘A’a (brown-footed booby) soared across the deep ocean surrounding the Pacific Remote Islands.

During my three-week journey aboard the exploration vessel Nautilus around Johnston Atoll (Kalama/Moku Kua‘au ‘o Ionatana), I saw ocean currents moving together, creating swells that looked perfect for paddling canoe. The pronounced aokū (rain clouds) encircling the halawai (horizon) showered rain and stilled the ocean. The moon rises and sunsets moved in unison while ‘A’a (brown-footed boobies) flew across the winds in groups to catch squid and other food provided by the ocean.

As a Native Hawaiian woman, I recognized the intimate relationship we have with the Pacific Remote Islands (PRI) through voyaging, food acquisition and cultural practices. The currents and swells showed me how we voyaged across these oceans in wa‘a; the abundance of manu kai (ocean birds) informed me of the seaways where food was present; and my nā kilo ‘āina (environmental observations) helped me recognize changes in the moon phases, rains and currents.

As a science communication fellow during the expedition, I saw the importance of meaningfully sharing our deep ocean seascapes. By providing scientific and cultural information to our international audience, we offered a firsthand look of why we need to ensure protection for future generations.

Johnston Atoll is part of the Pacific Remote Islands Marine National Monument, which protects these waters from harmful human activities like sea-bed mining and industrial fishing. In 2014, these protections were expanded by the Obama administration, extending 200 nautical miles from shore for some — but not all — waters of the monument.

Expanding the monument boundaries of Howard and Baker Islands, and Kingman Reef and Palmyra Atoll from 50 to 200 nautical miles would allow us to sustain the health and wellness of these waters for our future.

Additionally, as we advocate for more ocean protections, it is imperative to give the Pacific Remote Islands Marine National Monument a name that honors the genealogy of the ocean and reflects the diverse indigenous peoples connected to these spaces. We have seen name changes before: Papahānaumokuākea Marine National Monument was renamed within a year of receiving federal environmental and cultural protection. Papahānaumokuākea speaks to the relationship between the earth mother (Papahānaumoku) and the sky father (Wākea) and much more.

Now is the time to give the Pacific Remote Islands a name that shares its genealogy. That means starting a process to consider renaming the entire monument, as well as restoring the existing Indigenous or contemporary origin names of its islands and atolls, which include: Paukeaho (Jarvis), Ulukou (Howland), Puaka‘ilima (Baker) Island, Honuaiākea (Palmyra) and Nalukākala (Kingman Reef).

Additional names may also exist, and as part of a group of Native Hawaiians in conversation about the naming process, our hope is to engage with other Indigenous people throughout the Pacific connected to these oceans. Our desire is to create a working group reflective of our diverse ocean communities who will work together in a naming process.

I was heartened by the Biden administration’s announcement and commitment during the Our Ocean Conference in Palau to launch a working group to evaluate naming practices for marine monuments and sanctuaries, and I hope our Pacific communities will be included in the process for PRI.

My voyage on the Nautilus strengthened my desire to expand the monument and contribute to a process to give and restore names for the islands and atolls and monument of Pacific Remote Islands that reflects the essence of these places and the indigenous communities closely tied to these oceans. This naming practice will perpetuate the practices of our ancestors, strengthen our indigenous communities, and hold integral space for our future generations.

Hōkū Pihana is the executive director of the Nā Wa‘a Mauō Marine Stewardship program, a member of the Cultural Working Group for Papahānaumokuākea, and a member of the Pacific Remote Islands Coalition.

Community Voice

Biden Should Expand Pacific Remote Islands Marine National Monument

Presidential action would make it the largest highly protected marine area, which includes Palmyra Atoll, in the world.

By Sara Maxwell

August 28, 2022 · 5 min read



As the red-footed booby soars over Palmyra Atoll, flashes of clear sky are replaced by the deep blue of the Pacific Ocean. The bird dives for fish, flashes of their scales reflecting in the water.

This isn't just an imagined scene — it's a literal bird's-eye view from my recent research on Palmyra, which has no year-round human population but plenty of large seabirds, the focus of my scientific work.

Thanks to advances in technology, my team and I were able to attach tiny cameras and GPS trackers to the seabirds' backs to study and learn far more about their behavior than ever before.

One of the biggest takeaways from several weeks on the island with an interdisciplinary team is just how far the seabirds — and many other species like dolphins and whales — travel to meet their needs. Some species, like sooty terns, traveled 300 miles in less than 17 hours, filling their bellies with food far out at sea, then sprinting back to their nest to feed their chicks and switch places with their partners.



A red-footed booby chick on a nest on Palmyra Atoll in the Pacific Remote Islands Marine National Monument, home to large breeding colonies of seabirds. Adult seabirds regularly use the unprotected waters beyond the monument to forage and feed their chicks, leaving them at risk of entanglement in fishing gear and other threats. Scientists argue expanding the monument would help protect these seabirds and other long-ranging species like whales, sharks, and fish.

While we are still learning why birds choose where they forage, sometimes they are just like us. We watched footage of a red-footed booby meandering around Palmyra, taking its time before heading back to its nest. Our theory is that it was digesting more of the meal before going back to feed its chick.

As a mother, this is a familiar move to me: I have totally hung out in the corner of the kitchen to eat a cookie where my kid can't see me and I don't have to share.

Palmyra is about as remote as you can get on Earth: the atoll is about 3,300 miles away from both North America and New Zealand. It is part of the Pacific Remote Islands Marine National Monument, protected from harmful human activities like deep-sea mining and industrial fishing.

The protections extend 50 nautical miles from the island shore. We now know that many of the seabirds, along with other species of whales, dolphins and fish, regularly travel much farther than those current limits.

Health Of The Land

Right now, President Biden has the opportunity to expand two areas of the monument, including Palmyra, to the full extent of U.S. waters or 200 nautical miles. If he uses the presidential power granted under the Antiquities Act, this extension would increase the protected waters by approximately 685,000 square kilometers, making it the largest highly protected marine area in the world.

Our recent research on the importance of marine protected areas from around the world – and from the Pacific Remote Islands specifically – further underscores the importance of large protected areas like this, particularly when the movements of marine species like seabirds are taken into account.

The Pacific Remote Islands monument is home to hundreds of species from the seafloor to the skies that form an interconnected ecosystem, including more than 50 species of seabirds. To ensure the continued health of the land and nearshore areas that are already a part of the monument, we need to expand the protection to the deeper waters on which they depend.



Researchers on Palmyra Atoll place a GPS tracker on a red-footed booby in order to study and learn their behavior and movements throughout the Pacific Remote Islands Marine National Monument and beyond. Advances in technology have allowed marine scientists to study and learn far more about animal behavior than ever before.

The seabirds are an important part of this complex web of relationships: large fish like tuna trap smaller forage fish at the surface, allowing birds to forage on them. In turn, the birds bring vital nutrients back to land through excrement, supporting the corals, fish, mantas and other species that thrive on the reef and surrounding regions.

Reef ecosystems with healthy seabird populations are much healthier than those without them, because of this nutrient input. Seabirds are also an important part of healthy human communities: they have deep meaning across many Indigenous cultures, particularly in the Central Pacific, and their incredible beauty, movements, and ecological uniqueness have inspired and fascinated humans around the world.

Expanded monument protections would provide more comprehensive conservation throughout their range.

The more we learn about the seabirds in the Pacific, the more we understand that their survival is dependent on hundreds of nautical miles of ocean. Right now, the range of many seabirds

extends far beyond current protected area boundaries. It's not just a matter of miles, though, we also must reduce our impact on the broader ecosystem.

Many species of seabirds around the world, including in the Central Pacific, are declining because industrial fishing boats catch the squid, fish, and other food the birds need, and because the birds get entangled in fishing gear. Expanded monument protections would provide more comprehensive conservation throughout their range.

Expanding the monument would allow the seabirds I study the opportunity to thrive, soaring and diving for an abundance of fish to bring home to their chicks. By extending the boundaries of the Pacific Remote Islands Marine National Monument, these seabirds can truly spread their wings.

[Read the article online on Honolulu Civil Beat here.](#)



About the Author

Sara Maxwell is an associate professor at the University of Washington on the Bothell Campus focused on sustainable solutions that balance human uses of the oceans while preserving healthy marine ecosystems. All research has been approved and conducted under U.S. Fish and Wildlife Permit No. 12533-22003.

Community Voice

Expanded Pacific Remote Islands Protections Would Safeguard Nature, Culture

On World Ocean Day there is a chance to honor our connection to a very special region of the ocean.

By Sol Kahoohalahala, Hoku Cody
June 8, 2022 · 4 min read



About the Authors



Sol Kahoohalahala

Sol Kahoohalahala, a member of the Pacific Remote Islands Coalition, is a seventh-generation Native Hawaiian descendant, kupaaina, from the island of Lanai. He currently serves as a member of the Papahānaumokuākea Native Hawaiian Working Group and is the acting chair of the Hawaiian Islands Humpback Whale National Marine Sanctuary.



Hoku Cody

Hoku Cody, a member of the Pacific Remote Islands Coalition, is a marine biologist and GIS project analyst from Oahu who works on Kauai. She currently co-chairs the Native Hawaiian Cultural Working Group for Papahānaumokuākea.



The Pacific Remote Islands are one of the last wild and healthy marine ecosystems in the world, home to endangered sharks and resilient coral reefs, and deep-sea species found nowhere else on Earth.

These islands are also at the intersection of many ocean voyaging routes that connect all Pacific Island peoples and communities; they symbolize the forging of intergenerational knowledge and cultural values that could only be developed from living on islands at the center of the largest ocean on the planet.

As Pacific Island peoples, the ocean has always held a special place for us as the source from where life begins. In one of the origin stories for Native Hawaiians, out of darkness emerges all of our ohana, our family — the coral polyp was the first born in the darkness of the ocean,

then came all of our marine ohana, then our winged and feathered ohana took flight, followed by the flora and fauna that adorn this world, including the star families.

We humans joined the family much later in the creation process.

This story demonstrates that we have a profound duty and privilege to malama — care for — these precious places that give life which also includes our ancestors of the deep, remote, and vast Pacific.

Right now, on World Ocean Day — June 8 — there is a chance to honor our connection to a very special region of the ocean by expanding protections for the Pacific Remote Islands Marine National Monument. All of us have contributed our expertise as kupuna, educators, marine biologists, and storytellers to making this expansion a reality.

Last week, [we sent an official request](#) to the White House urging President Biden to extend the monument around two sets of islands and atolls from 50 to 200 nautical miles. If we're successful, the Pacific Remote Islands would become the largest highly protected marine protected area in the world. It would bring more than 50 endangered species, unexplored underwater mountain ranges and traditional voyaging seascapes under legally binding protections.

www.protectpri.com

The Pacific Remote Islands Marine National Monument was originally established in 2009 by President George W. Bush and was expanded in 2014, by President Barack Obama under the Antiquities Act. The Pacific Remote Islands Coalition is requesting that President Joe Biden expand the monument boundaries around Howland and Baker Islands, Palmyra Atoll and Kingman Reef to 200 nautical miles from the current 50 nautical miles of protection.

The sea turtles, sharks, and manta rays in the monument are just some of the species that make up the complex and interconnected nearshore ecosystems. The more ocean we can protect, the more we honor our interdependency to our ohana in the deep-seas, and on land. Furthermore, expanding existing monument boundaries will ensure the continued health of the areas we already protect.

In the face of increasing threats, expanded protections are essential. We must prevent destructive oil drilling, industrial fishing, and deep sea mining in these precious areas. Climate change has already reshaped our oceans in unprecedented ways, such as coral bleaching events that leave areas bone-white and barren. Intact natural ecosystems like those in the waters of the Pacific Remote Islands are more resilient to climate change — and can help in the fight against biodiversity loss.

Recognizing the ocean as a natural mechanism to counter climate change, the Biden administration has committed to protecting 30% of U.S. waters by 2030, which aligns with our call for setting aside more of our precious marine environment. Expanded protections will also allow us to better understand climate change impacts in a system driven by nature alone.

“

In the face of increasing threats, expanded protections are essential.

Creating a larger protected zone around the Pacific Remote Islands will also allow us to promote a more inclusive decision-making process. In the past, Pacific Island peoples were cut off from their ancestral connections and responsibilities as the U.S. government imposed names, marine boundaries, and management practices without any consultation.

”

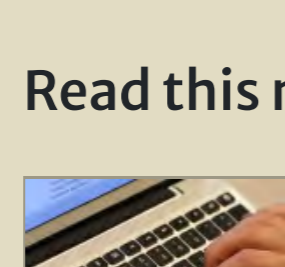
Moving forward, it is essential that the management of U.S. marine protected areas like the Pacific Remote Islands includes a role for the peoples with genealogical ties to these places. In this case, that means the communities of the Pacific.

In historic times, the islands and surrounding waters had a rich legacy of oceanic voyaging and served as places for stewardship for those on long trans-Pacific voyages. By keeping the ecosystems of the Pacific Remote Islands intact, it provides a setting for wayfinding to continue and bring the Pacific cultures together. Thus, by extending the boundaries of the Pacific Remote Islands, we honor their cultural and biological legacies.

Editor's note: Kekuwa Kikiloi and Nai'a Lewis, members of the Pacific Remote Islands Coalition, co-authored this Community Voice.

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By Catherine Toth Fox · June 10, 2022 · 5 min read

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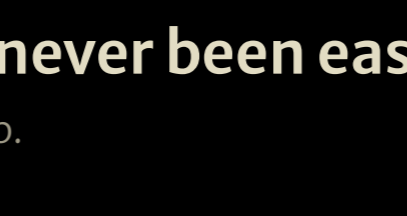
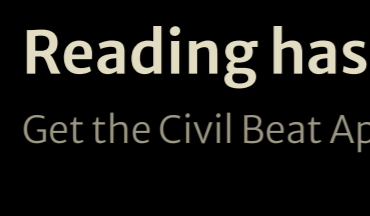
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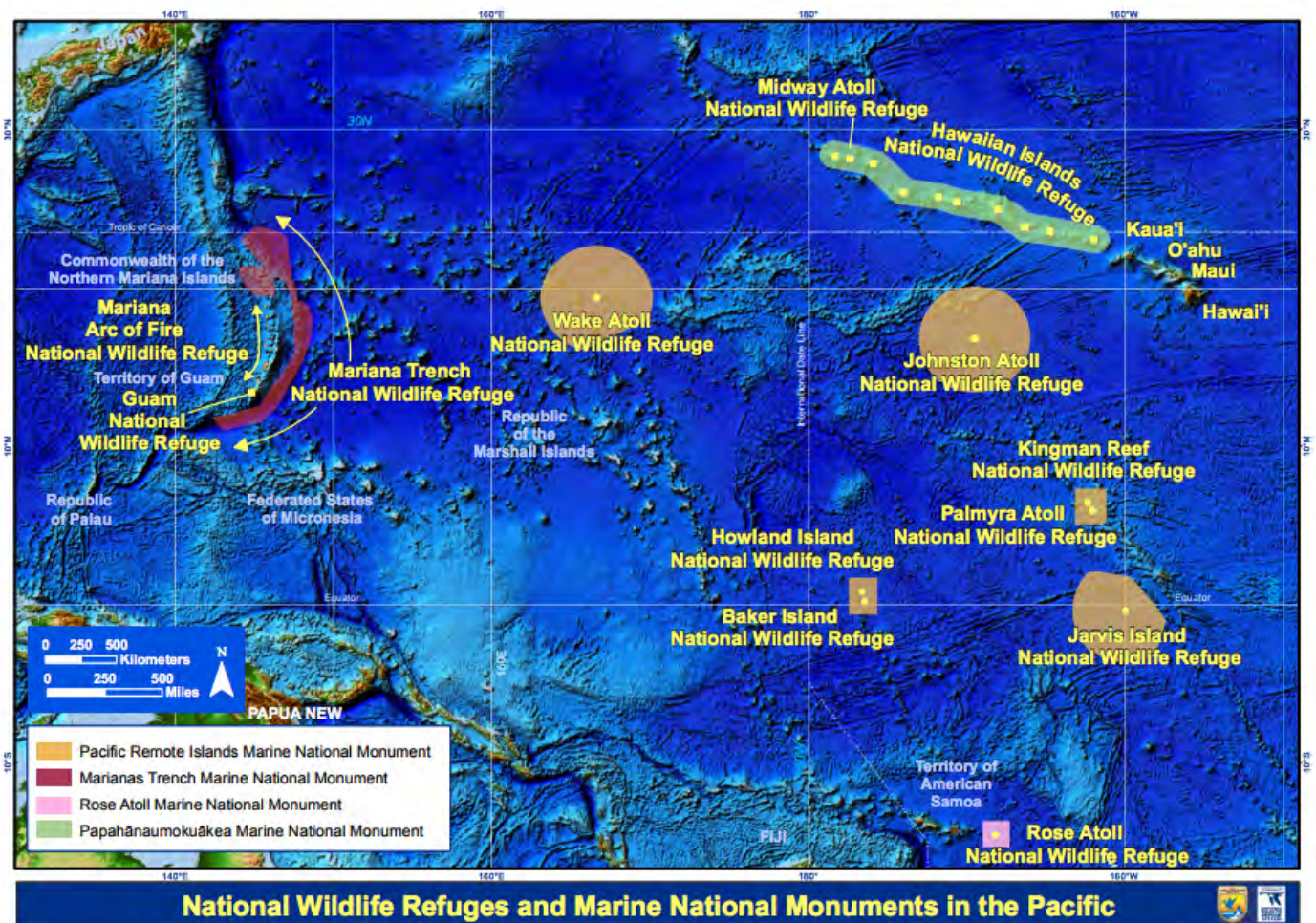
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Restore The Hawaiian Names Of The Remote Pacific Islands

We can honor the history and contributions of these Native Hawaiians who served in World War II.

By Catherine Takata

December 7, 2021 · 4 min read



On Wednesday's 80th anniversary of the attack on Pearl Harbor, I reflect on a little-known story of incredible sacrifice and bravery.



During the attack, several Native Hawaiian men from Kamehameha Schools — known as the Hui Panalā'au — occupied three islands in what is now the Pacific Remote Islands Marine National Monument on behalf of the United States as it prepared for World War II.

As a descendant of many Kamehameha Schools alumni, I was amazed and proud to learn about the sacrifice and bravery of these men. But I was shocked I had not heard of it until now.

At a time when our government and administration are finally prioritizing the voices and experiences of Native cultures, it also made me wonder how we can center these stories in our understanding and recognition of these unique places.

The Pacific Remote Islands might be just that — remote — but they hold a special place in Hawaiian culture and history. From 1935 to 1942, the Hui Panalā'au inhabited Jarvis, Howland and Baker Islands to help secure the U.S. territorial claims over the islands during World War II.

In addition to inhabiting the islands, the Hui contributed weather and environmental logs, seabird observations, and the initial conservation data that helped set the stage for conservation status as a marine national monument. Their commitment to serve the United States is equal to their advancement and contribution to the Hawaiian and global scientific communities.

This day, 80 years ago from the Kapalama Campus, my great uncle witnessed the bombs fall from Japanese planes on Pearl Harbor. The sight of the black smoke that disrupted such a peaceful and beautiful morning stayed with him forever. Little did he know that the planes had left a wake of destruction in the Pacific Remote Islands inhabited by the Hui Panalā'au as well.

Shortly after the attack, with fear and disbelief fresh in the minds of the people of Hawaii, my Grandma Kealalauaeokiahialani grew up to graduate from Kamehameha Schools with the memory of the Hui men who lost their lives after bravely inhabiting the islands. My kupuna experienced a piece of history, a story that was unknown to me until now.

We should not allow this story to fade with generations.

We can honor the history and contributions of these Native Hawaiians by restoring the original Hawaiian names of the islands within the Pacific Remote Islands Marine National Monument.

Names are essential. Hawaiian olelo ensures that traditional knowledge and values are recognized and perpetuated. Each name is an ode to generational stories, language, history, archeology, song and dance. Papahānaumokuākea Marine National Monument is a model, and an example of the importance of creating place names that are directly related to their cultural and ecological significance.

Why not do the same for the Pacific Remote Islands, which are currently named for sea captains, a vessel, a ship's managing agent, and a ship's owner?

The National Oceanic Atmospheric Administration acknowledged **PRIMNM's historical and cultural** origin in the designation of this protected area, and President Obama recognized the sacrifices of the Hui when he expanded the monument in 2014. Paukeaho (Jarvis), Ulukou (Howland), and Puaka'ilima (Baker) have existing Hawaiian names that tell their story and should be cherished.

The islands of the Pacific Remote Islands Marine National Monument hold a special place in Hawaiian history and in our cultural memory. On the 80th anniversary of the immense sacrifice and bravery that occurred at Pearl Harbor and in the remote Pacific attack, and as President Biden increasingly recognizes and prioritizes indigenous-led conservation, we have an opportunity to honor the historical and cultural significance of these places. Let us consider restoring the original Hawaiian names to the islands of the Pacific Remote Islands Marine National Monument.

It should not just be our grandparents who remember. Names are powerful and carry beyond a lifetime. Let us make sure our collective memory of these places and their cultural significance echos through generations.

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By Lee Cataluna · December 8, 2021 · 5 min read

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Catherine Takata



Catherine Takata is a marine scientist who developed an early passion for the environment by growing up along the Southern California coast, and by frequently visiting family on the Big Island. She is currently working toward her master's degree at the Bren School of Environmental Science and Management at UC Santa Barbara, and is the Program Assistant for the National Ocean Protection Coalition.



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Remote Islands Expansion Is a Critical Step Toward Healthy Pacific Region

CB civilbeat.org/2014/08/remote-islands-expansion-is-a-critical-step-toward-healthy-pacific-region

August 20, 2014

Community Voice

The president has an opportunity to create a unique cultural and conservation legacy with the Pacific Remote Islands Marine National Monument.

By Trisha Kehaulani Watson / August 20, 2014

Reading time: 9 minutes.

Eveli Hau'ofa, the famous Pacific Island anthropologist, once wrote: "... the sea is as real as you and I, ... it shapes the character of this planet, ... it is a major source of our sustenance, ...it is something we all share in common wherever we are in Oceania.... the sea is our pathway to each other and to everyone else, the sea is our endless saga, the sea is our most powerful metaphor, the ocean is in us."

Never before has there been a greater opportunity or greater need to act upon these sentiments. President Barack Obama has before him the option of expanding the Pacific Remote Islands Marine National Monument to include, not only the remote islands and their near shore waters, but also the deep waters, which are life-sustaining for seabirds, sharks, sea turtles and whales.

If he does so, it would create the largest marine protected network on earth, four times larger than California.

It isn't just environmentalists who support this unique chance to create the largest strongly protected marine network on earth, support for the monument has gained steam from respected political and cultural leaders across the Pacific islands who want to preserve this area as part of their heritage.



Red snapper, *Lutjanus bohar*, eating a *Diadema* sea urchin on the fore reef of Kingman Reef, 10 meters below the surface. They are a part of the remarkably diverse sea life in the area.

Enric Sala

Within a matter of days, more than 200 political and cultural leaders from across Oceania signed on to support the monument expansion by writing to President Obama and saying, “Greater protections of our beloved ocean are long overdue; we welcome these acts that protect our sea from misuse and abuse while honoring and protecting the subsistence and cultural traditions that have been a part of our livelihoods and seafaring traditions since the beginning of time.”

In addition, these same leaders in Oceania reminded the president that the region makes up a “Pacific family; it is our ancestral honor to protect the endangered, threatened and over-exploited species insufficiently protected by the current boundaries.”

This is an unprecedented moment; it has unified both cultural practitioners and conservation scientists in a vision for a protected Pacific.

Some of the Pacific’s leading conservation scientists who work on one Palmyra Atoll, one of the islands where the expansion would occur, support this expansion.

They stated that the Pacific Remote Islands Marine National Monument “is a truly unique and special place, of global significance for conservation. It contains some of the last pristine tropical ecosystems that remain intact and undisturbed by humans. Our years of

research in this area suggest that the significance of increased protection for the marine biodiversity in this area cannot be underestimated. There are only a handful of other places in the world, such as Chagos Island in the Indian Ocean, where this type of protection currently occurs. Just as the establishment of Yellowstone National Park was an ambitious action in its time that created a legacy of protection for wide-ranging terrestrial species like bison, grizzly bear, and elk – so will the establishment of (the remote Pacific marine conservation) serve as a lasting monument for protecting America’s sharks, marine mammals, sea turtles, manta rays, tuna – and many more.”

If Obama moves forward with the expansion, he would stand with several presidents of Pacific nations that would also benefit from the expansion. These presidents include: President Anote Tong of Kiribati, President Tommy Remengasau of Palau, and the Prime Minister Henry Puna of the Cook Islands.

These leaders have all pledged to establish transformative marine protected areas in collaboration with the U.S expansion in response to this era of overfishing and climate change.

In an address given in Honolulu on Aug. 13, Secretary of State John Kerry further articulated the Obama Administration’s plan for the Pacific when he said, “The Pacific Islands across the entire Pacific are vulnerable to climate change. And just yesterday, I saw with my own eyes what sea level rise would do to parts of it: It would be devastating — entire habitats destroyed, entire populations displaced from their homes, in some cases entire cultures wiped out. They just had flash flooding in Guadalcanal — unprecedented amounts of rainfall. And that’s what’s happened with climate change — unprecedented storms, unprecedented typhoons, unprecedented hurricanes, unprecedented droughts, unprecedented fires, major damage, billions and billions of dollars of damage being done, that we’re paying for instead of investing those billions of dollars in avoiding this in the first place.

That’s why we are deepening our partnerships with the Pacific Island nations and others to meet immediate threats and long-term development challenges. And we’re working through USAID and other multilateral institutions to increase the resilience of communities. And we’re elevating our engagement through the Pacific Islands Forum. And we’ve signed maritime boundaries, new maritime boundaries with Kiribati and the Federated States of Micronesia in order to promote good governance of the Pacific Ocean and peaceful relations among island nations.

And we’re also working on a Pacific pathway of marine protected areas that includes President Obama’s commitment to explore a protected area of more than a million square miles in size in the U.S. remote Pacific. (Emphasis added.)

Despite all the important scientific conservation reasons to protect this glorious and pristine ecosystem, the most compelling ones for the Hawaiian community are ultimately personal and cultural ones.

It turns out that intermittently, over the last century, hundreds of Native Hawaiians have lived on these remote islands.

Among these were Uncles Eddie Kaanana and Walter Paulo, both from the Hawaiian fishing village of Milolii. Both men came back to Hawaii and dedicated their lives to teaching Hawaiian children about their culture and sustainability.

The first Native Hawaiians to live on these islands in modern history were a group known as Hui Panalaa. As the first colonists of these islands for the United States, it is safe to say that this marine monument would not be possible today without their tremendous contribution.

In a letter to President Obama regarding the monument expansion, artist and scholar Noelle Kahanu wrote: “This is my dream. That you would care as much about the cultural and historical significance of the islands in the Pacific Remote Islands Monument as you do about their scientific value.

That you would care as much about those whose sacrifice made these islands U.S. territories in the first place, such that they are even under consideration for expansion today.

That you would care enough to recognize the contributions of the men of Hui Panalaa, which consisted of over 130 young men from Hawaii who were sent by the federal government to colonize Howland, Baker, and Jarvis from 1935-1942.

That you would care enough to officially recognize the sacrifices of these men, including three young Hawaiians who lost their lives — Carl Kahalewai, of a ruptured appendix in 1938, and Joseph Keliihanani and Dickey Whaley, from a Japanese air attack in 1941.

That by an act of good faith recognition, you would undo the silence and finally address nearly 80 years of injustice — including the denial of death benefits to the families of Keliihanani and Whaley.

That you would understand that before we can preserve island and ocean ecosystems, we must fundamentally understand their significance to the peoples of Oceania.

┆ For Pacific Islanders, our genealogies are not found in trails but on the waves.

That in the name of preserving the “world’s most valuable ocean ecosystems,” you would not whitewash colonial expansionist and militaristic policies that resulted in the targeted use and misuse of young Hawaiian men.

And finally, while such preservation today cannot undo the exploitation of the past, thoughtful, inclusive and honest dialogue and action can aid in healing as we build toward tomorrow's future.

I stand before you today as the granddaughter of George Hawae Kahanu, Sr., who at 96 is one of the last three colonists still alive.

As such, I call upon you, President Obama — if you truly care about extending protections to the Pacific Remote Islands Monument — to recognize that it is equally a memorial. And that the men of Hui Panalaau deserve to be recognized before the last of them leave this earth.

The United States has an extraordinary opportunity to step forward, retracing the steps of its colonial past, to help secure a sustainable future by creating this expanded marine monument.

If the commitments made towards a safe and secure Asia Pacific region by Secretary Kerry are sincere, then the full expansion of this monument, both in geographic size and historic and cultural integrity are necessities.

Historic and cultural integrity demands that the honors called for in Kahanu's letter be fulfilled and that the sacrifices made by Native Hawaiians in this monument must not be forgotten.

Further, lessons from other large scale Marine Protected Areas should also be heeded. While many of the claims of special interest groups opposing the expansion and other conservation activities are unfounded and akin to the rhetoric of climate-change deniers, conservationists would be remiss if they did not take this opportunity to better engage local communities and traditional cultural practitioners.

It is abundantly clear that the region, and perhaps the world, is counting on the president to institute better cultural leadership and management in this monument than the monument created by his predecessor. Subsistence rights should be fully protected, planned and granted, guided by sound and established practices and traditions.

Our fervent hope is that a peaceful and healthy Pacific will teach the rest of the world to see the planet as we do: calm, bountiful, and boundless.

We understand that the ocean does not divide us; it binds us. These were the pathways of our ancestors; they can surely be again for our descendants. For Pacific Islanders, our genealogies are not found in trails but on the waves. We are, in our heart, one Oceania, and the full expansion of this monument helps move us all closer to ensuring for future generations the opportunity to carry on the abundant natural and cultural heritage of our proud, shared past.

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Trisha Kehaulani Watson

Trisha Kehaulani Watson is a Kaimuki resident, small business owner, and bibliophile. She holds a Ph.D. in American Studies from the University of Hawaii and J.D. from the William S. Richardson School of Law. She writes about environmental issues, cultural resource management, and the intersection between culture and politics. Opinions are the author's own and do not necessarily reflect Civil Beat's views. You can follow or contact her on Twitter at [@hehawaiiiau](https://twitter.com/hehawaiiiau).



Expansion of Pacific marine sanctuary is consistent with Hawaiian practice

By **Hannah Kihalani Springer**

*Ola aku la ka 'aina kaha, ua pua ka lehua i kai.
(Life has come to the kaha lands, for the lehua blooms are seen at sea.)*

"Lehua" is a reference to the deep-sea fishermen of Kekaha, North Kona.

Kekaha is my home on Hawaii island and my family, descendants of subsistence fishermen, continue to supplement our table with fish caught in the waters that our ancestors fished for hundreds of years.

The 'olelo no'eau, or Hawaiian saying, above draws our attention to the Hawaiian inclination of connectivity.

Lehua blossoms are a metaphor for the fishermen of the kaha lands; the seasonal bloom of lehua coincides with the traditional lifting of the kapu on aku fishing.

The kapu was the regulatory system that maintained a sustainable yield of desired resources. Observations were made, conclusions drawn about conditions, and precautionary management actions were taken.

Our ancestors harvested from the waters around Hawaii with efficiency using these sophisticated man-



Hannah Kihalani Springer, a resident of Kaupulehu, North Kona, is a member of the Kaupulehu Marine Life

Advisory Committee and a former Office of Hawaiian Affairs trustee. The opinions expressed here are her own.

agement techniques — and our ocean resources thrived because of it.

The people of old understood that rigorously managed fisheries benefited fish and fishers alike. The proposed expansion of the Pacific Remote Islands Marine National Monument (PRIMNM) is consistent with this Hawaiian practice.

Like the connectivity between the aku, lehua and fishermen, there are strong and poetic connections between the deep-sea waters of the PRIMNM and our nearshore island waters.

Ocean currents, migrating marine mammals and birds, and our history and voyaging canoes link us to these distant and uninhabited islands and atolls. In recent times, commercial fishermen, calling Honolulu their homeport, have become connecting factors as well.

These geographies, and

their waters, abundant with wildlife, help maintain the productivity of Hawaii's ocean ecosystem and are a vital link in ensuring the health of the broader central Pacific.

Today in Kekaha, lineal descendants, applied scientists, old and new commu-

nity members, are working on place-based, adaptive management of our nearshore fishery. We have learned that protected marine areas can benefit ecosystems and replenish resources adjacent to protected areas.

The same applies to expanding the monument area from its current 50 miles to the 200-nautical-mile U.S. exclusive economic zone. Protecting this area ensures long-term viability of our resources, including fish species with commercial value.

If President Barack Obama fully protects the PRIMNM, commercial fishers can replace the less than 5 percent of U.S. tuna catch from this region in neighboring geographies, which are already active fishing grounds.

Even with the expansion of the PRIMNM, 94 percent of the exclusive economic zone area in the Pacific cov-

ered by the South Pacific Tuna Fishery would remain open for business to U.S. commercial fishers.

The U.S. has more fishing opportunities than any other country fishing in the region — and yet, other Pacific Island presidents have already led the way in establishing large-scale marine reserves to ensure the ability to feed families, secure ocean livelihoods and perpetuate culture.

President Obama should join our Pacific neighbors in this effort.

The PRIMNM expansion presents an opportunity to include a memorial to the Hui Panala'au, the more than 130 young men from Hawaii who were sent on a colonizing mission to Howland, Baker and Jarvis by the federal government from 1935-1942.

Three of the young men died during their missions; three of them are still alive today, and all are deserving of the honorable recognition suggested by a descendant, Noelle Kahanu, at a Honolulu town hall meeting last month.

The people of old left lessons for us: a rigorous management system ensures the long-term viability of our resources.

Let us seize this opportunity to rise to the standards of those set by our ancestors not long ago.

Expansion of the Pacific Remote Islands Marine National Monument

Honoring Cultural and Biological Legacies



MAY 2022

Hillary Young, James Murphy, Robin Baird, David Benavente, Alan Friedlander, Yimnang Golbuu, Mark Hixon, Sol Kaho'ohalahala, Kekuewa Kikiloi, Brian Kennedy, Douglas McCauley, Lance Morgan, Robert Richmond, Randi Rotjan, Scott Shaffer, Enric Sala, Gorka Sancho, and Sara Maxwell

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Photo credit: Amanda Pollock, USFWS

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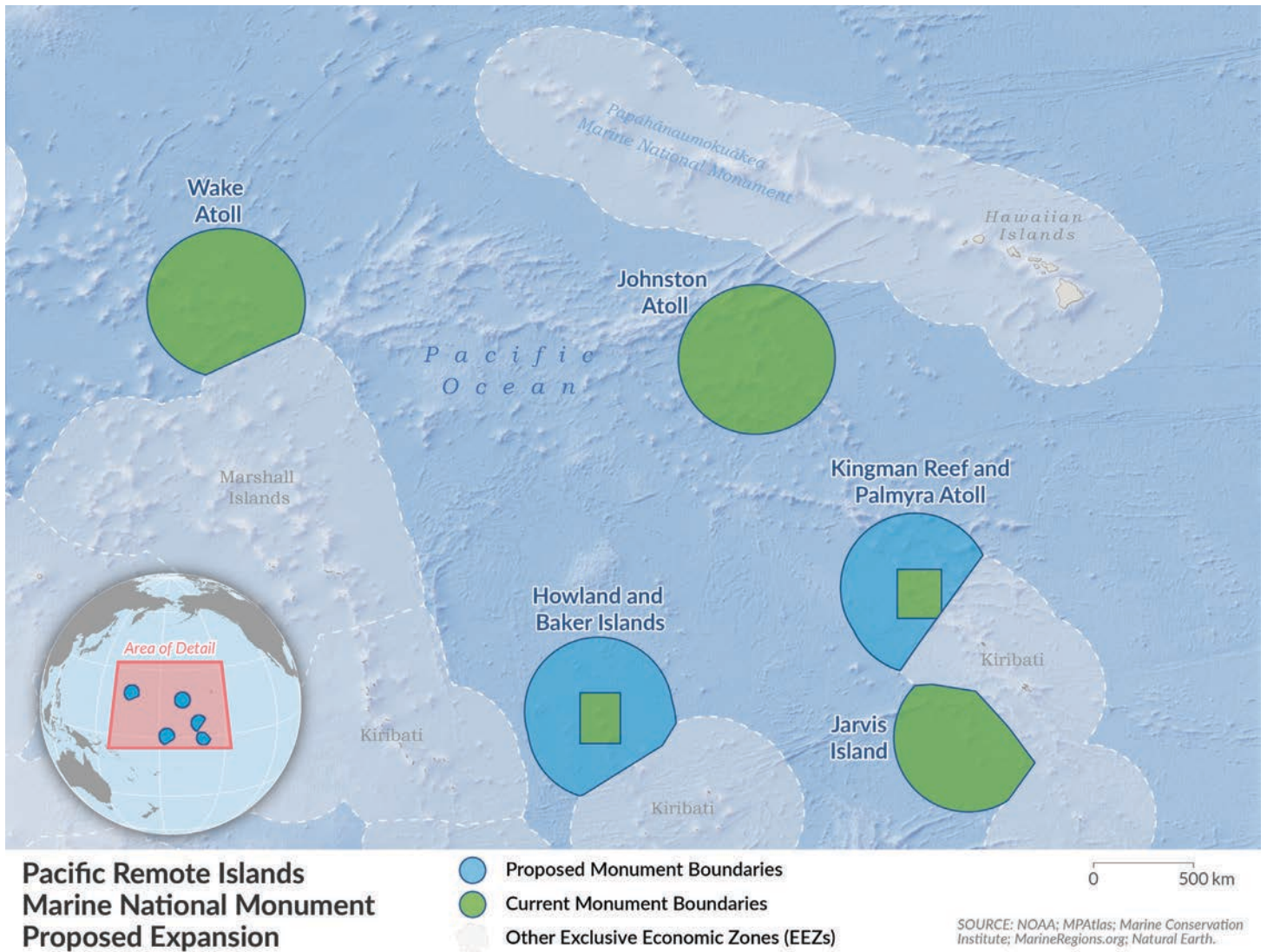
EXECUTIVE SUMMARY

The Pacific Remote Islands contain some of the last wild and healthy ecosystems in the world's ocean. They are places where human activity is distant and habitats teem with life. Here natural processes define where sharks, turtles, whales, and birds roam. These waters were split by the handmade canoes of Indigenous Peoples who used the stars, winds, currents, and life on land and sea to connect with distant resources, cultures, and lands. The bravery and sacrifice of 130 Native Hawaiian young men who colonized these lands of strategic importance before and during World War II helped define the footprint of the United States' ocean. Today, these waters are home to resilient coral reef ecosystems reliant on the healthy open ocean ecosystems around them, threatened and endangered wildlife, and deep-sea species found nowhere else on Earth.

The world's ocean faces a biodiversity and climate crisis. The window of opportunity to halt and reverse the worst impacts of climate change is closing. Nature is declining globally at rates unprecedented in human history. Intact natural ecosystems such as the Pacific Remote Islands are more resilient to the effects of climate change and can help in the fight against biodiversity loss.

There is also a global cultural awakening that recognizes the importance of Indigenous knowledge, stories, and cultural connections between lands and peoples, and celebrates the individual nature of cultures. However, the ecosystems on which these cultures depend are at risk, and in many places are disappearing.

In the face of the mounting climate and biodiversity crises and in line with the administration's priority to honor Indigenous and Tribal cultures and practices, President Biden has the authority and opportunity to make history, and honor history. In his first week in office President Biden said, "We have a narrow moment to pursue action at home and abroad in order to avoid the most catastrophic impacts of that crisis and to seize the opportunity that tackling climate change presents." Protecting the area to the full extent of the Exclusive Economic Zone (EEZ) will result in the largest highly protected marine protected area (MPA) in the world. Expanding the remaining two areas of the Pacific Remote Islands Marine National Monument (PRI) will add 686,839 square kilometers of MPA. It will protect blue whales and green sea turtles, and critically endangered species like Newell's shearwater and oceanic whitetip shark. It will allow us to better understand the effects of climate change in a system driven by nature alone. And by protecting these waters, President Biden will honor a critical cultural voyaging seascape that connects traditional navigating practices from centuries before with people of today and for generations to follow.



CURRENT PROTECTIONS

President George W. Bush established the Pacific Remote Islands Marine National Monument in 2009 under the Antiquities Act in recognition that these areas encompass pristine coral reefs and deep reefs of global ecological importance. PRI encompasses five management units: Wake Island, Johnston Atoll, Palmyra Atoll and Kingman Reef, Howland and Baker Islands, and Jarvis Island. The original 2009 monument extended 50 nautical miles around each site for a total of 86,888 square miles. In 2014, recognizing the importance of the deep sea and pelagic environments as the site of slow-growing, rare, and diverse species and ecosystems, President Barack Obama expanded three of these five management units (Wake, Johnston and Jarvis) to 200 nautical miles (or the edge of the U.S. EEZ waters), creating a monument totaling 495,189 square miles. The monument waters are permanently closed to resource extraction, such as deep-sea mining and commercial fishing, and open to limited amounts of permitted recreational fishing. With this and other U.S. Pacific monument expansions, the United States has shown that the world’s best-managed

fisheries and large protected areas can co-exist. Recent evidence shows that these monument designations have not harmed U.S. fisheries, and likely benefited them.

When President Obama expanded protection for PRI in 2014, the original 50 nautical mile boundary remained in place at two management units (Palmyra Atoll and Kingman Reef, and Howland and Baker Island), leaving the majority of the waters in the EEZ around these sites open to future exploitation. There was no clear biological justification for the lack of expansion in these important pelagic and deep water ecosystems. Given new research strengthening our understanding of the connections between these ecosystems and the nearshore, protected portion of the units, and new data on the biological value and richness of the deep-sea environment, it is critical to provide additional protection for these resources now.

INTERCONNECTED ECOSYSTEMS

The pelagic communities in the 50-200 nautical mile U.S. EEZ of the two remaining units contribute significantly to the continued health of nearshore protected ecosystems within PRI. Underwater seamounts create chlorophyll-rich productivity hotspots that drive bottom-up effects across ecosystems, providing benefits to both pelagic and nearshore fish communities. Seabirds that forage on pelagic fish bring vital nutrients back to their island nesting grounds, fertilizing these remote islands with their guano and transforming and promoting diversity in both terrestrial and inshore ecosystems. Coral reefs and their communities then take up these seabird nutrients, causing reef-building corals to grow four times faster in reefs with seabirds than those without, and contributing to larger populations of herbivorous fish. This in turn increases grazing and bioerosion processes that are essential to the long-term health of coral reefs.

The currently protected coral reefs of PRI are vulnerable to disruptions in pelagic productivity in the unprotected waters beyond its boundaries. The seabirds that connect these disparate ecosystems often entirely depend on tuna and other large predators to drive small pelagic food sources to the surface where seabirds can forage. Commercial fisheries target many of these open ocean predators, and seabirds themselves can be caught as bycatch by longline vessels. In addition, the many species of threatened and endangered sharks and manta rays that range between coral reefs and open ocean are often caught as bycatch in the commercial longline and purse seine fisheries in the region. The deeply interconnected nature of terrestrial, reef, pelagic, and deep-sea ecosystems in this region underscores the importance of meaningfully protecting each of these systems, and the dynamic processes linking them to each other, to the fullest extent possible. It is simply not possible to provide meaningful protection to the inshore coral reef ecosystems of PRI without also protecting the pelagic ecosystems on which they intimately depend.

CONSERVATION VALUE

In addition to their importance to nearshore protected areas of PRI, the unprotected waters themselves contain ecosystems and species of significant global conservation importance. They are home to robust populations of top predators such as several tuna species and at least ten endangered or critically endangered sharks and rays. These waters provide critical information on baseline functioning of reef and pelagic systems with predator communities. They are also home to more than 50 species of seabirds—many considered threatened or endangered—including more than a dozen species known to breed on the protected islands within PRI. The region is an important habitat for a large number of cetaceans, such as sperm whales and spinner dolphins, including the blue whale and many other species considered threatened and endangered. The area also serves as an important migration route for the critically endangered leatherback sea turtle, the largest sea turtle in the world. While many of these species do have large home ranges, there is increasing data to suggest that very large protected areas can effectively protect and even recover these populations.

Most of the deep-sea diversity remains unexplored in this area, with recent expeditions discovering new species on every dive. The data that does exist suggests high density and diverse benthic communities are common, with a great deal of undiscovered and sensitive biodiversity—much of which may be endemic to the region. Expansion of PRI would protect 98 additional seamounts (22 are currently protected within these two units' protected waters), which serve as ecological hotspots for biodiversity and habitat complexity. In addition to their intrinsic value as ancient and unique lifeforms on our planet, deep-sea biodiversity is also the source for a number of important products for biomedicine, discovered and produced using non-exploitative sampling techniques. Discoveries of new species and new habitats suitable for deep-sea communities, in addition to recent biomedical discoveries and those yet to be made, emphasize the value of unprotected deep-sea environments in this region and strongly support the need for extending protection surrounding Palmyra Atoll, Kingman Reef, and Howland and Baker Islands.

CULTURAL AND HISTORICAL VALUE

The Pacific Remote Islands have connected nature and culture since time immemorial. These islands served as stopping points during cross-Pacific migration and voyaging for Native Pacific Islanders pre-colonization, and for commercial and military interests in the modern era. Their distance from populated land and minimal human impact to their biological resources uniquely positions them as a critical location in the Pacific for the learning and practice of traditional voyaging, which is dependent on healthy ecosystems with intact biological indicators such as animal movements and behaviors. Expanding PRI's boundaries to the legal limit of the U.S.

EEZ is an important commitment to the preservation and prosperity of Indigenous cultures, traditional voyaging, and to Pacific Island Nations and neighbors.

In modern history, these waters served as passageways for guano traders and hunting grounds for whalers, the final resting places for ships, the maritime amphitheater for battle in WWII, and the territorial fruits of the dedication of brave Native Hawaiian young men who successfully colonized Howland, Baker, and Jarvis islands. However, the existing protection of this monument is not enough to fully preserve the historical landscape of this region. Expanding PRI to the full boundaries of the U.S. EEZ would afford recognition of these efforts and services in currently unprotected waters, while also facilitating further characterization, documentation, and protection of these activities within the extended monument.

The unprotected waters have to date experienced relatively few local anthropogenic impacts. It is therefore critical to work quickly to permanently protect these intact areas of ocean wilderness against future exploitation now, while impacts and pressure for extraction remain low. Such precaution is especially warranted given the increasing likelihood of deep-sea mining in the future and the rapidly increasing threats of climate change.

THREATS

This area is among the highest valued areas in the world by those with mining interests for its mineral rich crusts and nodules. The Kingman Reef and Palmyra Atoll unit is directly adjacent to the Prime Fe-MN Crust Zone (PCZ), and both units contain “prospective crust zones” within their boundaries— meaning thick crust formations may also have formed and are thus considered to be priority areas for further exploration. As deep-sea mining involves complete removal of the top layer of sediment, it will result in total mortality of deep-sea benthic organisms and the creation of toxic wastewater tailings that will likely have widespread impacts on mid-water pelagic communities. Given the extremely slow recovery of deep-sea benthic communities, expansion of protection prior to this disturbance is key to retaining the integrity of these ecosystems.

Additionally, climate change threatens the integrity of ocean ecosystems globally. Recent studies have suggested that large marine protected areas increase resiliency and the adaptive capacity of ocean ecosystems in the face of climate change by removing additional stressors. Further, these regions in particular offer a nearly unparalleled opportunity to understand the effects of climate change in very healthy tropical marine ecosystems.

With regard to industrial fishing, there is currently a high amount of fisheries pressure just outside the EEZ boundaries of these two units of PRI, with purse seine and longline fisheries

making up the primary fishing interests concentrated in the area. There may also be some significant ‘flow-through’ fishing by purse seine vessel-released drifting fish aggregating devices in protected areas, although this has not yet been quantified and is likely illegal. Protecting this area is ideal because it is both biologically extremely valuable and would cause minimal economic hardship, as the current economic impact of a commercial fisheries closure within the proposed expansion area would likely be minimal.

President Biden has the opportunity to honor Indigenous cultures and practices, bolster the resilience of these important ocean ecosystems in the face of climate change, and protect marine biodiversity from threats poised to grow in the future. Expanding the two remaining areas of PRI to the full extent of the U.S. EEZ would serve as a gift to future generations, and ensure the U.S. continues its strong record of ocean conservation leadership.

Photo credit: Kydd Pollock, The Nature Conservancy



1 | **CONNECTED AND DIVERSE MARINE ECOSYSTEMS**

The proposed expansion area around Palmyra Atoll and Kingman Reef, and Howland and Baker Islands would protect areas between 50 and 200 nautical miles from any landmass—essentially, an area of open ocean. The open ocean environment is often conceptualized as a homogenous and sometimes barren landscape. In reality, the open ocean is highly heterogeneous across and within geographic areas, with a mix of seamounts, abyssal plains, hadal troughs, and shifting ocean plates. Across these ecosystems are dynamic currents, winds and topography creating varied conditions that are further changed by annual climate variation and interannual El Niño–Southern Oscillation states. The

Photo credit: Kydd Pollock, The Nature Conservancy



ecosystems of the open ocean are highly and intricately interconnected both with each other and with the inshore and terrestrial communities. New data—discussed at length below—is bringing into focus the deep dependence of inshore and nearshore environments on pelagic ecosystems.

The areas in which these particular monuments are set are unique and diverse. Specifically, Howland Island and Baker Island, associated with the Phoenix Island archipelago, are located at the western edge of the equatorial cold tongue, characterized by strong trade wind-driven equatorial upwellings. The combination of cool nutrient-rich waters in a very sunlit surface on these equatorial islands makes these waters very productive, with very high chlorophyll-*a* levels relative to the rest of the Pacific. In contrast, Palmyra Atoll and Kingman Reef of the Line Island Chain sit at the intersection of the North Equatorial Countercurrent (NECC) and at the northernmost boundary of this tropical zone of increased productivity, and experience moderate levels of productivity and significantly warmer temperatures compared to Howland Island and Baker Island (reviewed in Brainard et al 2019). Palmyra Atoll, in particular, experiences strong upwelling from the NECC, and the island mass effect.

In general, atolls and reefs dramatically increase productivity in otherwise low-productivity tropical ocean landscapes. This phenomenon, deemed the island mass effect, is likely driven by a combination of physical (e.g., upwellings caused by reefs) and biotic factors (e.g. increased nutrient inputs from reef and terrestrial associated organisms—such as fish and seabirds). The island mass effect drives increases in phytoplankton biomass by over 86% near these habitats, providing critical energetic resources (Gove et al 2016). While this island mass effect dissipates before the 50–200nm zone of the proposed expansion area, recent work (Leitner et al 2020) shows that seamounts in open ocean areas like those of the proposed area can also drive long-term chlorophyll enhancements of up to 56% (although this is not universal, as reviewed in Clark et al 2010).

Consequences of such increased phytoplankton and productivity have bottom-up effects across ecosystems. For instance, corals and crustose coralline algae are both known to increase when phytoplankton increases, and these effects trickle up to species such as sharks, squid, and fish (Nadon et al 2012, Williams et al 2015). Fisheries around seamounts showing these increases in productivity exhibit catch rates two fold higher than seamounts without them (Leitner et al 2020)—demonstrating how these chlorophyll-derived subsidies create bottom-up effects on the pelagic fish community. Given that climate change is already predicted to drive significant declines in ocean production in Pacific island areas (e.g. Asch et al 2018), protecting these seamounts that can drive increased productivity is likely an important part of protecting pelagic ecosystems as a whole.

There is also increasing awareness of the importance of pelagic environments to coral reef ecosystems (Graham et al 2018, Morais et al 2019, Skinner et al 2021). For example, planktonic production from offshore pelagic environments has recently been shown to form the overwhelming majority of the carbon biomass of reef predators (Skinner et al 2021). The consistency of this result across species and both inshore and outer coral reef environments suggests that these subsidies likely have system-wide importance, providing an answer to long standing questions about how coral reefs persist in such nutrient poor tropical settings (Skinner et al 2021). Similar results from Palmyra Atoll show that sharks seem to be important in transferring nutrients from more offshore environments to coral reef ecosystems (Williams et al 2018).

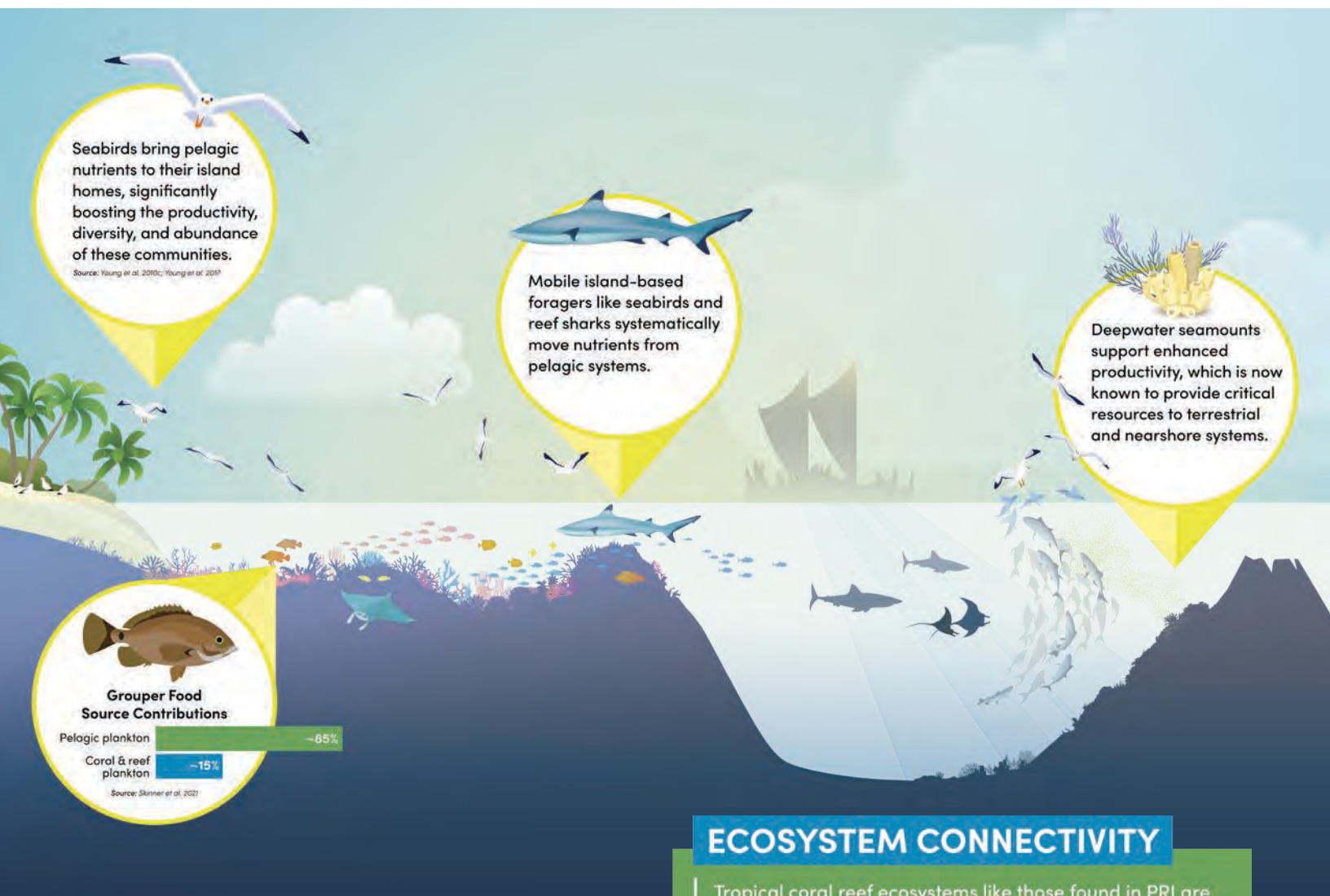
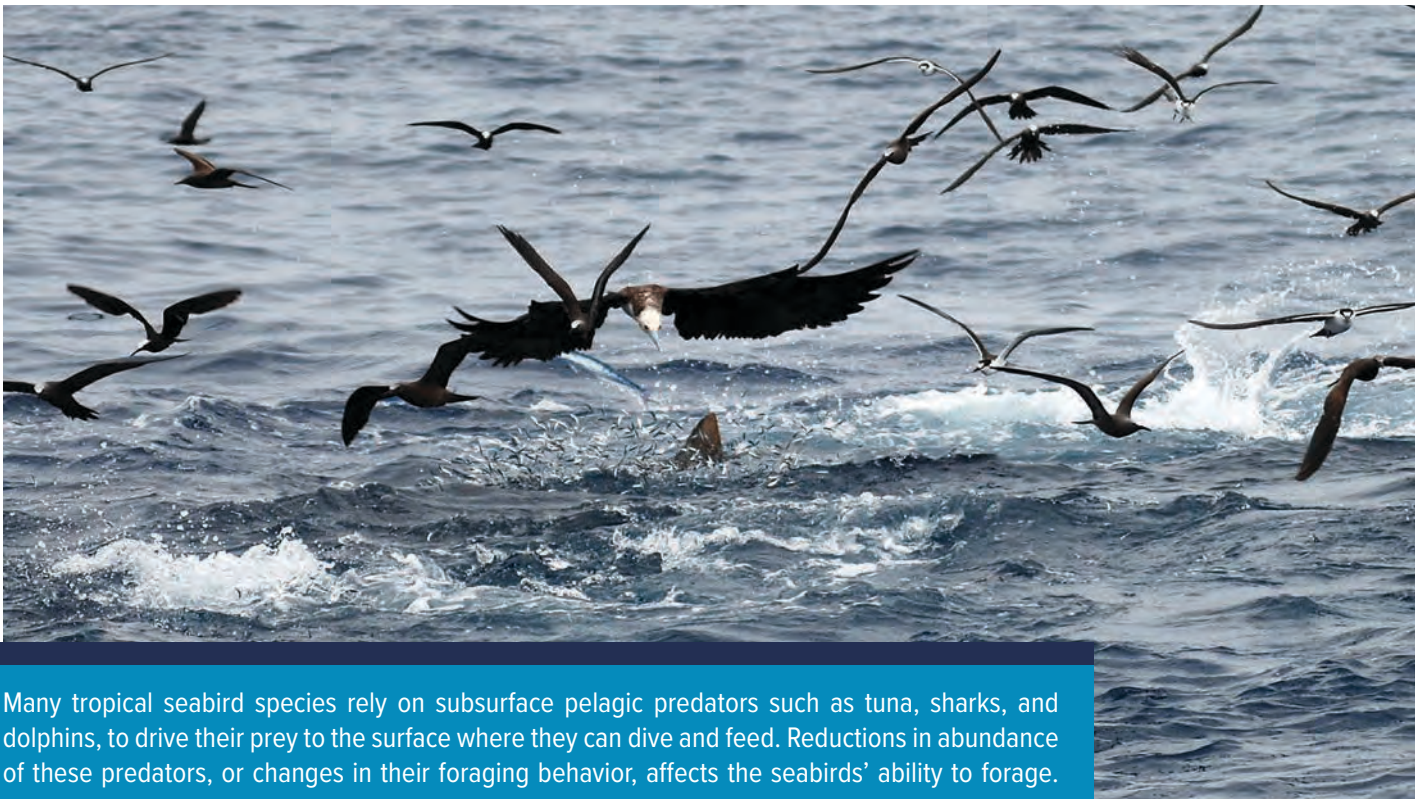


Figure 1. The pelagic communities in the 50-200 nautical mile U.S. EEZ are tightly connected with those of the Palmyra and Kingman Reef and Howland and Baker Island units of PRI. These pelagic areas contribute significantly to the continued health of nearshore protected ecosystems.

This body of work also emphasizes how vulnerable these reefs might be to disruptions in pelagic productivity. Far from being a ‘hot-spot’ that supports the pelagic environment in a desert of low productivity, coral reefs may be deeply dependent on a healthy pelagic ecosystem (Graham et al 2018, Morais et al 2019, Skinner et al 2019, Skinner et al 2021). These findings echo results from other studies and methods (e.g. McCauley et al 2012c, Bradley et al 2017) that have suggested that even species thought to be fairly obligately tied to coral reefs may in fact be deriving a large portion of their energy from more pelagic areas.

The mechanism by which pelagic ecosystems may subsidize reef productivity is unclear. Some may be by direct foraging—e.g. reef sharks moving to pelagic systems to forage there, or pelagic prey moving onto the reef. However, given the sedentary nature and inshore environments of some of the fish studied, much of this is likely to be indirect or through abiotic movement—e.g. through bottom-up incorporation of pelagic productivity into these food webs through entry points such as planktivorous reef fish consuming plankton originating from pelagic ecosystems, detritus—particularly guano—being consumed and processed in terrestrial or inshore areas and leaching back to reef environments, and/or settlement and predation of pelagic larval fishes by reef consumers. In most cases, mechanisms remain uncertain, and this remains a ripe area for future research.



Many tropical seabird species rely on subsurface pelagic predators such as tuna, sharks, and dolphins, to drive their prey to the surface where they can dive and feed. Reductions in abundance of these predators, or changes in their foraging behavior, affects the seabirds’ ability to forage.

Photo credit: Kydd Pollock, The Nature Conservancy

Other research has long shown the importance of marine resources to subsidizing both terrestrial and inshore environments. For instance, seabirds in particular are known to transform both terrestrial and inshore ecosystems. These seabirds nest on islands, but travel long distances to forage in surrounding waters. Within Palmyra Atoll, reductions in seabird abundance have been shown to cause reductions in productivity and diversity of plants, and changes in composition, diversity and body condition of both plants and arthropod consumers (Young et al 2010c, 2013, 2017). Their guano also is suggested to drive changes in terrestrial processes such as rates of decomposition and pollination (Fukami et al 2006, Lee et al personal comm). Moreover, the runoff of guano-enriched water into lagoon environments drives increased phytoplankton in these environments, affecting abundance and behavior of rays that are known to be highly pelagic in much of their life (McCauley et al 2012a).

Work in similar systems has also shown that seabird nutrients are assimilated by coral reefs (Lorrain et al 2017), for example, causing reef-building species *Acropora formosa* to grow up to 4 x faster in reefs with seabirds than those without seabirds (Savage 2019). These nutrients also seep into benthic communities—such as turf algae and sponges—which causes a bottom-up subsidy to the fish community and has beneficial cascading effects on ecosystem stability. For instance, herbivorous damselfishes grow faster and have nearly 50% higher biomass overall in sites with seabirds than adjacent sites without seabirds (Graham et al 2018). This in turn causes herbivore-facilitated grazing and bioerosion rates—which are critical processes for the long-term persistence of coral reefs—to be more than 3 times higher on sites with seabirds than sites without large seabird colonies (Graham et al 2018).

The seabirds that connect these disparate ecosystems are often entirely dependent on pelagic food sources, with some species regularly foraging hundreds of miles offshore (e.g. Young et al. 2010a, b, Maxwell and Morgan 2013). Furthermore, many of these species are considered to be obligately dependent on the presence of subsurface predators (Au and Pitman, 1986; Maxwell and Morgan, 2013)—especially, in this system, pelagic sharks and tuna that chase their prey to the surface where they are accessible to the seabirds (Maxwell and Morgan 2013). Thus, the integrity of even the terrestrial and reef ecosystems is tightly and reciprocally linked to the integrity of the pelagic predator community.

Although our awareness of the degree of importance of movement of nutrients across horizontal space—specifically linking pelagic to inshore and nearshore environments—is more recently appreciated, the linkages between pelagic and deep sea environments—across vertical space—have long been recognized. We are well aware of the critical value of daily vertical migrations of zooplankton from deep sea to pelagic zone to deep waters (Hays 2003). Large animals such as cetaceans are also critical in moving volumes of nutrients from deep sea to

surface in an upwards nutrient pump, dramatically affecting carbon budgets (Williams et al 2018). Similarly, grey reef sharks dive to depths of at least 120 m in this area (Papastamatiou et al 2018) and yellowfin tuna forage up to two hundred meters in depth (Fonteneau and Hallier 2015, Lam et al 2020). The downward flow of nutrients, detritus and carcasses are thought to be critical in supporting deep-sea biodiversity. The reduction of mesopelagic fish by fishing is thought to decrease deep-sea bottom dwelling organisms by the loss of prey in these food-limited ecosystems.

The deeply interconnected nature of terrestrial, reef, pelagic, and deep-sea ecosystems in this region further demonstrates the importance of meaningfully protecting each of these systems, and the dynamic processes linking them to each other, as anthropogenic disturbance has been to frequently decouple these important linkages (Williams et al 2015).



Manta rays travel great distances through the open ocean and nearshore environments like the lagoons at Palmyra Atoll. Mantas feed exclusively on phytoplankton, and their movements between phytoplankton-rich environments connect the open ocean ecosystems within the U.S. EEZ to the inshore communities of PRI.

LEFT: Giant oceanic manta rays feeding in phytoplankton-rich waters of Palmyra Atoll.
Photo credit: Alex Wegman, The Nature Conservancy

RIGHT: Giant oceanic manta rays soar through the open ocean.
Photo credit: Shawn Heinrichs, SeaLegacy.

2 | CONSERVATION VALUE OF THE REGION BY ECOSYSTEM AND TAXA

The ecosystems of Palmyra Atoll, Kingman Reef, Howland Island, and Baker Island are highly biodiverse and are of high global conservation value (Maragos et al 2008). The islands and their surrounding waters host very healthy shallow water coral reef ecosystems (e.g. Sandin et al 2020) surrounded by a diverse and still largely unexplored range of deep water ecosystems.

The deeper water systems between 50 and 200 nautical miles—the area of focus for potential expansion of protections—host rich communities of pelagic and benthic organisms including many vulnerable and endangered species, and many largely unexplored communities. It holds ecosystems that are diverse and valuable, and new species are being discovered on nearly every dive. There are 98 additional seamounts that would be protected with this expansion.



A coral reef around Palmyra Atoll. The coral reefs of Palmyra Atoll, Kingman Reef, and Howland and Baker Islands are large and overall extremely healthy, dominated by reef-building corals and crustose coralline algae.

Photo credit: Kydd Pollock, The Nature Conservancy

While some pelagic predator species found in these areas appear to be at a fraction of their historical norms, likely due to regional fishing pressure (e.g. yellowfin tuna, oceanic whitetip and bigeye tuna) other parts of the predator community is still relatively intact with high biomass of top predators, especially reef sharks and some tuna species (e.g. skipjack) (Sandin et al 2008, McCauley et al 2018). PRI is providing critical information on baseline functioning of reef and pelagic systems with robust predator communities. Notably, more than 50 species of seabirds, many considered threatened or endangered, are known to use the waters around the islands, including more than a dozen species known to breed on these sites (Depkin 2002, USFWS 2007 a, b, c, d, Rauzon 2016). These waters are also important habitat for a large number of cetaceans, including many species considered threatened and endangered (Kennedy et al 2021).

While the inshore reef habitats of these sites are variable, they include some of the highest reported cover of live coral, rates of coral recruitment, and diversity of coral in the Pacific as well as regionally rare species of finger corals; coral health is generally high with low levels of disease and coral predation (Brainard et al 2005, Sandin et al 2008, Obura et al 2011, Smith et al 2016). They also have the largest populations of giant clams in the Pacific, as well as over 400 fish species in at least 47 families (Mundy et al 2010, Allen and Bailey 2011).

These taxa and ecosystems are described in more detail in the following sections.

2.1 DEEP SEA

The deep sea floor in the central Pacific is dotted with hundreds of undersea mountains, or seamounts, which serve as ecological hotspots for biodiversity and habitat complexity between large swaths of mostly barren deep ocean seascapes far from land (Bohnenstiehl et al 2018; Cantwell, Elliott, and Kennedy, 2018; Demopoulos et al 2018; Kennedy et al 2019). Like the rich biodiversity observed on the shallow water coral reefs surrounding near-shore environments, these largely unexplored deep-sea habitats act as biological refuges for unique organisms, of which many can be found nowhere else (Pitcher et al 2007, Kennedy et al 2019, Auscavitch et al 2020). Additionally, given the numbers of seamounts dotting the ocean floor and associated high levels of endemism, seamounts may well harbor the largest number of undiscovered marine species left on Earth (Roark et al 2009). As of 2014, PRI waters around Howland and Baker Islands, Kingman Reef, and Palmyra Atoll included 22 seamounts within their protected boundaries. However, 98 unprotected, mostly unexplored, seamounts remain within the proposed expansion area surrounding these islands (Sala et al 2014).

BATHYMETRIC MAPS OF THE PROPOSED EXPANSION AREA

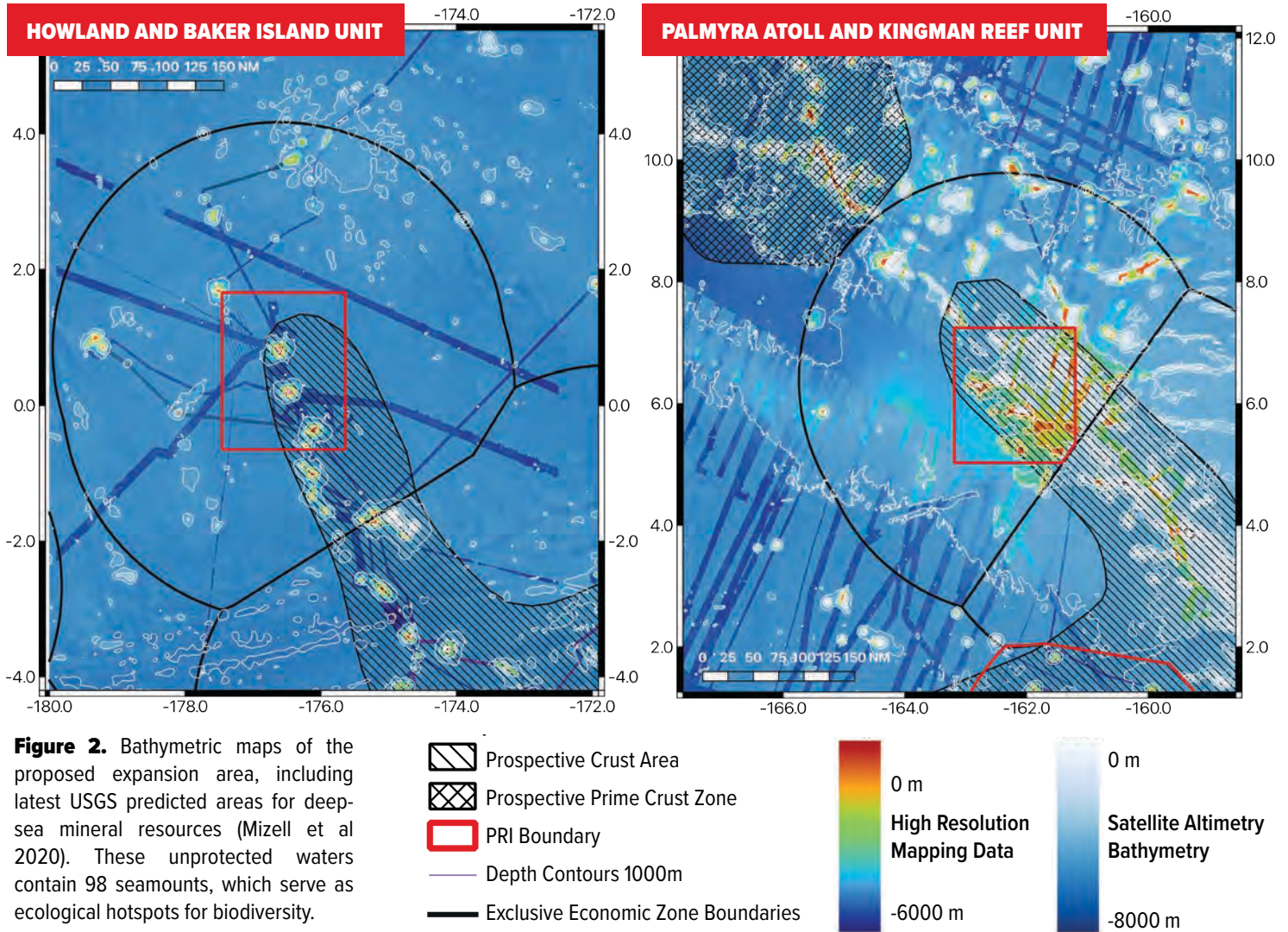


Figure 2. Bathymetric maps of the proposed expansion area, including latest USGS predicted areas for deep-sea mineral resources (Mizell et al 2020). These unprotected waters contain 98 seamounts, which serve as ecological hotspots for biodiversity.

Although the locations and rough sizes of seafloor features in this region are known from satellite altimetry data (resolution of about 1.5 km for imaging the seafloor) (Figure 2), the lack of complete, high-resolution sonar mapping (resolution of 100 m) limits the ability to fully describe deep-sea habitats throughout these waters (Kim and Wessel, 2011; Cantwell, Elliott, and Kennedy 2018; Kennedy et al 2019). For example, sonar mapping data collected during 2017 transits of the Jarvis Unit of PRI revealed errors in previous satellite altimetry seamount depth estimations of about 1700 m (Kennedy et al 2019). Due to these mapping errors, unexplored seamounts within this region may be several hundred feet shallower or deeper than previously thought. As such, there is high potential for the unexplored and poorly-characterized seamounts in the proposed expansion area to harbor more suitable environments for pelagic organisms and marine invertebrates than previously thought.

During the 2015–2017 CAPSTONE Campaign conducted by NOAA Ocean Exploration Ship *Okeanos Explorer* (Maxon et al 2021), exploration of undocumented seamounts within the proposed areas for expansion found unexpected associations of sponges, corals, and other marine invertebrates with different geologic features (Kennedy and Pawlenko 2017a, NOAA 2017b, Kennedy et al 2019). This suggests that not only are deep-sea environments areas of high diversity, but the surveyed environments within and around PRI are not as homogenous as expected. For example, different species of coral were found to grow on shallower island slopes and atolls than those of deeper conical seamounts and guyots (Kennedy et al 2019). Further, distinct differences were also found between habitat diversity and seamount shape (conical versus guyot) suggesting that habitat complexity and associated recruitment may be much more complex than previously understood (Kennedy et al 2019). These findings suggest that the standing protection of nearshore environments and limited seamounts within PRI may leave large swaths of unique taxa and habitats in this region unprotected and vulnerable to various threats.

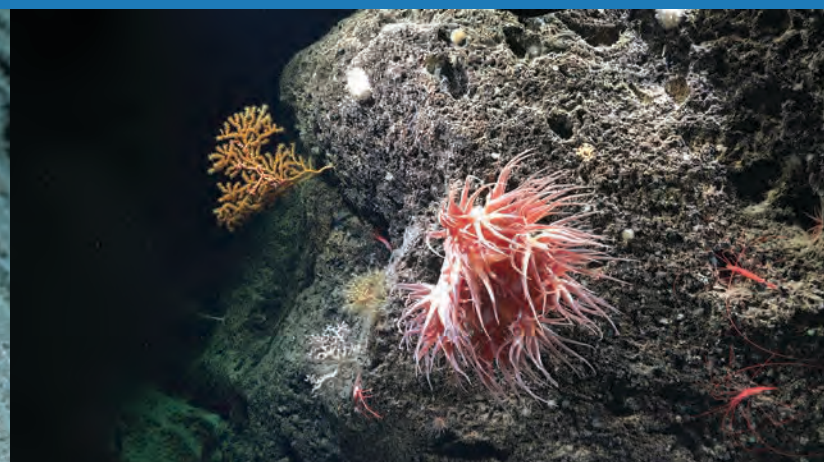
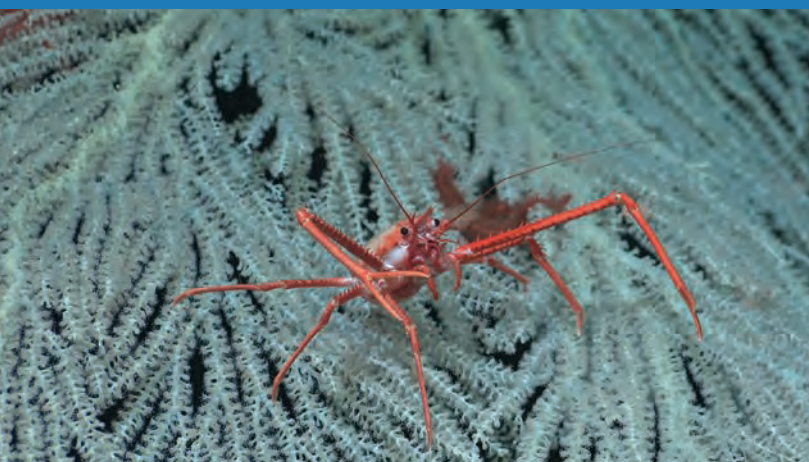
Additional analyses of data collected by the *Okeanos Explorer* and the Ocean Exploration Trust Exploration Vessel (E/V) *Nautilus* documented previously unobserved species in this region. New discoveries were not limited to the protected waters within the existing monument borders (Ocean Exploration Trust 2019). Dives inside the proposed expansion area found potentially undescribed bamboo corals (Isididae), plexaurid corals, cup corals (Scleractinia), sea stars, and several organisms new to this area, including a rare protist (*Groma sphaerica*) and a massive branching scleractinian coral colony (*Madrepora oculata*) growing below 975 meters (Kennedy and Pawlenko 2017a, b; Demopoulos et al 2018; Kennedy et al 2019; Rotjan 2021).

Recent exploration cruises conducted in 2021 by the Schmidt Ocean Institute and its Research Vessel (R/V) *Falkor* through seamounts within the proposed expansion area south of Howland and Baker Islands have led to the documentation of additional rare species, extensive mesophotic and deep-sea coral reefs, and schools of sharks and skates traversing through this region (Auscavitch 2021, Kagan 2021, Kennedy et al pers comm, Rotjan 2021, Weinning 2021). This range of seamounts spans the border of the unprotected section of the U.S. Howland and Baker EEZ and the Phoenix Islands Protected Area (PIPA), connecting into the Winslow Reef Complex, and has lately served as an important stage for new findings (Rotjan and Teroroko 2016). Partially explored by the *Okeanos Explorer*, R/V *Falkor*, and E/V *Nautilus* during remote operated vehicle (ROV) dives, this complex has been home to the discovery of a new octocoral species (*Narella aurantiaca*) and identification of a rare octocoral previously identified in Indonesia (*Thouarella tydemani*) (Auscavitch et al 2020). Though data from this cruise is still undergoing processing, the high number of traversing skates and rays and unique taxa present suggests that this complex may serve as a corridor for the flow of deep-sea and pelagic organisms across U.S. EEZ and PIPA borders.



DEEP-SEA BIODIVERSITY

The deep-sea ecosystems of the proposed expansion area are home to unique and incredible biodiversity, including rare and slow-growing corals and sponges, invertebrates such as sea stars, pyrosomes, crustaceans, and cephalopods, deep-dwelling sharks and fishes, and more. The images here were captured during ROV dives within the proposed expansion area by the NOAA Ocean Exploration Ship *Okeanos Explorer* in 2017 and the Schmidt Ocean Institute's R/V *Falkor* in 2021. These expeditions have brought to light many novel taxa, records, and behaviors in the area, uncovering new types of species interactions and unveiling critical information around the drivers of deep-sea life.



In addition, outputs from this cruise have not only led to novel species and connectivity discoveries, but also advancements in the field of biomedical science. Deep-sea biodiversity is the source for a number of important products for biomedicine. For example, the medicine Discodermolide was isolated from a deep-sea sponge and shows promise for treatment of drug-resistant cancer; similarly Topsentin, isolated from deep-sea sponges, is being used to treat arthritis and cancer (Schwartzmann et al 2001, Haefner 2003, Kumar and Pal 2016).

Most recently, exploration conducted during these R/V *Falkor* surveys in PIPA have resulted in the discovery of non-toxic molecules for biomedical drug delivery applications (Gauthier et al 2021). Swabbed from lesions on deep-sea coral during dives within PIPA, bacteria were isolated without any exploitation beyond normal scientific exploration efforts conducted throughout the Pacific by NOAA, OET, SOI, and others. Researchers found that 80% of the bacteria examined from coral lesion swabs elicited no inflammatory response from mammalian lipopolysaccharide (LPS) receptors (Gauthier et al 2021). These LPS molecules are among bioactive molecules notably utilized in biomedical drug delivery applications, so evasion of detection in mammalian systems points to non-pathogenic and non-toxic options for drug delivery, such as in cancer treatments, versus current methods (Gauthier et al 2021). Although the bacteria that synthesize this LPS were discovered in neighboring PIPA, recent exploration has now continued the research resulting in similar discoveries in PRI and proposed areas for expansion (Rotjan pers comm). This discovery has immense potential for the development of new biological tools and therapeutics offering novel ways to deliver medicine. However, these results also highlight the ability to both protect areas of the ocean even with strong no-take protection and continue to conduct basic research, non-exploitative sampling, and to make discoveries for major biomedical applications.

It is already clear that deep-sea biodiversity is critical for the health of the oceans, as well as a human resource (Niner et al 2018). The equatorial Pacific is considered a hotspot for productivity and deep sea biodiversity (Smith et al 2008). Although there have only been a limited amount of dives conducted in these areas (40 dives in the EEZ surrounding Howland and Baker Islands, Palmyra Atoll, and Kingman Reef through 2021), exploration has shown that this region is rich with dense beds of corals, sponges, and other invertebrates, most of which are likely undescribed (Kennedy and Pawlenko 2017a, b; Demopoulos et al 2018; Kennedy et al 2019; Rotjan 2021). Discoveries of new species and new habitats suitable for deep sea communities, in addition to biomedical discoveries and those yet to be made, emphasize the value of unprotected deep-sea environments in this region and strongly support the need for extending protection surrounding Palmyra Atoll, Kingman Reef, and Howland and Baker Islands.

2.2 PREDATORY FISHES

There are a large number of predatory fish species in these waters—many of which have declined dramatically in the last century. The proposed expansion area is home to tuna, swordfish and marlin, as well as sharks, which are discussed separately below. These predators are known to have disproportionately strong effects on ecosystem functioning, including altering carbon sequestration and total storage, nutrient cycling and cross-system movement, disease dynamics, and species invasion, among many others (Hammerschlag et al 2019).



A school of big-eyed jacks swirls in the water column near Palmyra Atoll. There are a large number of predatory fish species in these waters—many of which have declined dramatically in the last century.

Photo credit: Kydd Pollock, *The Nature Conservancy*

Predatory fishes present in the region of the proposed expansion area include four tuna of commercial significance: skipjack (*Katsuwonus pelamis*), yellowfin (*Thunnus albacares*), bigeye (*Thunnus obesus*), and albacore (*Thunnus alalunga*)—with yellowfin and skipjack being the most abundant in the Central Tropical Pacific (CTP). While Western Central Pacific Fisheries Council (WCPFC) data suggests there has been a stabilization of most tuna populations globally, many

of which had been in precipitous declines in previous estimates, the biomass and spawning stocks of multiple species are still dramatically lower than historical norms (Senina et al 2018, WCPFC 2021a, b, c, d). Specifically, biomass and spawning potential of yellowfin and bigeye in the region appear to be at <50% of 1950s levels (WCPFC). Notably, four of the regionally important tuna species are still considered by the International Union for Conservation of Nature (IUCN) to be declining, with bigeye tuna considered a globally vulnerable species (IUCN 2021).



A yellowfin tuna feeding frenzy. These pelagic predators chase their prey up to the surface to feed, often alongside sharks, seabirds, and other predators.

Photo credit: Kydd Pollock, The Nature Conservancy

The area is also an important tuna spawning ground. Recent work has also shown persistent tuna spawning activity of yellowfin, bigeye and skipjack tuna within the Phoenix Islands archipelago, of which Howland and Baker Islands are a part (Hernández et al 2019). While this work did not actually extend to the proposed expansion area of the Howland and Baker unit of PRI, some of the higher spawning sites especially for skipjack (e.g. near Winslow Reef) directly abut this EEZ and strongly suggest there are high levels of spawning within these areas, with additional data to support this claim available soon (Rotjan et al pers comm).

While tropical tuna are undoubtedly highly mobile, the median distance moved over the *lifetime* of the fish is estimated at 420–470 nautical miles for skipjack and 20% less than that for yellowfin. The median residence time for these species within an EEZ is 3–6 months, suggesting that pelagic MPAs, especially when arranged in a coordinated network (as in PRI) can be effective for conservation (Sibert and Hanson 2003) (see section 5.1 for a more in-depth discussion). In some systems, individual tuna can have residency times of 100–200 days (Richardson et al 2018).

2.3 SHARKS

Sharks are considered the most threatened marine vertebrate group in the world (Dulvy et al 2014, Pimiento et al 2020), with one in four of all evaluated species of sharks and rays now threatened with extinction, and only 37% considered safe (Dulvy et al 2021) (Figure 4). Tropical shark species are experiencing disproportionately strong population declines, with more than half considered to be threatened or near threatened by IUCN (Nadon et al 2012, Dulvy et al 2014, Bradley and Gaines 2014, Bradley et al 2017, Roff et al 2018, Letessier et al 2019). This is of global conservation concern, as sharks are a major component of predator biomass in tropical pelagic and reef environments and play an important role in ecosystem health and function (Roff et al 2016). Notably, under most global extinction scenarios sharks are predicted to experience more functional loss than any other marine group examined, suggesting particularly strong effects on ecosystem function (Pimiento et al 2020).

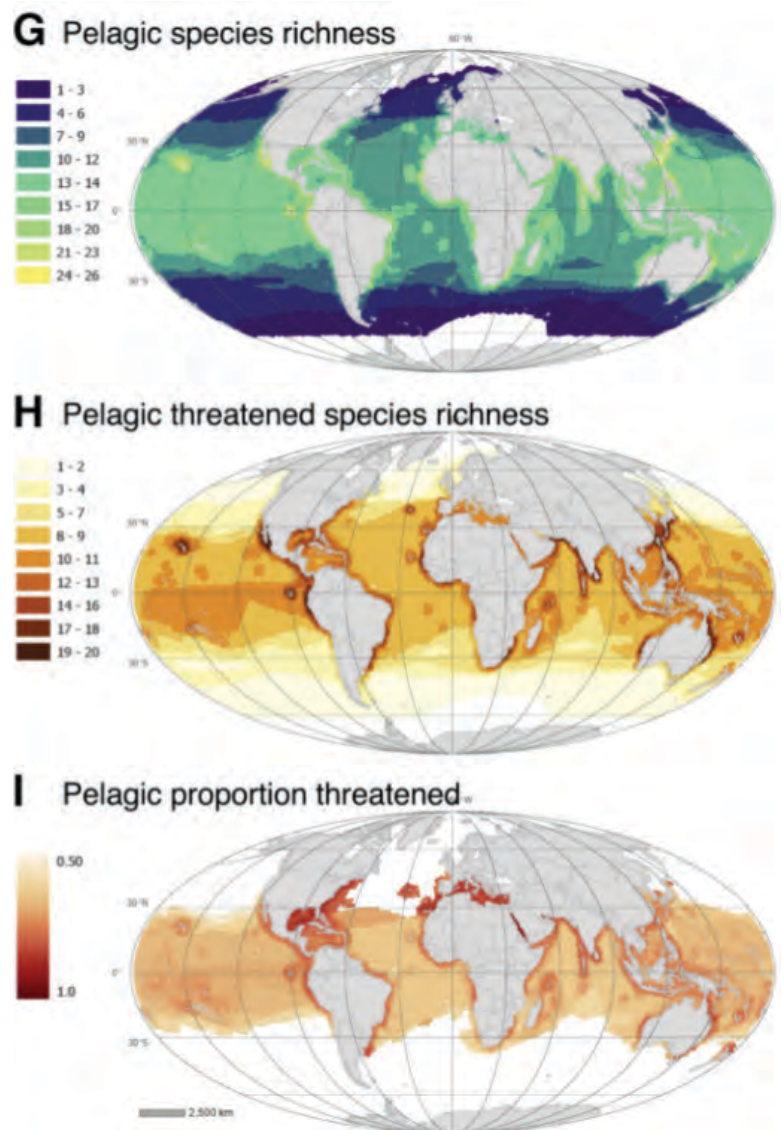


Figure 3. Tropical shark species are experiencing disproportionately strong population declines, with more than half considered to be threatened or near threatened by IUCN. *Figure source: Dulvy et al 2021.*

While there is no analysis across shark species for this region in particular, an analysis in tropical systems globally found declines of 74–92% in sharks across multiple species examined, along

with substantial declines in body size (Roff et al 2018). Another global analysis of reef sharks found these sharks to be totally absent on 20% of the world’s coral reefs (MacNeil et al 2020). Even the highly abundant grey reef sharks (composing up to 46% of biomass at upper trophic levels of coral reef ecosystems, Bradley et al 2014) are now listed as endangered (IUCN 2020)

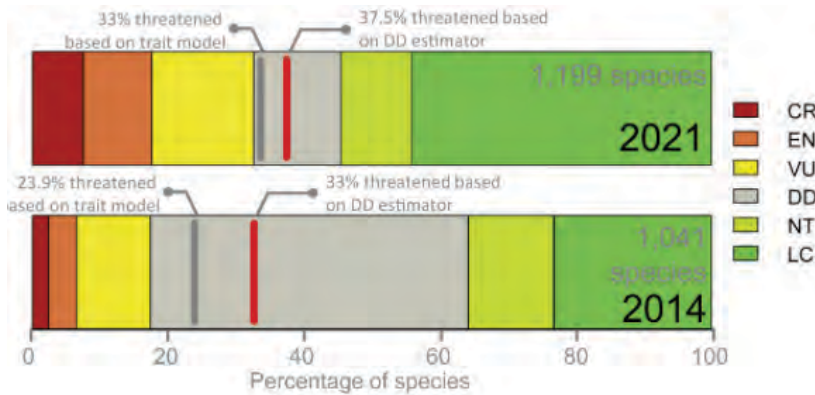
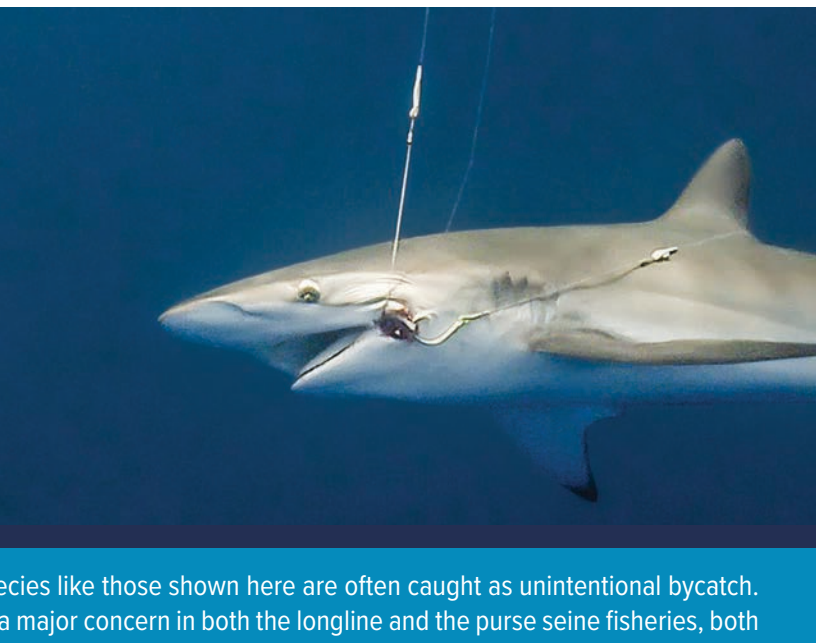


Figure 4. A comparison of the IUCN Red List status of sharks and rays between 2021 (upper bar) and the first assessment (lower bar, 2014), demonstrating the rapid decline of populations worldwide. Currently, over one-third of all sharks and rays are threatened. *Figure source: Dulvy et al 2021.*

and have been found to be in global decline even at remote locations (Robbins et al 2006, Graham et al 2010). Even the once common blacktip reef sharks are now listed as vulnerable (IUCN 2020).

Nearly all this decline is likely due to bycatch fishing of sharks (Bradley et al 2014, Dulvy et al 2014). Shark bycatch is a major concern in both the longline and the purse seine fishery, both of which operate in

or directly adjacent to the waters of the proposed expansion area. Studies of survivorship of sharks captured in the purse seine fishery around drifting FADs in the equatorial Pacific show 80 to 95% mortality (combining at-vessel and post-release mortality) (Eddy et al 2016). Stock assessments produced by the Western and Central Pacific Fisheries Commission (WCPFC) indicate that some pelagic sharks have experienced population declines of over 95% in this region (WCPFC 2019f).



Pelagic shark species like those shown here are often caught as unintentional bycatch. Shark bycatch is a major concern in both the longline and the purse seine fisheries, both of which operate in or directly adjacent to the waters of the proposed expansion area.

Photo credit: Shawn Heinrichs, SeaLegacy

Only very large closed areas are effective in protecting sharks from these threats (MacNeil et al 2020), including reef sharks—many of which range more widely than are traditionally thought. For instance, one study in the Palmyra and Kingman Reef unit of PRI showed that grey reef sharks’ range includes the areas between 50 and 200 nautical miles outside of the current protected area (White et al 2017). Further, remote areas like this one have been shown to be the most effective at protecting sharks (Letessier et al 2019). Comprehensive surveys of a few shark populations in PRI and surrounding region suggest abundances here are among the highest reported anywhere—a testament to the value of these remote and protected areas for conserving these species (Sandin et al 2008, McCauley et al 2012b, Nadon et al 2012, Bradley et al 2017). However, it should be noted that recent analysis suggests that previous estimates of shark abundance in this region overall are likely severely inflated, suggesting that even these relatively robust populations may be significantly more vulnerable to exploitation because they are smaller than previously thought (Bradley et al 2017). Critically, a recent analysis found that large closures in the U.S. Pacific have some of the highest conservation potential for sharks anywhere in the world, suggesting critical gains could be made for shark populations using large closures such as those discussed here (MacNeil et al 2020).



Gray reef sharks (*Carcharhinus amblyrhynchos*) in the pelagic waters outside the PRI. Recent work at Palmyra Atoll suggests protecting the full EEZ of this unit would strengthen protection for this pelagic species in particular (Gilmour et al 2022).

Photo credit: Kydd Pollock, The Nature Conservancy

Species of sharks known in the expansion area are listed below. These waters are known to contain ten endangered or critically endangered elasmobranch species (including both sharks and rays), and five vulnerable species. This is an incomplete list, as observations are driven mainly by sightings in reef environments, emphasizing common and easily visible species (Mundy et al 2010, McCauley et al 2012c). There is much to be learned about shark biodiversity in the area, and it is likely much higher than reflected here—for instance, a single recent effort of deploying deep water dropcams in just one of the PRI units added five new shark species records to this list (Tholan et al 2020).

SCIENTIFIC NAME	COMMON NAME	IUCN STATUS
<i>Carcharhinus amblyrhynchos</i>	Gray reef shark	Endangered
<i>Carcharhinus galapagensis</i>	Galapagos shark	Least Concern
<i>Carcharhinus melanopterus</i>	Blacktip reef shark	Vulnerable
<i>Carcharhinus altimus</i>	Bignose shark	Near Threatened
<i>Carcharhinus longimanus</i>	Oceanic whitetip shark	Critically Endangered
<i>Rhincodon typus</i>	Whale shark	Endangered
<i>Carcharhinus albimarginatus</i>	Silvertip reef shark	Vulnerable
<i>Triaenodon obesus</i>	Whitetip reef shark	Vulnerable
<i>Sphyrna lewini</i>	Scalloped hammerhead	Critically Endangered
<i>Sphyrna mokarran</i>	Great hammerhead	Critically Endangered
<i>Taeniurops meyeri</i>	Round ribbontail ray	Vulnerable
<i>Aetobatus narinari</i>	White spotted eagle ray	Endangered
<i>Aetobatus ocellatus</i>	Spotted eagle ray	Vulnerable
<i>Mobula birostris</i>	Giant manta ray	Endangered
<i>Nebrius ferrugineus</i>	Tawny nurse shark	Vulnerable
<i>Negaprion acutidens</i>	Sharptooth lemon shark	Endangered
<i>Echinorhinus cookei</i>	Prickly shark	Data Deficient
<i>Etmopterus pusillus</i>	Smooth lanternshark	Least Concern
<i>Hexanchus griseus</i>	Bluntnose sixgill shark	Near Threatened
<i>Odontaspis ferox</i>	Smalltooth sand tiger shark	Vulnerable
<i>Galeocerdo cuvier</i>	Tiger shark	Near Threatened

Table 1: IUCN status of sharks and rays with species records within the expansion area. When available characterizations are

for local rather than global populations

2.4 MARINE MAMMALS

A large number of protected marine mammals have been observed or acoustically detected in this area, including a species of beaked whale new to science (Dalebout et al 2007, Baumann-Pickering et al 2010). Frequently observed species in these areas include bottlenose dolphins, melon-headed whales, and beaked whales. Models also suggest high relative densities of rough-toothed dolphins (*Steno bredanensis*), bottlenose dolphins (*Tursiops truncatus*), short-finned pilot whales (*Globicephala macrorhynchus*), and sperm whales (*Physeter macrocephalus*), and moderate densities for pantropical-spotted dolphins (*Stenella attenuata*), spinner dolphins (*Stenella longirostris*), striped dolphins (*Stenella coeruleoalba*), and false killer whales (*Pseudorca crassidens*) (Becker et al 2021). Historical data suggests that these waters were once some of the most productive in the world for sperm whales, which were heavily depleted by whaling and have still not recovered; protection of pelagic MPAs in their prime habitat would likely play a key role in fostering their recovery (Kennedy et al 2021).



These waters are home to many marine mammal species, including bottlenose dolphins (top left), melon-headed whales (top right and bottom left), and the rare Deraniyagala's beaked whale (bottom right, with calf).

Photo credits: Kydd Pollock, The Nature Conservancy (TOP RIGHT), and Simone Baumann-Pickering, Scripps Institution of Oceanography (TOP LEFT AND BOTTOM)

Cetaceans perform myriad critical roles in ecosystem functioning, ranging from nutrient and carbon cycling to benthic food sources (as whale falls) (Roman et al 2014). For example, the body of a single large whale may provide carbon flux equal to nearly 2,000 years of natural background carbon flux to a deep seafloor area (Smith 2006, Roman et al 2014). One particularly important function in this ecosystem is likely their role as subsurface predators, which chase prey fish (e.g. squid, flying fish) to the surface, making them available to tropical seabirds, which cannot dive to great depths. In this way, these species directly regulate prey abundances while also facilitating persistence of obligate surface feeding seabirds by affecting behavior of prey.

SCIENTIFIC NAME	COMMON NAME	IUCN STATUS
<i>Mesoplodon densirostris</i>	Blainville's beaked whale	Least Concern
<i>Balaenoptera musculus</i>	Blue whale	Endangered
<i>Tursiops truncatus</i>	Common bottlenose dolphin	Least Concern
<i>Ziphius cavirostris</i>	Cuvier's beaked whale	Least Concern
<i>Kogia simus</i>	Dwarf sperm whale	Least Concern
<i>Pseudorca crassidens</i>	False killer whale	Near Threatened
<i>Balaenoptera physalus</i>	Fin whale	Vulnerable
<i>Monachus schauinslandi</i>	Hawaiian monk seal	Endangered
<i>Megaptera novaeangliae</i>	Humpback whale	Least Concern
<i>Orcinus orca</i>	Killer whale	Data Deficient
<i>Peponocephala electra</i>	Melon-headed whale	Least Concern
<i>Eubalaena japonica</i>	North Pacific right whale	Endangered
<i>Mesoplodon hotaula</i>	Deraniyagala's beaked whale	Data Deficient
<i>Stenella attenuata</i>	Pantropical spotted dolphin	Least Concern
<i>Grampus griseus</i>	Risso's dolphin	Least Concern
<i>Steno bredanensis</i>	Rough-toothed dolphin	Least Concern
<i>Balaenoptera borealis</i>	Sei whale	Endangered
<i>Globicephala macrorhynchus</i>	Short-finned pilot whale	Least Concern
<i>Physeter macrocephalus</i>	Sperm whale	Vulnerable
<i>Stenella longirostris</i>	Spinner dolphin	Least Concern
<i>Stenella coeruleoalba</i>	Striped dolphin	Least Concern

Table 2: IUCN status of marine mammals reported from this region

Cetaceans face a number of threats ranging from habitat loss, direct harvest (both intentional and as bycatch), to entanglement in fishing and other gear. A particularly relevant threat to cetaceans is noise pollution, by which acoustic noise from anthropogenic sources masks vocalization used for communication and feeding and even causes hearing damage (Weilgart 2007, Gómez et al 2016, Avila et al 2017). Currently, the Central Pacific remains a relatively quiet zone (Sirovic et al 2013) and is thus a critical acoustic refuge for these noise-sensitive animals. All vessels make some noise, and seabed mining would likely be an exceptionally noisy activity (Levin et al 2016, Martin and Entrup 2021). Thus seabed mining or increased fishing vessel traffic would both likely negatively impact this acoustic refuge for cetaceans, including endangered cetaceans that may directly interact with ecosystems being targeted for mining (Marsh et al 2018). Increased vessel traffic could of course also increase the likelihood of ship strikes, and increasing fishing activity increases the likelihood of bycatch or entanglement in fishing gear.

2.5 Sea turtles

Turtle populations have declined dramatically at a global scale in the last few centuries—a result of direct harvest of adults and eggs, and of bycatch in fisheries. Longline fisheries are an important source of mortality for turtle populations of multiple species (Lewison and Crowder 2007, Wallace et al 2013, Savoca et al 2020). They are also harmed by entanglement in marine debris and fishing gear, destruction of habitat, and pollution. All sea turtles are now classified as threatened or endangered. While there is little data on turtle abundance from within PRI, data from nearby Phoenix Island Protected Area has reported long-term substantial declines in sea turtle abundance (Maison et al 2010).

There are multiple species of protected sea turtles in these regions, including the endangered green sea turtle (*Chelonia mydas*) and the critically endangered hawksbill turtle (*Eretmochelys imbricata*) (Balazs 1975, 1985; IUCN 2004, 2008; Naro-Marciel et al 2009), the olive ridley (*Lepidochelys olivacea*), the loggerhead sea turtle (*Caretta caretta*) and the leatherback sea turtle (*Dermochelys coriacea*)—the largest sea turtle in the world and critically endangered in the Pacific Ocean.

Importantly, these waters are known to be important to the migration patterns of the leatherback sea turtle. Tracking data (Benson et al 2011) has shown that leatherbacks are actively foraging or transiting the EEZs of the PRI—including the unprotected EEZ waters of the proposed expansion area—throughout the year, and has suggested that these EEZs serve as critical migration routes between Indonesia and California. Pacific leatherback sea turtle populations are currently at high risk for extinction (National Marine Fisheries Service and U.S. Fish and Wildlife Service 2020) and are in critical decline (90% or greater in the Pacific).

Of the 11 populations of green sea turtles listed by USFWS under the Endangered Species Act (ESA), three are endangered, and PRI straddles the habitat of two of these three endangered populations—the Central West Pacific and the Central South Pacific (Fed Reg. 2016). These areas are used both for migratory and feeding grounds, and there has been increasing observation of nesting activity in recent years (Wegmann pers. comm). Tracking of green sea turtles has shown that both juvenile and adults often stay in these sites year round, suggesting the importance of this area as a foraging ground (Luke et al 2004, Naro-Maciel et al 2018). Protecting intact foraging grounds is important for turtle conservation (Wallace et al 2010, Sterling et al 2013). Indeed, tracked turtles in this area show extremely small home ranges while present.



A green sea turtle (*Chelonia mydas*) visiting the coral reefs of Palmyra Atoll. This endangered species is one of the many sea turtle species that call these waters home.

Photo credit: Kydd Pollock, The Nature Conservancy

In addition to their intrinsic conservation values, sea turtles are known to be important in helping maintain low algal covers on coral reefs and are thus likely important in helping reef resilience in the face of climate change and other disturbance (Wabnitz et al 2010, Goatley et al 2012, Burkholder et al 2013). Work from British Indian Ocean Territory (BIOT) has shown strong increases in green sea turtle clutches after prolonged periods of protection, some of which is suggested to be linked to protection (Hays et al 2020, Mortimer et al 2020).

2.6 Seabirds

Among bird species worldwide, seabirds and shorebirds are experiencing particularly rapid declines and are vulnerable from multiple threats—notably including declining food availability at sea as a result of fisheries extraction (Cury et al 2011, Grémillet et al 2018), invasive species on land (Pierce et al 2008, Spatz et al 2017), loss of breeding habitat, direct mortality in fisheries bycatch (Gianuca et al 2017), and climate change and associated sea level rise at their nesting sites (Weeks et al 2013, Reynolds et al 2015, Nicoll et al 2017).

Tropical seabird populations are, in general, poorly monitored given their often aseasonal nesting behavior and remote locations, including at these sites (VanderWerf and Young 2017). However, the studies that do exist suggest rapid declines. For instance 45% of monitored colonies across tropical species in the Great Barrier Reef showed declines (Woodworth et al 2020). Similarly petrel populations in Hawaii are thought to have declined from ~200,000 individuals immediately prior to human contact, to perhaps a tenth of that size when last assessed (Spear et al 1995).



Palmyra's red-footed booby (*Sula sula*) populations are estimated at 6250 breeding pairs, the second largest colony in the world.

Photo credit: Andrew Wright, The Nature Conservancy

There are 16 species of seabirds breeding at these sites, with nearly 40 other species—including multiple endangered species—known to use these waters (See Table 3). Notably, the endangered and declining phoenix petrel (*Pterodroma alba*) and white throated storm-petrel (*Nesofregatta fuliginosa*) may occur on Baker and Howland Islands, although this is unconfirmed (Depkin 2002; Rauzon 2016; USFWS 2007 a, b, c). There are also a number of migratory shorebirds recorded in these sites, including species such as the endangered bristle thighed curlew (*Numenius tahitiensis*), that use this as an important stopover location during migration. Stopover locations are known to be key to the survival of shorebird species and their loss is a major cause of decline in this group, as they provide critical areas to rest and forage to facilitate these long journeys (Studds et al 2017).



A breeding colony of sooty terns (*Onychoprion fuscatus*) on Palmyra Atoll, one of the largest in the world. Breeding colonies at Howland Island can be even larger. These seabirds rely on the unprotected pelagic waters outside of PRI to forage.

Photo credit: Kydd Pollock, The Nature Conservancy

Not only are numerous species present in these areas, but the two units also include some of the world's largest breeding colonies. Sooty tern (*Onychoprion fuscatus*) breeding colonies at Palmyra alone range up to 750,000 nests at a time, and 150,000 nests at Howland Island. Black noddy (*Anous minutus*) colonies range up to 20,000 birds at Palmyra, the largest colony in the Pacific, and Palmyra's red-footed booby (*Sula sula*) populations are estimated at 6250 pairs, the second largest colony in the world.

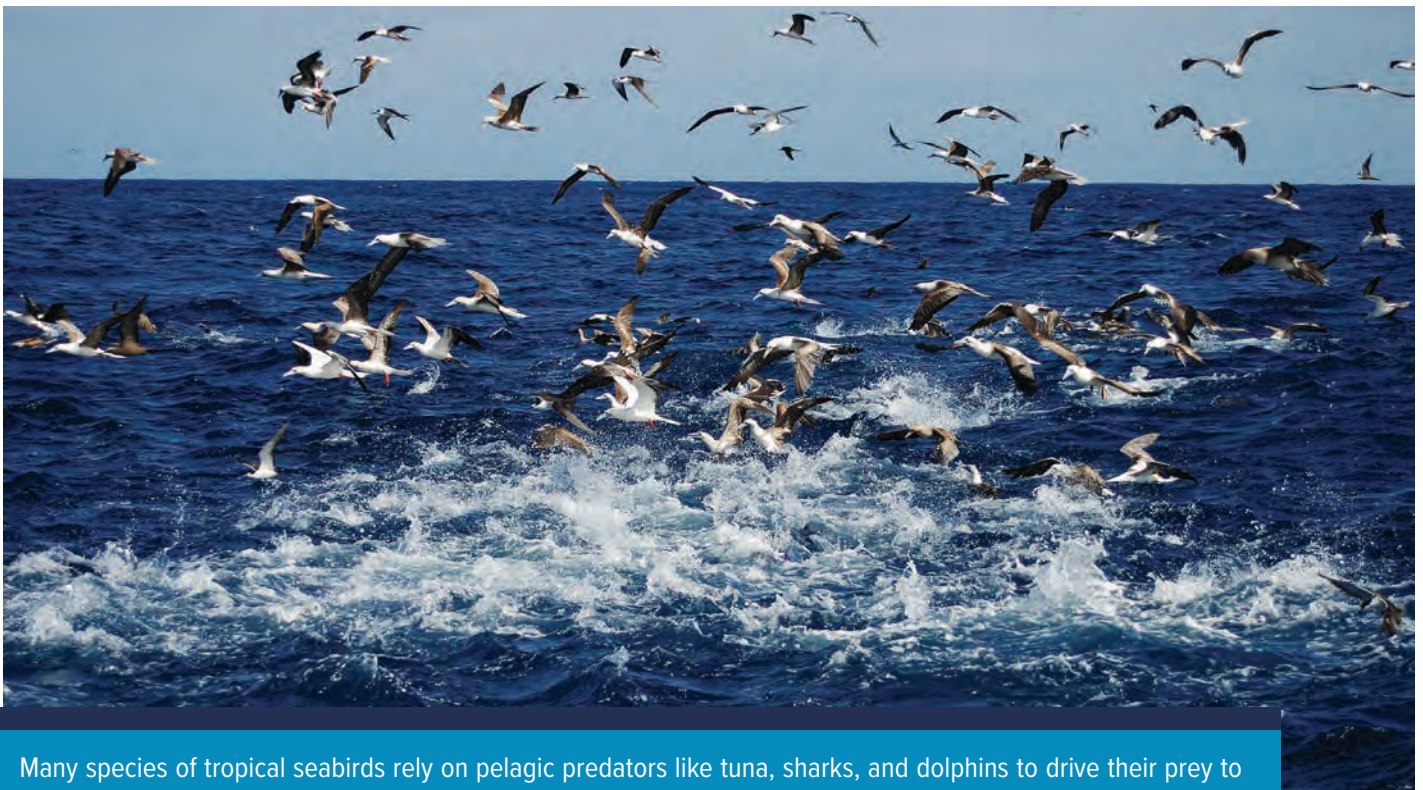
Table 3: IUCN status, breeding status and breeding numbers of seabirds recorded from these sites (sourced from: Flint pers comm; Depkin 2002; Rauzon 2016; USFWS 2007 a, b, c).

SCIENTIFIC NAME	COMMON NAME	IUCN STATUS	BREEDING	NUMBER BREEDING
<i>Anous minutus</i>	Black noddy	Least Concern	YES	6,498
<i>Anous stolidus</i>	Brown noddy	Least Concern	YES	5,164
<i>Ardenna bulleri</i>	Buller's shearwater	Vulnerable		
<i>Ardenna carneipes</i>	Flesh-footed shearwater	Near Threatened		
<i>Ardenna creatopus</i>	Pink-footed shearwater	Vulnerable		
<i>Ardenna grisea</i>	Sooty shearwater	Near Threatened		
<i>Ardenna tenuirostris</i>	Short-tailed shearwater	Least Concern		
<i>Bulweria bulwerii</i>	Bulwer's petrel	Least Concern		
<i>Fregata ariel</i>	Lesser frigatebird	Least Concern	YES	20,050
<i>Fregata minor</i>	Great frigatebird	Least Concern	YES	1,850
<i>Gygis alba</i>	Common white tern	Least Concern	YES	596
<i>Larus pipixcan</i>	Franklin's gull	Least Concern		
<i>Leucophaeus atricilla</i>	Laughing gull	Least Concern		
<i>Nesofregatta fuliginosa</i>	Polynesian storm-petrel	Endangered		
<i>Oceanites oceanicus</i>	Wilson's storm-petrel	Least Concern		
<i>Oceanodroma castro</i>	Band-rumped storm-petrel	Least Concern		
<i>Oceanodroma leucorhoa</i>	Leach's storm-petrel	Vulnerable		
<i>Onychoprion fuscatus</i>	Sooty tern	Least Concern	YES	2,626,000
<i>Onychoprion lunatus</i>	Gray-backed tern	Least Concern	YES	4,000
<i>Phaethon lepturus</i>	White-tailed tropicbird	Least Concern	YES	9
<i>Phaethon rubricauda</i>	Red-tailed tropicbird	Least Concern	YES	829
<i>Phoebastria immutabilis</i>	Laysan albatross	Near Threatened		
<i>Phoebastria nigripes</i>	Black-footed albatross	Near Threatened		
<i>Procelsterna cerulea</i>	Blue noddy	Least Concern	YES	37
<i>Pseudobulweria rostrata</i>	Tahiti petrel	Near Threatened		
<i>Pterodroma alba</i>	Phoenix petrel	Endangered		

SCIENTIFIC NAME	COMMON NAME	IUCN STATUS	BREEDING	NUMBER BREEDING
<i>Pterodroma brevipes</i>	Collared petrel	Vulnerable		
<i>Pterodroma cervicalis</i>	White-necked petrel	Vulnerable		
<i>Pterodroma cookii</i>	Cook's petrel	Vulnerable		
<i>Pterodroma externa</i>	Juan Fernandez petrel	Vulnerable		
<i>Pterodroma heraldica</i>	Herald petrel	Least Concern		
<i>Pterodroma inexpectata</i>	Mottled petrel	Near Threatened		
<i>Pterodroma leucoptera</i>	White-winged petrel	Vulnerable		
<i>Pterodroma longirostris</i>	Stejneger's petrel	Vulnerable		
<i>Pterodroma neglecta</i>	Kermadec petrel	Least Concern		
<i>Pterodroma nigripennis</i>	Black-winged petrel	Least Concern		
<i>Pterodroma pycrofti</i>	Pycroft's petrel	Vulnerable		
<i>Pterodroma sandwichensis</i>	Hawaiian petrel	Endangered		
<i>Pterodroma ultima</i>	Murphy's petrel	Least Concern		
<i>Puffinus bailloni</i>	Tropical shearwater	Least Concern	YES	1
<i>Puffinus nativitatis</i>	Christmas shearwater	Least Concern	YES	4
<i>Puffinus newelli</i>	Newell's shearwater	Critically Endangered		
<i>Puffinus pacificus</i>	Wedge-tailed shearwater	Least Concern	YES	4
<i>Stercorarius parasiticus</i>	Arctic jaeger	Least Concern		
<i>Stercorarius longicaudus</i>	Long-tailed jaeger	Least Concern		
<i>Stercorarius pomarinus</i>	Pomarine jaeger	Least Concern		
<i>Sterna anaethetus</i>	Bridled tern	Least Concern		
<i>Sterna sumatrana</i>	Black-naped tern	Least Concern		
<i>Sula dactylatra</i>	Masked booby	Least Concern	YES	6,967
<i>Sula granti</i>	Nazca booby	Least Concern		
<i>Sula leucogaster</i>	Brown booby	Least Concern	YES	1,392
<i>Sula sula</i>	Red-footed booby	Least Concern	YES	26,539
<i>Thalasseus bergii</i>	Greater crested tern	Least Concern		

As detailed in earlier discussion on connectivity, seabirds are land place-based foragers, returning to and from regular sites—and thereby drive strong directional movements of nutrients—gathering resources at sea and depositing them on land where they rest, breed, and defecate (Young et al 2010c, 2013). This nutrient movement has been shown to be critical to supporting healthy functioning of both terrestrial and coral reef ecosystems. Loss of seabirds from ecosystems can drive whole scale state change of ecosystems (Croll et al 2005). Seabirds themselves are also an important food source for inshore communities; for instance, at Palmyra Atoll 29% of blacktip sharks were shown to eat seabirds (Papastamatiou et al 2009).

The success of these islets as breeding colonies is, in part, due to the great success of terrestrial conservation efforts related to the terrestrial environments for seabirds. Cats, rats, or both were historically present on all three emergent islands (Palmyra, Baker, Howland) but have now been eradicated on all sites, providing an important refuge from invasive predators and some recovery of seabird populations (Pierce et al 2008, Rauzon et al 2011). A new habitat restoration program at Palmyra Atoll promises to further restore terrestrial habitats for seabirds. Therefore, the main immediate threats to these populations are likely from disruption to their ocean food sources—both directly (e.g. removal of prey or predators that make that prey available) and indirectly via climate change—and direct negative interactions with fisheries.



Many species of tropical seabirds rely on pelagic predators like tuna, sharks, and dolphins to drive their prey to the surface where it is more available to them. Reductions in abundance of these predators also impacts seabirds.

Photo credit: Kydd Pollock, The Nature Conservancy

Tropical seabirds in particular are energetically constrained in foraging in low productivity environments and lack deep diving capabilities; instead, many species rely on subsurface pelagic predators such as tuna, sharks, and dolphins, to drive their prey to the surface where it is more available to them. Reductions in abundance of these predators, or changes in their foraging behavior may dramatically reduce the ability of seabirds to effectively forage (Maxwell and Morgan 2013).

Longline fisheries in particular may pose an important bycatch threat to seabirds. Seabirds can get caught on baited hooks on the miles of line laid out by longline fisheries. More than 160,000 seabirds are killed annually on longlines with strongest effects on petrels, albatrosses, and shearwaters (all found in these waters); this rate is likely to drive population declines for many of these long-lived, slow-reproducing species (Anderson et al 2011). While much of the bycatch of seabirds occurs in higher latitudes and recent improvement in fishing practices have reduced bycatch, the Hawaiian longline fishery alone may catch hundreds of birds a year (Gilman et al 2016).

2.7 Inshore and Island Resources

While terrestrial and inshore ecosystems are not directly affected by expansion from 50 to 200 nautical miles, Section 1 above details the strongly interconnected relationship between the proposed expansion area and these nearshore ecosystems. Additional pelagic protections

would likely provide indirect benefits to nearshore areas and the wildlife relying on them, as these ecosystems are intricately dependent on subsidies from offshore environments for their functioning. For this reason, inshore and terrestrial and taxa and resources are described briefly below.



The coral reefs of PRI, like those shown here at Palmyra Atoll, are among the healthiest in the world.

Photo credit: Kydd Pollock, The Nature Conservancy

The coral reefs of Palmyra Atoll, Kingman Reef, and Howland and Baker Islands are large and overall extremely healthy, dominated by reef building corals and crustose coralline algae. For comparison, up to 71% coral cover was reported at

Kingman Reef, while more disturbed reefs in the same island chain exhibited 21–38% coral cover. Coral reef species richness, coral density and coral recruitment are also notably high at these sites, while disease prevalence is low (Sandin et al 2008, Obura et al 2011). Reef fish biomass at these sites is higher than at other sites in the Central Tropical Pacific (Sandin et al 2008, Brainard et al 2019). However, despite the high health of these reefs, two of these sites have still reported some declines in coral cover (13% at Kingman Reef and Baker Island) during the last surveys (Brainard et al 2019), highlighting the delicate nature of these globally-threatened ecosystems and the need for all protections possible to preserve them.



Giant clams, absent or rare throughout most of the Pacific, are abundant and dominate the reef landscape at Kingman Reef in PRI.

Photo credit: *Amanda Pollock, USFWS*

The terrestrial ecosystems in these units, while small, harbor a number of endemic species—many of which are newly discovered. A recent survey of invertebrates at Palmyra Atoll, for instance, found 16 arthropod species entirely new to science. These arthropods span 11 orders and likely include numerous endemic species. They include a large picture wing fly, a large Thysanopteran, a new cricket, and a common isopod (Young et al unpublished data). There are also multiple locally adapted plant subspecies, and important populations of coconut crabs—a threatened charismatic invertebrate. These habitats are also being considered for introduction or reintroduction of globally threatened passerine species, notably the Bokikokiko. Studies in this area have shown that terrestrial biodiversity declines substantially when seabird subsidies are reduced, again highlighting the dependence of these regions on healthy pelagic ecosystems (Young et al 2015).

Similarly, a recent survey of sandflats of Palmyra Atoll has shown 86 new records for parasites, including some in bonefish *Albula glossodonta*, one of the regionally best-studied fishes (McLaughlin et al 2020). The bonefish, heavily targeted by recreational fisheries elsewhere, is found in very high numbers at Palmyra Atoll, including spawning aggregations (Friedlander 2007). Lagoons across many of these sites are utilized by a range of highly-mobile and pelagic species, potentially even serving as nursery habitat for some elasmobranch species (Papastamatiou et al 2010).



Photo credit: Kydd Pollock, The Nature Conservancy

3 | CONSERVATION FOR HISTORICAL AND CULTURAL VALUES

There is a current global cultural awakening that recognizes traditional knowledge, stories, cultural connections between lands and peoples, and celebrates the individual nature of cultures. However, while these attributes are finally receiving value and recognition at this scale, the ecosystems that originally inspired these values are at risk, and in many places, are disappearing.

The protections conferred by PRI can help maintain these baseline ecosystems and elevate their cultural value. Further, fully protecting the two units recognizes that the area may contain artifacts of historic and scientific interest from previous eras, such as whaling, colonization, and World War II—and could prompt continued exploration and protection of these areas from disturbance.

The protection of these waters, however, does not mean that access will be permanently restricted. Instead, protection could afford continued use of these waters through standing regulations and can even expand access to those across the globe. As has been seen through the coverage of existing protected waters by various media, protection can enable scientists, film makers, story tellers, cultural practitioners, and ambassadors to be among those to visit these protected places, to study them, revive and perpetuate cultural traditions, and to share their teachings with the world. As such, especially with the advent of modern technology, global audiences can engage with the wonders of the ocean without leaving their homes.

3.1 Indigenous and Cultural Roots

“

Aloha ‘āina, mālama ‘āina, and mālama ke kai

Love of the land, protect and care for the land, and protect and care for the ocean

”

The sea far beyond the artificial monument boundaries in which the islands of PRI lie is equally valuable for protection. Currently, Papahānaumokuākea serves as the only ‘intact cultural voyaging seascape [with]in the Hawaiian Islands’ (Kerr et al 2016, Kikiloi et al 2017). However, PRI can serve as the premier classroom for ancestral voyaging in remote, pristine oceans by expanding areas of PRI to include all unprotected seas up to the limits of the U.S. EEZ.

As a practice, teaching and practicing traditional open-ocean navigation is limited to specific areas like those in PRI. It is a stage in which ancestral voyages far from land, crossing between distant islands, can be replicated and perfected. Given its distance from heavily populated islands, PRI acts as an open water lab for voyaging since voyagers can remain fully out of sight from land and its associated traits (Finney et al 1986, Hawaiian Voyaging Traditions 2009, Buente et al 2020). As such, areas of pristine ocean outside of the current 50 nautical mile monument limits around Palmyra Atoll, Kingman Reef, and Howland and Baker Islands are invaluable for continuing the progress in revitalizing traditional navigation.

Expanding PRI boundaries to the legal limit of the U.S. EEZ would be a strong and significant signal of U.S. commitment to culture, voyaging, and to Pacific Island nations and neighbors. The ocean exists as an ever changing, but living being; a cultural seascape across which ocean people are connected through sinews of ocean channels, currents, and fauna spread between their islands. It is a vast, thriving body of water holding godly reverence to Pacific Islanders as genealogical and creation chants, such as the Hawaiian Kumulipo, tie the sea, the sky above, and all the organisms seen and unseen within it to their people (Pukui et al 1972, *The Kumulipo* 1981, Maly and Maly 2004, Kerr et al 2016, Takata 2021b, Villagomez and McGuire 2021).

Each system within these waters, whether referring to a series of currents bringing nutrients up the slopes of remote seamounts to feed corals and fish, or the schools of pelagic fish traveling from feeding ground to feeding ground, has function and meaning belonging to a greater corporeal body requiring delicate management and humble understanding to properly function (Pukui et al 1972, Kerr et al 2016). The remote waters of PRI far from land and the influence of anthropogenic factors best represent the areas which gave inspiration to these foundations of cultural knowledge. It is due to these qualities that the regions outside of the currently protected monument act as reservoirs for cultural inspiration and open-water classrooms for teaching activities, such as traditional voyaging.

Specifically, in Native Hawaiian culture the Kumulipo serves as an ever-growing foundation of such stories, songs, and protocols that describe these relationships with the gods, land, sky, ocean, and associated organisms that give people on ‘Island Earth’ their pulse of life (Liliuokalani 1897, *The Kumulipo* 1981). It provides direction and outlines responsibilities from the findings and interpretations of kūpuna (elders and ancestors), while recording familial lines and describing spiritual ancestral knowledge relating to creation and the first organisms to emerge from the depths of darkness; ‘āko‘ako‘a (coral) (Liliuokalani 1897, *The Kumulipo* 1981).

Through its texts, the Kumulipo describes views of holistic and careful respect for ecosystems and their responsible management. These are not only tales of how previous ancestors perceived

and managed lands and seas, but guidance for how future generations can learn to utilize far-reaching spaces, including those holistically and harmoniously within PRI, to preserve what is there, better understand their ecosystems through modern science and exploration, and equitably manage it for the future.

As such, management plans cannot ignore cultural input. The experiences and knowledge of native peoples can be beneficial to other efforts in conservation, exploration, and research, and often hold the empirical observations of these places when they were first explored, settled, and utilized for resources (Liliuokalani 1897, *The Kumulipo* 1981). These findings are no different from those derived from the academic research conducted today. As research is enshrined in modern journals, findings and suggestions for discovery and management were recorded in the Kumulipo and continue to be added in modern knowledge as advancements in technology help to reexamine and retest themes.

The Kumulipo is the foundation of being that ties Native Hawaiians to the shared ancestor that is the ocean, which has allowed for the accomplishment of activities, such as wayfinding to connect ocean peoples. Voiced through the writings of the Native Pacific Islander scholar, Epeli Hau'ofa, he reminds us not to simply focus on land as the only valuable asset as “there is a world of difference between viewing the Pacific as ‘islands in a far sea’ and as ‘a sea of islands’” (Hau'ofa 1994). It is from this central knowledge that Pacific Islanders do not only see islands as destinations for place-to-place access, but as nodes within a thriving sea within which reverence and respect is paid to those organisms and resources in the open expanses that connect them.

Hōkūleʻa, a Polynesian double-hulled voyaging canoe launched by the Polynesian Voyaging Society in 1972, sailing from Rapa Nui to Hawaiʻi. Learning and practicing traditional open-ocean navigation is limited to specific areas like those in PRI and the surrounding unprotected waters. It is a stage in which ancestral voyages far from land, crossing between distant islands, can be replicated and perfected.

Photo credit: Polynesian Voyaging Society



As seafaring people, Pacific Islanders understood these connections, and through their interpretation of the function of the ocean as a living entity, were able to navigate its waters far from the sight of land for millennia (Finney 1977, 1992; Kikiloi 2010; Irwin and Flay 2015; Thompson n.d.). Examples of stewardship in the areas considered for PRI expansion, the application of ancestral knowledge, and continued cultural growth within PRI can be found in this voyaging history.

Oral histories and more recent archeological evidence and voyaging simulations document traditional seafarer’s utilization of marine corridors to reach islands throughout the Pacific; including those within PRI, for cultural practices and exchanges (Di Piazza and Pearthree 2001b; Di Piazza, Pearthree, and Paillé 2014; Irwin and Flay 2015; Kerr et al 2016; Bautista and Smith 2018; Villagomez 2018). As stopping points for resources, temporary shelter, and cultural duties, the islands within PRI prior to colonization by the United States were functional nodes within a water highway utilized by voyagers throughout the Pacific (Finney 1977, Di Piazza and Pearthree 2001a, 2001b).

To accomplish this feat of open-ocean navigation without modern technological means for wayfinding, Pacific Islanders relied upon a deep knowledge of the stars, marine life far from any land, currents, weather, and other factors to provide confirmation of the direction towards land (Lewis 1974, Finney 1992, Thompson n.d.). This ability to purposefully traverse widely distributed islands was dependent on a cohesive suite of biotic and abiotic factors stretching far from the shores of their destinations, unaltered from pristine conditions such that cues to land would be undiminished. Some voyages required passage through oceanscapes over 300 nautical miles long without any land in sight, while others necessitated the knowledge of cycles of lulls in prevailing trade winds in order to reach specific islands (Finney 1977, 1992; Di Piazza and Pearthree 2001b; Irwin and Flay 2015).

This ability to read subtle signs across the oceanscape not only afforded them the skills to utilize immense stretches of unoccupied waters as voyaging avenues, but intrinsically provided them with the role as stewards caring for the environment that made this travel possible to accomplish (Thompson n.d.). Reading the sea, sky, and their associated fauna enabled voyagers to accurately target low-lying, small islands and shoals, such as those in PRI, hundreds of nautical miles before they were visible on the horizon.

Polynesian and Micronesian oral history describes voyaging to PRI for cultural duties and traditions, such as the Marshallese voyaging to Eneen-Kio (Marshallese after the plentiful kio flower) or Wake Atoll, for seabird bones utilized in tattooing (Bautista and Smith 2018, Villagomez and McGuire 2021). Further, their names, many of which given in modern times by Hawaiian cultural scholars of the Kōmike Hua’ōlelo (Hawaiian Language Lexicon Committee), are referential to how Native Pacific Islanders utilized these islands, the native flora, conditions of the islands, and namesakes of vessels utilized to transit the region (Bautista and Smith 2018, Takata 2021a).

Kalama/Moku Kua’au ‘o Ionatana (Johnston Atoll) refers to the vessel used to sail to Johnston Atoll when it was claimed for the Kingdom of Hawai’i. Nalukākala (Kingman Reef) references the frothing surf that crests over its shallow reefs. Named by Native Hawaiian laborers on both islands, Ulukou, or ‘kou tree grove(s),’ was given to Howland Island in recognition of its kou trees, while Puaka’ilima,



Ka Huaka'i a Pele

*Mai Kahiki mai ka wahine 'o Pele,
Mai ka 'āina o Polapola,
Mai ka pūnohu a Kāne,
Mai ke ao lalapa i ka lani, mai ke ao 'ōpua.
Lapakū i Hawai'i ka wahine 'o Pele.
Kālai i kona ka wa'a Honua-i-ākea,
Kō wa'a, e Ka-moho-ali'i, holoa mai ka moku.
Ua 'oki, ua pa'a ka wa'a o ke akua,
Kō wa'a o Kālai-honua-mea,
Holo mai ke au.*

The Coming of Pele

*From Kahiki came the woman Pele,
from the land of Polapola,
from the rising reddish mist of Kāne,
from the clouds blazing in the sky, horizon clouds.
Restless desire for Hawaii seized the woman Pele.
Ready-carved was the canoe, Honuaiākea,
your own canoe, O Kamohoali'i,
for sailing to distant lands.
Well-lashed and equipped, the canoe of the high gods,
your canoe, Sacred-hewer-of-the-land,
stood ready to sail with the ocean current*



An excerpt from the **mo'olelo (story)** of the goddess Pele on her migration to Hawai'i from which Palmyra Atoll received its name; translated by Mary Pukui and Alfons Korn, 1973.

the 'ilima flower, was given to Baker Island in reference to the similar beauty and conditions shared with islands reminding them of home. Similarly, Paukeaho (Jarvis Island) or 'out of breath/exhausted' was indicative of the difficult working conditions on the island, especially during the era of guano mining (Bautista and Smith 2018). Additionally, though its name is of contemporary origins and was chosen for Palmyra Atoll instead of being named by past voyagers and native laborers, Honuaiākea was given to this island and describes the name for the canoe from the chant in which the Hawaiian goddess Pele sailed to Hawai'i (Bautista and Smith 2018, Kikilo pers comm).

Within PRI, these sacred islands and ocean highways connect Native Hawaiians and other Pacific Islanders that have voyaged through this region to their past (Finney 1977; Di Piazza and Pearthree 2001a, 2001b; Thompson n.d.; Villagomez 2018; Villagomez and McGuire 2021). Their roles as navigational beacons assisted voyagers as stopping points during cross-ocean voyages for trade and settlement (Di Piazza and Pearthree 2001a, 2001b; Villagomez 2018; Bautista and Smith 2018; Villagomez and McGuire 2021). Limited in resources, PRI never housed permanent populations, but instead provided food in the form of seabird and turtle eggs, fish and limu (seaweed) from their reefs, a place to rest, areas to cultivate small crops of plants, and burial grounds for those that did not survive ocean journeys (Di Piazza and Pearthree 2001a, 2001b; Bautista and Smith 2018).

Archeological research throughout neighboring islands in the Phoenix and Line Archipelagos have also pointed to even wider utilization of these atolls and reefs by Pacific voyagers, as small structures, basalt artifacts, spears, stones, and axes have been discovered linking to quarries in Samoa, Hawai'i, Society Islands, Tuamotu Archipelago, and Marquesas (Di Piazza and Pearthree 2001b). Additional archeological work during the Whippoorwill Expedition in the mid-1920s pointed to coral walls and mounding structures on Howland Island that shared common traits with those of the far south-east Tuamotu Archipelago, while artifacts of Tahitian origin were also found (Bautista and Smith 2018).

It has only been within the past 50 years that cultural traditions, specifically of Native Hawaiians, have found rebirth, following years of colonization by other nations and religions (Kanahele 1979). The rebirth of the Native Hawaiian language, study and reverence of the Kumulipo, reinstitution of wayfinding and voyaging through the efforts of the Hawaiian voyaging canoe *Hōkūle'a* (a replica of ancient Polynesian voyaging canoes), and reconnection of communities throughout Oceania through wayfinding has led to a wave of reclamation of traditional protocols and knowledge once lost to native Hawaiian peoples (Kanahele 1979, Finney 1992, Thompson n.d.).

Beginning with relearning lost knowledge from traditional Pacific navigators on the islands of Polowat and Satawal, the sharing of traditional seafaring skills and understanding of ancient



*Aia ka nani i Puaka'ilima
Kēlā 'ailana noho i ke kai
No kai ka makani Pāulukona
Ha'īha'i lau lā'au o ka uka
No uka ka 'iwa i kiani mai
Ke hea mai nei lā i ku'u kino
I naue paha wau me ku'u hoa
Me ku'u komo kaimana i ka la'i
Ha'ina ka inoa i lohe
Ke Kuini 'Emalani he inoa.*

*The beauty is there at Puaka'ilima
That island that dwells in the sea
From the sea comes the Pāulukona wind
Crackling the branches of the shoreland regions
From the highlands the frigate bird glides and wheels
Beckoning to my person
That I should perhaps move along with my
companion
With my diamond ring in the serene calm
Tell of the name, that it be heard
Queen Emmalani, a name song*



Mele (chant/song) composed by Native Hawaiian guano laborers working on Baker Island in the late 1850s; mele translated by Mary Kawena Pukui in 1937 and 1952, and Marvin Puakea Nogelmeier in 2001.

canoe designs have led to recreations of these vessels and inaugural voyages (Finney 1992; Cunningham, Kranz, and Sikau 2006). This has also led to breakthroughs in archeological research simulating and replicating the performance and voyaging of canoes through these regions, including currently unprotected areas of PRI, confirming oral accounting of transits throughout the Pacific (Finney 1977; Di Piazza and Pearthree 2001a, 2001b; Di Piazza, Pearthree, and Paillé 2014; Irwin and Flay 2015).

This renaissance has also permitted Native Hawaiians and other Pacific Islanders to look back through the eyes of their ancestors and to view the management of this oceanic basin through a different lens. Relevant to the region surrounding PRI, as Dr. Kekuewa Kikilo'i stated in support of expanding Papahānaumokuākea Marine National Monument, much of the area protected within the monument is underwater and should be viewed from the vantage point of it being a sea-dominated area (Kerr et al 2016). Through this vision, protection and management become nearsighted when failing to include the full extent of a cultural space.

As a source for the past, present, and future, Native Hawaiians knew from the Kumulipo that this knowledge of place and the wide-reaching areas around them were important to preserve, expand upon, and pass on to future generations. Such inspiration and examples for these values come from leaders of the Native Hawaiian people. While under house arrest in 'Iolani Palace following the illegal overthrow of the Hawaiian Kingdom in 1893, Queen Lili'uokalani recognized the importance of such generational knowledge and duties to continue adding to the fabric of Hawaiian culture (Liliuokalani 1897).

She devoted much of her time in isolation to translating the Kumulipo from Hawaiian to English. She recognized that not all Hawaiian people in the future would be mānaleo (Hawaiian speakers), but that the knowledge and responsibilities of kūpuna must be made available for the future. Otherwise, intangible and less understood language or traditions affording insight into the past practices and environmental management of the land and sea would be lost, as would the ability to add new findings and genealogies.

This threat mirrors the opportunity to proactively fully protect open expanses of the U.S. EEZ surrounding PRI for future generations of Native Hawaiians and other Pacific Islanders. This also builds into the dynamic nature of the Kumulipo, as setting aside and designating healthy, rarely exploited seas as kapu (off-limits) for industrial exploitation allows for future Hawaiian and Pacific Islander explorers, scientists, and observers the opportunity to continue the discovery of species and habitats, and to record ecosystem health management while preserving moana (ocean), papakū (seafloor), and lewa (sky) as sacred no-take areas for the growth of future traditional practices.

The deep ocean of PRI is abundant with life and culture, tightly braided together as the cordage utilized to construct the voyaging canoes sailing its waters. Native Hawaiians and other Pacific Islanders were not people who simply existed by colonizing islands and remaining there. Further, travel across the Pacific was not a single-directional migration and settlement of unfamiliar places (Soares et al 2011; Finney 1991, 1992; Polynesian Migrations n.d.;). The passage through PRI was a cultural byway for Polynesians, Micronesians, and possibly Melanesians (Finney 1991, 1992; Polynesian Migrations n.d.). As such, the protection and responsible management of these areas allows for the expansion and cultural renewal of this region through rebuilding of connectivity across shared pristine oceanic paths.

Existing permitting through NOAA and U.S. Fish and Wildlife Service (USFWS) allows for cultural practitioner access to these waters and islands for voyaging, so expansion of PRI would not hamper access when protection is extended. Additionally, monument management through NOAA and USFWS has already implemented traditional fishing and consumption exceptions for cultural practitioners in Papahānaumokuākea (Papahānaumokuākea Marine National Monument 2020). A revision of monument management with public comment has been conducted in early 2022 with submissions requesting additional access and cultural practice allowance within protected waters (Fed Reg. 2021).

As their sacred duty, Pacific Islanders have lived by the principles of working in harmony, conserving, responsibly managing, and protecting their seas to safeguard their traditions and preserve connections to the past while fostering the growth of their culture and enable their practices to persist in the future (Pukui et al 1972, Maly and Maly 2004, Thompson n.d.). Oceans are already changing due to myriads of threats, leading to the loss of wildlife and even inundation and loss of islands due to climate change (Roberts et al 2017, O’Leary et al 2018, Freestone & Çiçek 2021). There is an opportunity to fully protect these areas to limit impacts from these factors and provide large-scale examples evocative of what the ocean looked like to the people who first utilized these areas. The U.S. expansion of PRI would highlight the U.S. commitment to these ancient and traditional values. If extended, PRI would secure protection of the Mo (Marshallese for ‘sacred area’) or Ākea (Hawaiian for the pristine ‘expanses of space’) currently lying unprotected for the expansion of cultural rejuvenation, advancement of traditional voyaging, and preservation of physical and biological resources for future generations.

3.2 Modern History

In addition to the Native Hawaiian and Pacific Islander cultural connection with the Pacific Remote Islands, areas within and outside the current bounds of PRI exist as shared monuments to maritime, military, and native history. These waters stood as passageways for guano traders

and hunting grounds for whalers, the final resting places for ships, the maritime amphitheater for battle in World War II, and the territorial fruits of the dedication of 130 brave Native Hawaiian colonists claiming land and sea in service to the U.S. However, the existing protection of this monument is insufficient to fully preserve the historical landscape of this region.

As with other monument designations, expanding PRI will invite further mapping and seafloor characterization, which may bring lost history to light with the recovery of military ordnance and other objects that thus far have had no recognition (Keogh 2017; NA101 2017; NOAA Ocean Exploration 2021, 2022). To honor the brave Americans who served in these waters, expansion of PRI would likely help reconstruct their brave acts, and bring closure to some military MIA persons and their surviving family members as well as World War II-era mysteries in these parts of the elusive Pacific. Expansion of PRI to the full boundaries of the U.S. EEZ would afford recognition of these efforts and services in currently unprotected waters, while also facilitating further characterization, documentation, and protection of these activities within the extended monument.

Beginning in the 1500s and 1600s, Europeans began sailing through and mapping the region (Magier and Morgan 2012, Bautista and Smith 2018) and by the 1800s, whalers from New England began pursuing Pacific sperm whales as Atlantic populations declined (Magier and Morgan 2012, Smith et al 2012, Bautista and Smith 2018, Kennedy et al 2021). Though whales were hunted within the current boundaries of PRI, significant effort was expended outside of the PRI, but within the current U.S. EEZ (Kennedy et al 2021).

Towards the end of the 19th century and continuing until the early part of the 20th century, the undisturbed and dense bird populations on the islands attracted the exporters of highly prized seabird feathers to feed fashion trends into the early 1900s (Magier and Morgan 2012). Further, ship traffic across the region expanded from the 1800s through the early 1900s as the islands became sources for copra, or dried coconut kernels, and guano mining, which led to the establishment of working populations on these islands to gather, process, and load materials onto vessels for export (Tengan 2008, Magier and Morgan 2012, Bautista and Smith 2018). During these times, the islands became homes for laborers from Niue, Cook, and Hawaii, and made the PRI region a major shipping corridor for this growing economy.

During this period, both Howland and Baker Islands witnessed the destruction of ships due to accidental groundings, fires, and damaged, leaking hulls creating a wealth of historic objects of interest (Magier and Morgan 2012, Bautista and Smith 2018). However, in addition to those lost near shore, logs document ships being lost at sea within the surrounding waters that have yet to be discovered (Bautista and Smith 2018). Lack of modern discovery is partially due to the

lack of high-resolution mapping of the seafloor in much of the EEZ surrounding PRI, leading to features, such as ships and planes, being too small to detect with current satellite imaging (Kim and Wessel 2011; Cantwell, Elliott, and Kennedy 2018; Kennedy et al 2019). These wrecks would prove difficult to find in the wide expanses of the abyssal plain, but could potentially lay beyond current PRI bounds.

Most notably in the modern Hawaiian history of PRI was the dedicated colonization of Howland, Baker, and Jarvis Islands following the guano mining era. From the late 1800s to 1930s these islands were relatively forgotten before U.S. interest was piqued in utilizing their location for air travel stop-overs during flights between Hawai'i and Australia (Danielle 2013). Given its good location for air travel stopovers, Howland Island was the intended destination for Amelia Earhart prior to her theorized disappearance in the surrounding waters (Hancock 2009). With interest in formally establishing these islands and their seas as U.S. territory, the United States set out to colonize the region, recruiting the service of young Native Hawaiian men for continuous occupation in order to lay claim for annexation (Magier and Morgan 2012, Danielle 2013, Bautista and Smith 2018).



Graduates and students of Kamehameha School, later known as the Hui Panalā'au, onboard the USCGC Itasca, January 1936. Back row, left to right: Luther Waiwaiole, Henry Ohumukini, William Yomes, Solomon Kalama, James Carroll. Front row, left to right: Henry Mahikoa, Alexander Kahapea, George Kahanu, Sr., Joseph Kim.

Photo credit: Image courtesy of George Kahanu, Sr.; credit: Center for Oral History, Social Science Research Institute, University of Hawai'i at Mānoa and Bernice Pauahi Bishop Museum.

Beginning in 1935, these young men would go on to meticulously document the environmental conditions of the islands and their waters, record weather patterns, and survey seabirds, later gaining recognition as Interior Department employees (Tengan and Kikiloi 2006, Tengan 2008, Hirsh n.d., Magier and Morgan 2012, Danielle 2013, Bautista and Smith 2018). Their occupation of the islands and service to their country proved successful with additional young men rotating through the program annually (Danielle 2013). However, their tenure on the island was not without tragedy and sacrifice. First, in 1938, colonist Carl Kahalewai fell ill and succumbed to appendicitis while transiting back to Honolulu (Tengan and Kikiloi 2006, Danielle 2013, Hirsh n.d.). Several years would pass before tragedy would again visit the islands in the form of World War II.

Following the attack on Pearl Harbor by Japanese forces, the islands withstood numerous bombings by enemy planes and I-22 submarines, leading to the destruction of Kamakaiwi Airfield and forcing residents to hide during the day, only emerging at night to eat and drink (Tengan and Kikiloi 2006, Tengan 2008, Danielle 2013). Due to their remote location, U.S. forces did not rescue the young men until approximately two months later on January 31, 1942 for those on Howland and Baker Islands, and on February 9, 1942 for those occupying Jarvis Island and Enderbury Island in the Phoenix Islands (Kahanu 2006, Tengan and Kikiloi 2006, Danielle 2013, Takata 2021a, Pacific Remote Islands Marine National Monument n.d.). Unfortunately, during the initial attacks, two young men colonizing Howland Island were fatally wounded by bombs dropped on the island. Joseph Keli'ihananui and Richard 'Dickey' Whaley lost their lives and were interred on the island in craters left by the bombings by the other men until the 1950s (Tengan and Kikiloi 2006, Danielle 2013).

Returning from PRI aboard the USS *Helm* while World War II was still being fought, the men were ordered by the U.S. government not to speak about their experiences on the islands. However, in honor of their sacrifices and to perpetuate the fellowship of the Hawaiian youth that served as colonists on these islands, the men formed a lasting hui (group) (Kahanu 2006, Tengan and Kikiloi 2006, Danielle 2013, Takata 2021a). Hui Panalā'au, or the 'club of settlers of the southern islands,' 'holders of the land society,' and 'society of colonists,' went on to successfully petition the U.S. government for the return of their fallen brothers who were recovered, but then laid to rest with little fanfare or recognition at the Schofield Barracks on O'ahu Island in 1954 (Tengan and Kikiloi 2006, Kahanu 2006, Danielle 2013). Following renewed petitioning from Hui Panalā'au and their descendants to the Hawai'i congressional delegation, Joseph Keli'ihananui and Richard 'Dickey' Whaley were reinterred in 2003 at the Hawai'i State Veterans Cemetery in Kāne'ohe, O'ahu with Hawaiian ceremonial chants, hula, presentations of gifts, and speeches to acknowledge their contributions and sacrifices (Tengan and Kikiloi 2006, Danielle 2013, Hirsh n.d.).

Through the establishment of PRI in 2009 and the expansion of the monument in 2014, PRI has been effective in preserving the scientific, biological and historical resources and objects defining these islands and surrounding waters for centuries. Additionally, it protects those that have lost their lives traversing its waters in their final resting places and its first expansion in 2014 specifically honored the bravery and sacrifice of the voluntary Native Hawaiian colonists of Hui Panalā'au.



Military ordnance discovered by the R/V Falkor in the Howland and Baker unit of PRI in 2021, illustrating the types of wartime artifacts that expansion would help to protect.

Photo credit: Schmidt Ocean Institute

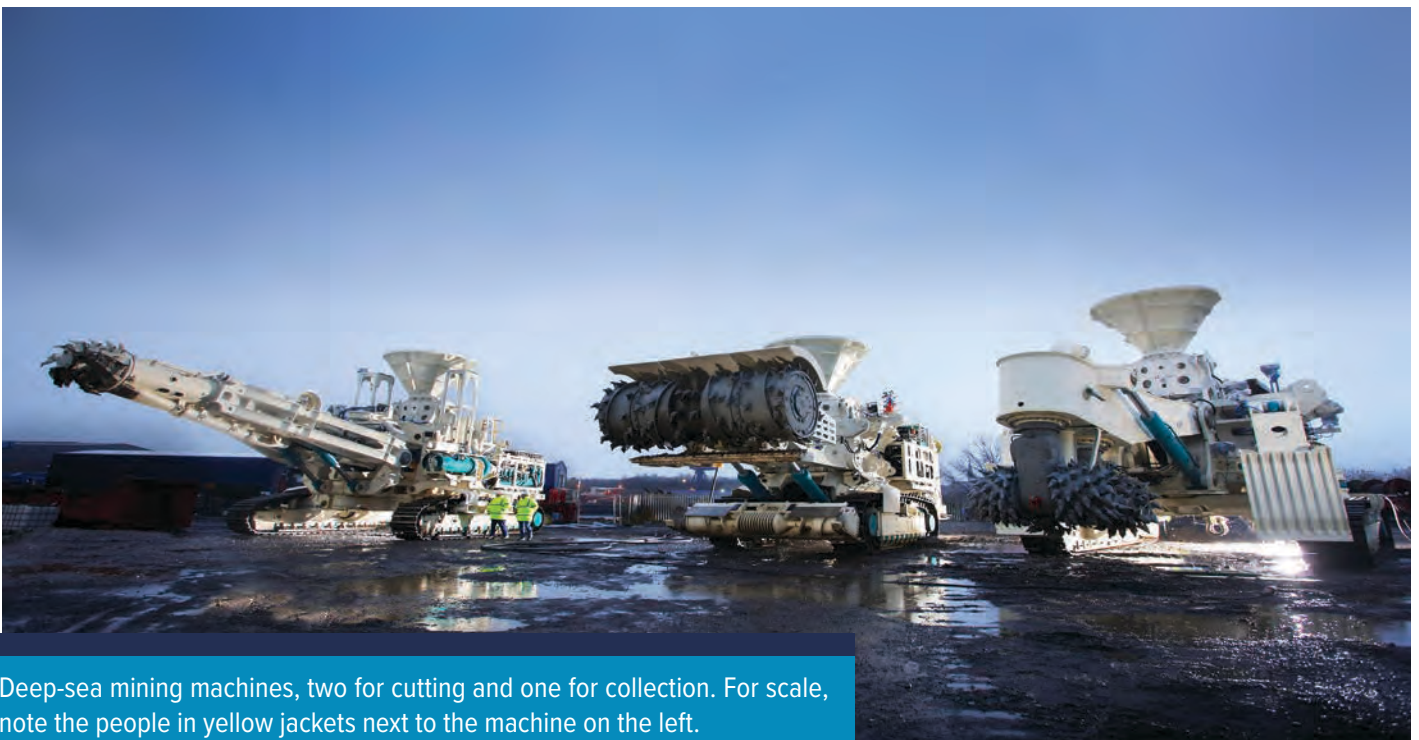
However, the history of this area and commitment of colonists extends far beyond the standing borders of PRI and expansion of the current monument would recognize their actions and service to their country (Kahanu 2006, Tengan and Kikilo'i 2006, Magier and Morgan 2012, Bautista and Smith 2018, Takata 2021a). It would also afford expanded protection for the legacies of cartographers, explorers, whalers, and traders, with some spending the majority of their effort in these seas (Magier and Morgan 2012, Smith et al 2012, Bautista and Smith 2018, Kennedy et al 2021). Further, continued exploration within the proposed waters for expansion have revealed new findings relevant to the military heritage of this region. For example, recent deep-sea work in Howland and Baker Islands found previously undocumented military ordnance with only limited time on the sea floor (R/V Falkor 2021); more thorough exploration is warranted to piece together the history and military action in these remote locales. The expansion of PRI to the full extent of its surrounding U.S. waters provides an invaluable opportunity to facilitate these goals and to memorialize the service of those that aided in the economic and territorial growth of this area as well as as the defense of our country for future generations.

4 | THREATS

The two remaining management units, Palmyra Atoll and Kingman Reef, and Howland and Baker Islands, have to date experienced relatively few local anthropogenic impacts in the 50 to 200 nautical mile zone of the EEZ, and are in relatively good health. It is, however, critical to work quickly to permanently protect these intact areas of ocean wilderness, against future exploitation (O’Leary et al 2018). Such precaution is especially warranted given the rapidly increasing threats of climate change—and the evidence that large marine protected areas may help buffer against climate change threats (reviewed by Roberts et al 2017)—as well as the increasing likelihood of deep-sea mining taking place in the region. Below is a discussion of current and future threats to the proposed expansion area and broader region.

4.1 Seabed mining

Deep-sea mining is poised to become a potentially major threat to these areas and broader region. Mining activities are expected to target one of three different resource types: polymetallic nodules (nodules), cobalt crusts (crusts) and seafloor massive sulfides (SMS). While seabed mining is still in exploratory stages for all of these resource types, the increasing price of strategic minerals and elements is driving increased commercial interest and the likelihood that these

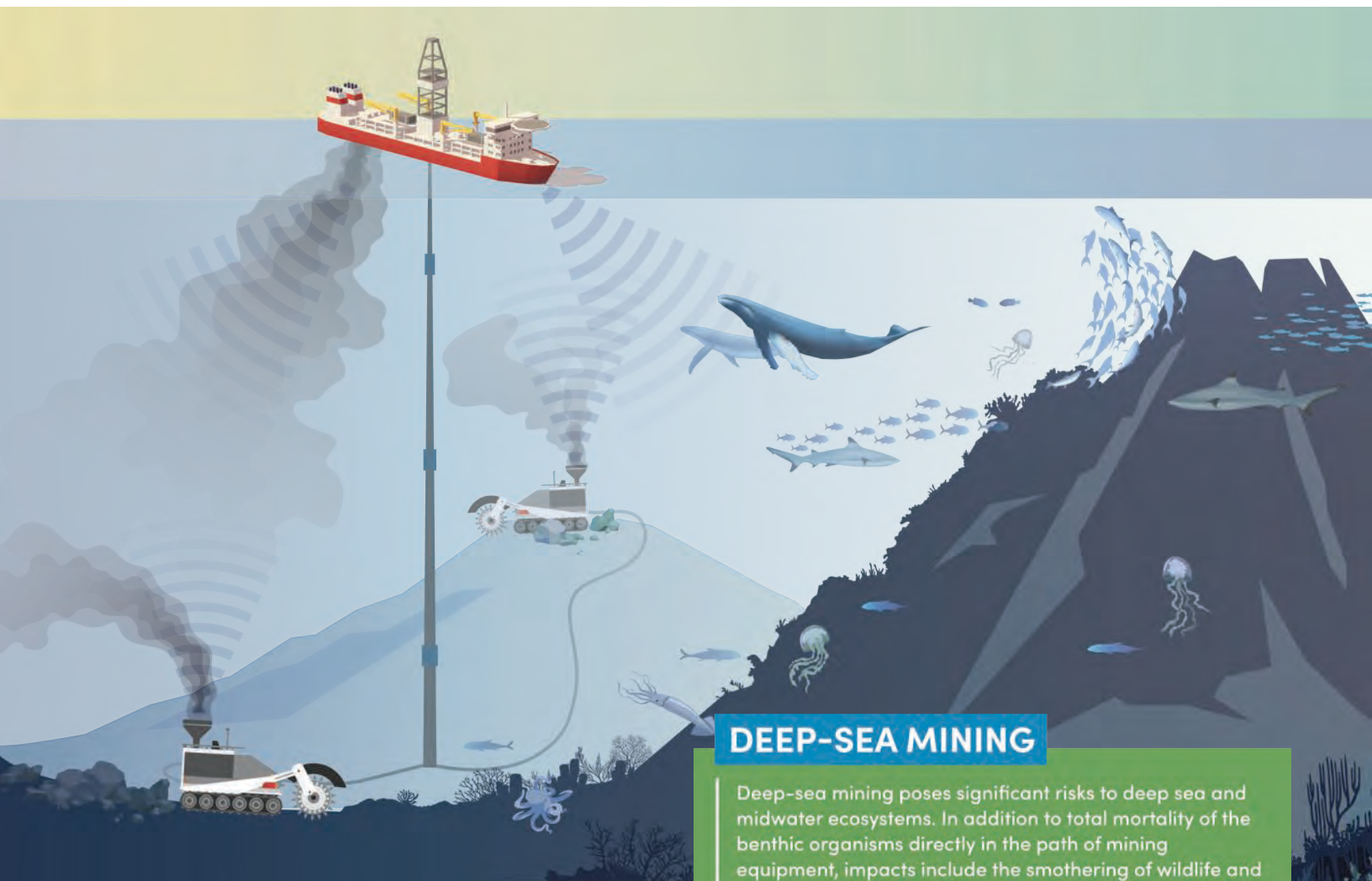


Deep-sea mining machines, two for cutting and one for collection. For scale, note the people in yellow jackets next to the machine on the left.

Photo credit: Nautilus Minerals

activities will occur (Cuyvers et al 2018). The expansion of PRI represents a critical opportunity to proactively safeguard the biodiversity and functioning of the ecosystems within these units against this emerging new industry.

Both Kingman Reef and Palmyra Atoll are located near or in the Prime Fe–Mn Crust Zone (PCZ) (Figure 2), an area highlighted as among the highest value areas in the world for mining mineral rich crusts, and one that contains some deposits of nodules as well. Kingman Reef, Palmyra Atoll, and Howland and Baker Islands are also located within a “prospective zone,” meaning thick crust formations may also have formed and are thus considered to be priority areas for further exploration. Additionally, analysis of crusts in Howland and Baker Islands from previous collections in 1999 have displayed higher levels of Fe–Mn than adjacent seamounts along the Marshall, Gilbert, Tuvalu, and Samoan chains, drawing further mining interests to areas in the Pacific Remote Islands (Mizell et al 2020, 2022).



DEEP-SEA MINING

Deep-sea mining poses significant risks to deep sea and midwater ecosystems. In addition to total mortality of the benthic organisms directly in the path of mining equipment, impacts include the smothering of wildlife and introduction of toxins by wastewater plumes, increased noise and light pollution of the surrounding ecosystem, and disturbance of long-term carbon stores in the deep.

Figure 5. Visualizing the risks of deep sea mining.

Deep-sea mining involves the complete removal of the top layer of seafloor along with all organisms in it—causing complete mortality of organisms in the impacted areas. Moreover, as this crust is piped up to the surface and processed, the mining wastewater and tailings are expected to be released back into the mined marine environment. The effects of these wastewater plumes may be even more impactful than the direct effects of mining seafloor communities. Potential negative impacts include smothering of midwater species that are highly sensitive to sediment loading, reduced productivity and erosion of the forage base for midwater and pelagic communities, and the introduction of harmful toxins in the wastewater plumes that could have deleterious effects on affected ecological communities (Jones et al 2017, Cuyvers et al 2018, Drazen et al 2020, Levin et al 2020, Smith et al 2020). Deep-sea biodiversity is likely to have very slow recovery times given the very low rate at which biological processes occur in these food, light, and temperature limited environments (Smith et al 2008, McClain et al 2012). In fact, this has been demonstrated via small scale, simulated seabed mining disturbances, after which deep-sea benthic communities showed very limited recovery to prior levels of faunal diversity and density—even after more than 20 years of monitoring (Jones et al 2017). Further, some of the oldest marine species on the planet (i.e. deepwater corals) are present in the central Pacific PCZ targeted by mining (Roark et al 2009). With these concerns in mind, over 600 scientists have joined joint calls highlighting the risks posed by seabed mining to ecosystems like those of the proposed expansion area (<https://www.seabedminingsciencstatement.org/>).



Seabed mining would have catastrophic effects on directly impacted benthic communities like those shown here.

Of the areas of most interest for mining in the Pacific, guyots (flat-topped seamounts) have been identified as areas of highest interest, value, and optimized effort relative to areas on the seafloor and conical seamounts (Hein et al 2009). Currently, the unprotected areas around Palmyra Atoll and Kingman Reef are of major interest for these mining efforts, and additional mining resources on guyots within unprotected waters of Howland and Baker Islands have been identified as well (Hein et al 2009, Demopoulos et al 2018). However, as discussed in more detail in Section 6.1,

additional exploration of these areas in recent years has underscored the critical conservation value of these environments and the need for protection prior to disturbance (Cantwell, Elliott, and Kennedy 2018; Demopoulos et al 2018; Kennedy et al 2019). For example, guyots in these areas have been identified as hotspots for biodiversity and harbor higher amounts of slow-growing and threatened corals than surrounding conical and ridge seamounts (Kennedy et al 2019).

The optimal depth of crust mining is between 1,500 and 2,500 meters. The proposed expansion zone contains extensive area at these depths that could support seabed mining, and dives from the National Oceanic and Atmospheric Administration (NOAA) Ship *Okeanos Explorer* found Manganese crust substrate within the optimal mining depth in all but one of six dives. Notably, these Manganese crust environments were home to two of the three high-density coral communities discovered on these dives.

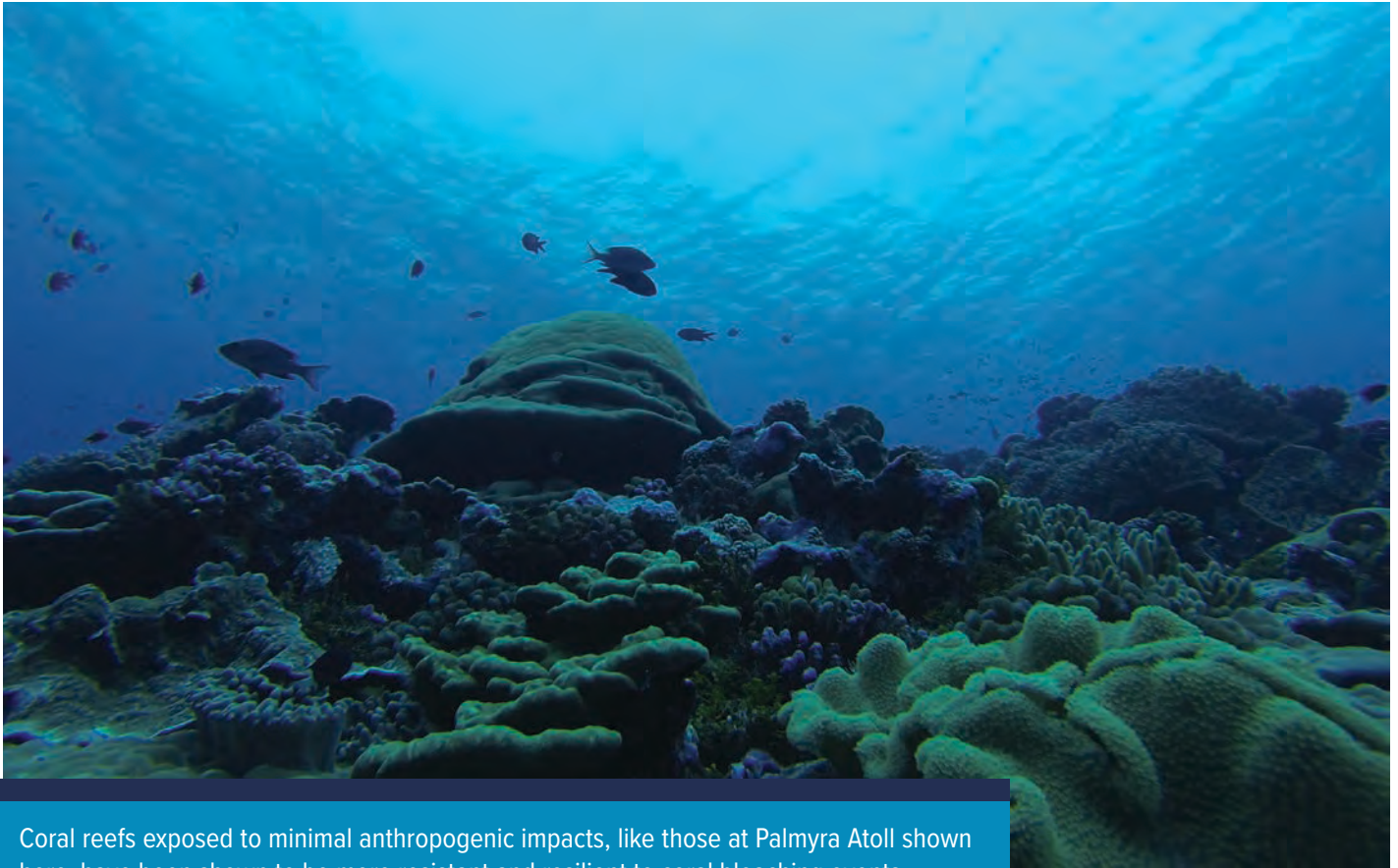
Seabed mining may also have global impacts in terms of long-term carbon storage. Organic carbon stored in marine sediments can remain for millenia, but disturbing marine sediment can re-mineralize sedimentary carbon, likely reintroducing carbon into marine systems and increasing ocean acidification (Sala et al 2021). For this reason, deep-sea mining is considered an emerging threat to sediment carbon (Sala et al 2021).

Seabed mining would have catastrophic effects on directly impacted benthic communities, and likely severe indirect effects on downcurrent communities—pelagic, benthic and possibly coastal. In most instances, spatial marine protection is put in place to slow or reverse damage already done to marine ecosystems. However, especially in the case of low resilience systems like these deep ocean communities with very long recovery times, enacting protections prior to disturbance is key to retaining the value of these resources (Wedding et al 2015).

4.2 Climate Change

Climate change presents a major challenge to this region. Climate change is expected to increase sea surface temperature (SST), ocean acidification, and wave height, and cause more frequent heat waves and sea level rise (IPCC 2020). Cumulatively, these effects will likely decrease productivity across the tropics and may also push the Intertropical Convergence Zone (ITCZ)—an oceanographic feature that accounts for 32% of global precipitation and shapes the climate in the tropics—closer toward the equator, which may have implications for regional and even global climate patterns (Kang and Xie 2018, Byrne et al 2018). Closer to shore, increased storm events and wave intensity combined with sea level rise may drive erosion and turnover of lagoon water—which at Palmyra Atoll is both anoxic and sulphidic (Gardner et al 2014), thus posing significant threats to coral reef communities. Even in areas with strong management,

the tropical Pacific is predicted to show dramatic declines in coral cover under current climate change scenarios (Bell et al 2013). In addition, climate change is projected to diminish tropical pelagic diversity to levels not seen for millions of years (Yasuhara et al 2020).



Coral reefs exposed to minimal anthropogenic impacts, like those at Palmyra Atoll shown here, have been shown to be more resistant and resilient to coral bleaching events.

Photo credit: Susan White, USFWS

However, there is some evidence that coral reefs in PRI may be more resistant to climate change than those in more populated areas (Fox et al 2019), likely due to their remote location protecting them from other anthropogenic threats. Additionally, it is possible that these areas offer an area of promise for climate change—the upwelling of cold, deep water and dynamic, mixing currents in the region may provide relative respite from warming ocean temperatures. A recent analysis showed these areas to be some of the best tropical MPAs in terms of being able to resist and persist through the projected effects of climate change (Bruno et al 2018).

With regards to fisheries resources, in the short run, climate change is likely to cause an eastward movement of tuna populations into the region of the proposed expansion area—potentially increasing the relative importance of this area in the near term (Senina et al 2018;

Bell et al 2013, 2021). This may increase pressure to fish these areas, making protection more important. However, this potential increased fishery value may not last, as longer-term models of some tuna suggest their range may shift even further eastward of these sites with time (Bell et al 2013, 2021). This would in turn potentially exacerbate risks to seabirds and other species in the region that depend on tuna. Much depends on how oxygen and water temperatures in the area change—factors around which much uncertainty remains.

In the face of these climate-related changes and threats, this region offers a nearly unparalleled opportunity to understand the effects of climate change in relatively intact tropical marine ecosystems. Free from many of the anthropogenic stressors present in other, nearshore or coastal areas, these sites provide critically-needed end points to understand how climate change alone will act on coral reefs and pelagic ecosystems—and the extent to which these ecosystems can be resilient in the face of rapid change. Indeed, The Nature Conservancy has recently established a new focus of a long-standing science commitment based on Palmyra Atoll called the the Climate Adaptation and Resilience Lab (CARL), which includes a focus on “blue water” species that heavily utilize the 50 to 200 nautical mile zone of the proposed expansion area. The great potential knowledge that may come from this effort and others like it depends on protecting the integrity of the system from other stressors.

4.3 Fishing

While pressure from fisheries is historically and currently still low within the proposed expansion area, future increases in fishing could pose multiple threats to these unprotected waters. The most important effects include: 1) direct effects of harvest on targeted pelagic species, many of which are at historically low abundances, 2) direct effects of bycatch on many declining or listed species including sea turtles, sharks, and seabirds, 3) indirect effects of harvest on other non-targeted



A tuna feeding frenzy in the waters off Palmyra Atoll. Tuna are the primary fishery-targeted species in the region.

Photo credit: Kydd Pollock, The Nature Conservancy

species—for instance, declines in major pelagic predators disrupting foraging dynamics of seabirds, food sources to benthic environment, and abundance and behavior of prey fish—and 4) pollution and risk of pollution from these vessels, including noise pollution, derelict fishing gear that includes drifting fish aggregating devices, and risk of oil spills or vessel sinking.

Globally, large pelagic fish populations are declining (Myers and Worm 2003) and climate change is predicted to redistribute the world’s fisheries in a dramatic way in the near future (Cheung et al 2008). Some of the species commonly caught by fisheries activities—especially bycatch species such as sharks, turtles, and seabirds—have slow life histories and are unable to sustain even modest bycatch pressure. Protected areas help alleviate pressure on these populations by reducing or eliminating fishing mortality. For example, the establishment and expansion of PRI to the 200 nautical mile limit around Johnston Atoll has already been shown to have reduced catch rates of blue sharks and bigeye tuna. There was no similar effect observed for Kingman and Palmyra, which was only protected to 50 nautical miles (Gilman et al 2020).

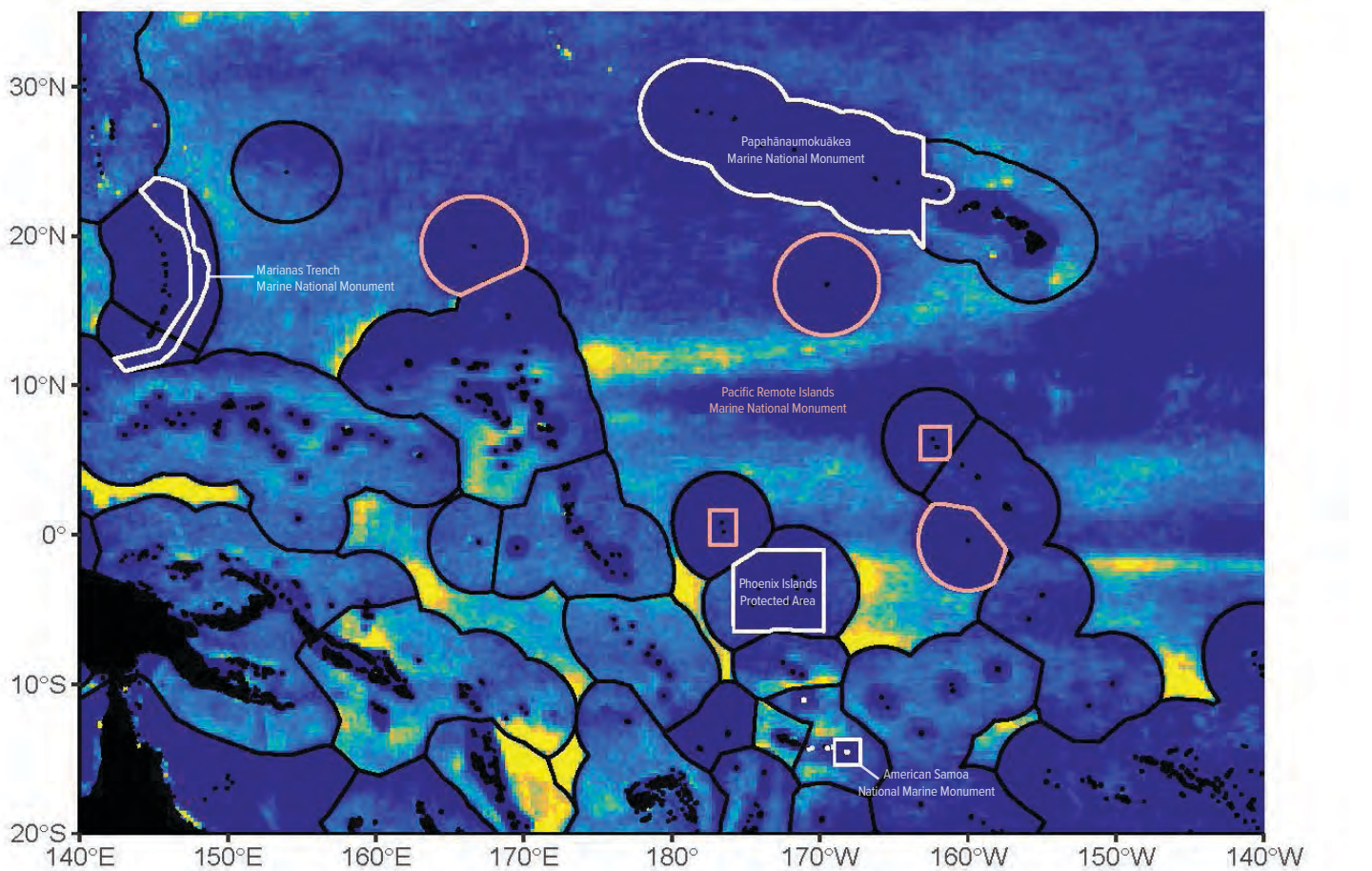
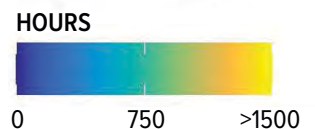


Figure 5. Commercial fishing in the Western Central Pacific from 2017-2019. Map shows the sum of fishing hours at a quarter degree resolution. Fishing hours are derived from Automatic Identification System (AIS) data by Global Fishing Watch. While AIS is only used by large vessels (>24m), approximately 50-75% of industrial fishing activity can be detected via AIS (Kroodsmma et al. 2018) and smaller vessels are unlikely to operate in remote waters (White et al. 2017). Exclusive Economic Zones (EEZs) are shown in black, and Marine Protected Areas (MPAs) by shaded colors.



Currently, there is a high amount of fisheries pressure just outside the EEZ boundaries of PRI, with purse seine fisheries targeting yellowfin and skipjack focused around Howland and Baker

Islands and the eastern edge of Palmyra Atoll and Kingman Reef, and longline fisheries targeting albacore, yellowfin, and bigeye tuna on the western sides of Palmyra and Kingman (White et al 2017, 2020; Global Fishing Watch). Currently the vast majority of fishing activity takes place outside of the U.S. EEZ, and heavy fishing on the perimeters of these areas likely already has a significant impact on the pelagic community by removing fish that exit the boundaries of the EEZ, among other threats (e.g. noise pollution, stranding of equipment, ghost fishing). As discussed in the above section, some studies have suggested that the Central Tropical Pacific, where these sites are located, may become more important fishing grounds in the near-term due to climate change, as warmer waters attract more tuna (Lehodey et al 2013). However, there is great variation in these projections.

Additionally, while to our knowledge there is no significant seamount fishery in the region, this could be a significant future threat. Seamounts are often highly valued fishing grounds, and even very remote seamounts are increasingly targeted for fishing. These deep water areas contain slow-growing species that are highly sensitive to fishing impacts. For instance, heavy fishing efforts of Northwest Hawaiian Ridge and Emperor Seamount Chains in the 1960s and 1980s led to a collapse of the fishery, which is only now showing signs of a limited recovery after 40 years of protection (Baco et al 2019).

There may also be significant ‘flow-through’ fishing taking place within the protected zone of these two units, with purse seine vessel-released fish aggregating devices (FADs) released outside the borders and drifting through, to be fished on the other side—although this has not yet been quantified and is not legal (Gomez et al 2020). Drifting FADs are an important tool used in purse seine fisheries to attract fish, which are easier to catch when aggregated (Curnick et al 2020b, 2021).

In this region, drifting FADs primarily target tuna; however, they frequently catch high volumes of bycatch including triggerfish, undersize tuna, turtles, and sharks. While percentage rates of bycatch for purse seines (e.g. 2.3% of all landings, Restrepo, 2011) is relatively low compared to other types of gear (e.g. 7.5% for longline, 30% for trawls; Kelleher 2005) the large volume captured by purse seine fleets results in large total volumes of bycatch (IATTC 2013). In particular, bycatch rates on sharks are about twice as high on drifting FADs as they are on purse seines set on free swimming schools (Clarke et al 2011, Hutchinson et al 2015). Drifting FADs also often catch juvenile tuna which are below reproductive age, removing these individuals before they are able to contribute to population growth. Drifting FADs are also often lost or abandoned at sea, becoming a source of marine pollution; for instance, an estimated 10% end up beaching in coastal areas where they may damage reefs or other sensitive ocean resources (Maufroy et al 2015). Further, recent work in the Galapagos suggests that overuse of FADs in the area

may diminish effects of protected areas by continuing to harvest recovering fish stocks prior to recovery and spillover (Bucaram et al 2018).

Enlarging the areas of protection would likely make it more difficult for FADs to undermine the value of this reserve. Drifting FADs do not have any form of direction or locomotion to steer them through regions through which they aggregate fish. As such, increasing reserve size in turn discourages FAD use through protected areas, as FAD trajectory and other factors, such as increased time within the reserve extending deployment and collection timelines, reduce FAD efficiency and efficacy.

The presence of even the limited fisheries present to date within the EEZ also poses direct risks to reef ecosystems through vessel shipwrecks. For instance, in 1991, a longline fishing vessel, *Hui Feng*, grounded on the reefs of Palmyra. Over time, iron leaching from the wreck facilitated an outbreak of the corallimorph *Rhodactis howesii*. This corallimorph—a non-calcifying sessile animal—can cause significant harm to corals, and at Palmyra Atoll it facilitated large scale conversion of a coral reef community to a monodominant corallimorph barren across many hectares (Work et al 2008, Kelly et al 2012). Even after the wreck was removed at great expense, and aggressive treatment was implemented, the corallimorph spread has not been stopped—and instead the corallimorph has now spread to multiple other sites around the atoll, causing declines in coral cover (Carter et al 2019). The corallimorph has also had outbreaks at Baker Island and has potential to have outbreaks at Howland Island and Kingman Reef near sites of ship debris (Howland Comprehensive Conservation Plan, 2008).

Fisheries vessel traffic also poses risk for oil spills, increases noise pollution in the area, and can cause direct damage to deeper reefs when ships sink or drag gear. Fisheries are also a significant source of marine debris, especially in remote areas where other sources of marine debris are more limited (Amon et al 2020).

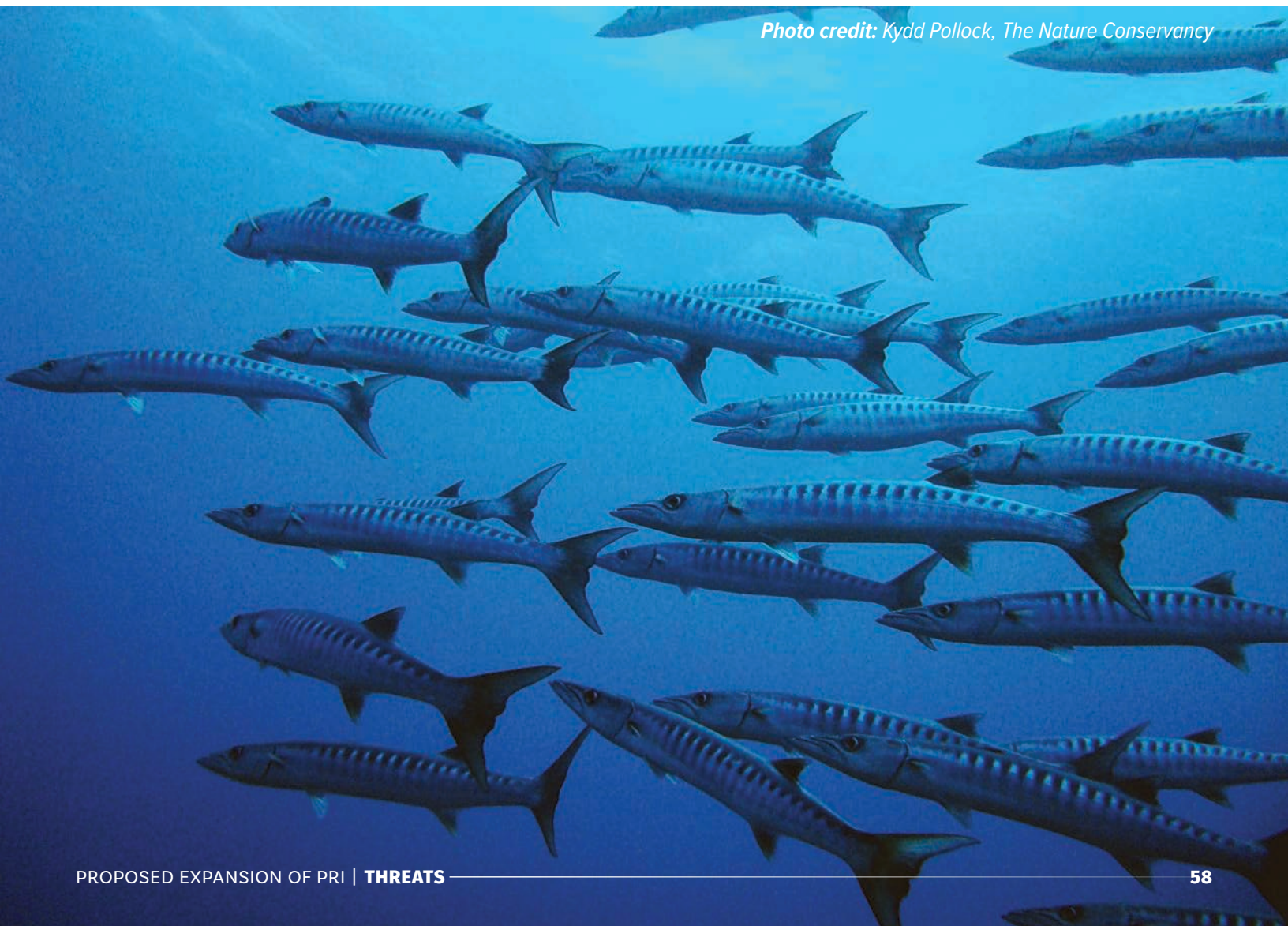
While it is sometimes suggested that legal fisheries are important as ‘eyes on the water’ to prevent illegal fishing, the lack of significant illegal fishing activity in the area and the increasing use of Automatic Identification System (AIS) tracking by most vessels (McCauley et al 2016) makes this less important in these areas. Indeed, closures in multiple Pacific areas since 2013 have largely been very effective—as measured by the fact that there is no significant fishing activity detected—despite a lack of strong monitoring efforts, likely due to their remote nature (White et al 2020).

It is ideal to place MPAs in areas that are both biologically valuable and that cause minimal economic hardship. Expansion of PRI in this area achieves both goals. As noted elsewhere,

there is currently only sporadic fishing activity currently happening in the unprotected EEZ (White et al 2020), so there is little current economic activity to disrupt. However, the potential of future threats does exist, as fisheries in the region are poised to grow—thus, the relative ease of protection now, with minimal disruption to economic livelihoods, is not guaranteed to remain. For comparison, in Papahānaumokuākea, where fisheries effort was also low (though much higher than the proposed expansion areas around PRI), the closure appears to have caused only relatively minor economic impacts (Lynham et al 2020).

There are, however, likely to be strong benefits in conservation if establishment of pelagic MPAs (PMPAs) significantly reduces fishing activity that might otherwise increase in the future. As highlighted in the following section on MPAs, recent work has shown benefits of pelagic MPAs to most of the major fisheries species important in this region (see section 3.1)—potentially creating positive net benefits not only in terms of conservation, but also in terms of spillover increasing total fisheries yield, thus providing important provisioning resources from the ocean (Sala et al 2021).

Photo credit: Kydd Pollock, The Nature Conservancy



6 | VALUE OF PELAGIC MPAs

Marine ecosystems globally are threatened by multiple factors including climate change, overfishing, biodiversity declines, pollution, and habitat degradation (e.g. IPBES 2019, McCauley et al 2015). In addition to threatening ocean organisms themselves, the effects of global change on marine ecosystems has strong trickle down effects on large scale processes—such as nutrient cycling and climate regulation via carbon storage—and on human communities, economies, and societies dependent on ocean resources and services (IPBES 2019, Stuchtey et al 2020). One response to these growing threats has been the creation of marine protected areas—where destructive and extractive activities may be prohibited. MPAs, which are consistent with traditional management practices and are an integral part of the U.S. protected areas program since the mid 1900s now cover 26% of U.S. waters and the level of protection is not equal (e.g. the degree of protection across MPAs varies widely (Sullivan-Stack et al 2022).

Decades of research has shown that MPAs can provide enormous benefits to ecosystems, biodiversity, communities, fisheries, and economies (Ban et al 2019, Goñi et al 2010, Angulo-Valdés and Hatcher 2010, Naidoo et al 2019; Wilson et al 2020, Sala et al 2021). Notably, MPAs can increase ecological resilience and adaptive capacity of ocean ecosystems even in the face of climate change (Micheli et al 2012, Barnett and Baskett 2015, Mellin et al 2016, Roberts et al 2017, McLeod et al 2019). However, much of the research to date on the efficacy of MPAs has focused on coastal MPAs, which were the longstanding model of MPAs in conventional Western ocean

management. PRI was among the first of a series of very large pelagic MPAs implemented beginning in 2009. While the newness and often remote location and pelagic nature of these MPAs has made it more difficult to assess the value of these MPAs than their coastal or older counterparts, an emerging body of literature, discussed below, suggests that these large pelagic MPAs overall are highly valuable.



Coral reefs protected within large MPAs have been found to recover more quickly after coral bleaching events than other sites in the same region with less protection.

Photo credit: Andrew S. Wright, USFWS

5.1 Value of Pelagic MPAs (PMPAs)

Despite its relatively young age, the expansion of PRI has already provided immense conservation value in the form of new discoveries and scientific knowledge—much of which was made possible only through federal investment in exploring this newly-protected area and its resources (see findings from the multi-year NOAA Ocean Exploration Campaign to Address Pacific monument Science, Technology, and Ocean NEeds (CAPSTONE), Schmidt Ocean Institute R/V *Falkor*, and Ocean Exploration Trust Research Vessel E/V *Nautilus* expeditions described in more detail in section 2.1). Since the expansion of this protected area in 2014, many novel taxa, records, and behaviors have been observed, uncovering new types of species interactions and unveiling critical information around the drivers of deep-sea life. For instance on the CAPSTONE expedition alone, over 80% of species observed over the 3-year expedition were new to science, including at least 14 new species of deep sea corals (Kennedy et al 2019).



This new type of sea star was spotted at the end of a dive to an unprotected seamount in the U.S. EEZ outside of PRI's Howland and Baker unit

Photo credit: NOAA *Okeanos Explorer*

Other large pelagic MPAs (PMPAs) have exhibited additional signs of conservation value. For instance, recent work on the Chagos Archipelago in the British Indian Ocean Territory (BIOT) PMPA suggests that the protection (both from formal designation and from de facto isolation) has benefits for climate resilience. The archipelago has shown relatively rapid recovery after a

significant 1997–1998 coral bleaching event, recovering to pre-bleaching coral cover by 2014, much faster than other regional sites with less protection—some of which actually regime-shifted to macro-algal or rubble dominated reefs (Head et al 2019). More broadly, sites with minimal anthropogenic impacts have been shown to have more resistance and resilience to coral bleaching events than more disturbed sites. For instance, findings indicate that both water quality and intact large fish communities may be important for mediating the effects of climate change on reef ecosystems (Lapointe et al 2019, Donovan et al 2020)—both of which are factors that PMPAs help to protect and maintain.

A major question about the value of pelagic MPAs is if these MPAs can effectively protect the larger and more pelagic species, either by preventing direct mortality or by protecting the resources they need for vitality (for example, zones of high ocean productivity, key spawning grounds, etc). Most PMPAs are relatively new and have been located in areas where there was originally low human activity, both of which complicate efforts to evaluate effects of protection.



New research out of Palmyra Atoll suggests protecting the full EEZ of this unit would strengthen protection for grey reef sharks, like those shown here.

Photo credit: Kydd Pollock, The Nature Conservancy

However, there is growing evidence to suggest that pelagic species can be protected by stationary place-based protection, especially when these areas are large enough to contain key habitats for breeding, foraging, resting, or otherwise increase residency of species in protected waters (Gilmour et al 2022). As such, increasing the size of PRI via expansion will directly increase protected habitat for these species.

For instance, findings from the Galápagos Marine Reserve have shown spillover benefits for yellowfin and skipjack tuna (Boerder et al 2017, Bucaram et al 2018) suggesting that despite the very pelagic nature of these fish, PMPAs can be effective in providing protection for pelagic species and serve as one conservation solution for tuna fisheries. While these fishes are highly mobile, there is growing awareness that large reserves can dramatically reduce the overall mortality of these species, especially if—as found in other sites—residency of fish in protected areas is higher in MPAs than found in the general seascape (Curnick et al 2020b, Mee et al 2017).

A first study of the impacts of pelagic MPAs on large pelagic species in the equatorial Pacific has just been conducted in the Palau National Marine Sanctuary (PNMS). This study found that blue marlin and sailfish both exhibited site fidelity to the Sanctuary prior to dispersal (Filous et al 2022). While yellowfin tuna had different behaviors, the PNMS was constantly protecting a portion of the stock (Filous et al 2022). Similarly, a study on Ascension Island showed very limited dispersal of yellowfin tuna—which showed a maximum displacement from Ascension Island of 187 km (Richardson et al 2018). If tuna showed similar displacement at PRI, this would suggest the proposed expanded protection of PRI could offer significant protection of this stock. Another recent study (Carlisle et al 2019) from a similar large pelagic MPA—the British Indian Ocean Territory—seeks to examine the effects of pelagic MPAs in protecting pelagic and reef-associated fish. After tracking 6 pelagic species (Blue Marlin, Reef Mantas, Sailfish, Silky Sharks, Silvertip Sharks, and Yellowfin Tuna) as well as the more reef-associated grey reef sharks, they found that all species showed activity spaces much smaller than the area of the MPA, suggesting that the MPA was sufficiently large to provide these species with benefits.

With regards to the proposed expansion area for PRI, work at Palmyra Atoll suggests protecting the full EEZ of this unit would strengthen protection for grey reef sharks, green sea turtles, bottlenose dolphins, red footed boobies, manta rays, melon-headed whales and frigatebirds (Maxwell and Morgan 2013, Young et al 2015). While these smaller ranged species already have significant protection in the EEZ for significant parts of their life histories, expansion would help protect populations during other important life history periods. For example, sooty terns would have the majority of their breeding foraging habitat protected (444 km core range, of which ~370 km would be protected with expansion to the full EEZ) (Gilmour et al 2022). Of the 9 species tracked in this study, only yellowfin tuna would have the majority of their tracked range

outside of the expanded MPA (Gilmour et al 2022). This added protection is especially critical for frigatebirds, sooty terns, and melon-headed whales.

While there is concern about the ability to enforce pelagic MPAs in remote locations, recent analyses of AIS vessel tracking data suggests that the creation of MPAs is very effective at keeping fishing effort extremely low (White et al 2020).

These results, combined with those from results highlighted earlier in this section, suggest that an MPA on the scale of an expanded PRI can offer meaningful protection to even highly pelagic species, especially if developed in a coordinated fashion with other MPAs and fishery management efforts regionally.



Expanding PRI to the full extent of the U.S. EEZ would be critical for sooty terns, shown here. The majority of this species' core breeding foraging habitat lies within the unprotected area outside of the monument's current boundaries.

Photo credit: U.S. Fish & Wildlife Service



Photo credit: Kydd Pollock, The Nature Conservancy

CONCLUSION

President Joe Biden has the opportunity to use the Antiquities Act to fully protect Palmyra Atoll, Kingman Reef, Howland Island, and Baker Island to 200 nautical miles, denying major threats such as seabed mining and increasing the area’s resilience to climate change. The unprotected waters contain 98 seamounts, known to be ecological hotspots with yet-to-be discovered species. The waters teem with healthy populations of top predators—from tuna to endangered sharks and rays—to more than 50 species of seabirds. The region boasts important habitat for cetaceans, including a species of beaked whale new to science. The unprotected waters are also a migration route for the critically endangered leatherback sea turtle, the largest sea turtle in the world, as it travels between California and Indonesia.

The waters surrounding the Pacific Remote Islands are known as a cultural seascape, used as passage by Polynesians, Micronesians, and possibly Melanesians who relied on the intact ecosystems for voyaging. Preservation of the area to its full extent is an important commitment to Indigenous cultures—and to the healthy ecological areas that they rely upon.

With the planet’s last healthy places in peril, now is the time to take action and fully protect the Pacific Remote Islands.

REFERENCES

- Allen G, Bailey S. 2011. Reef Fishes of the Phoenix Islands, Central Pacific Ocean. *Atoll Research Bulletin* **589**:83–118. Available from <https://repository.si.edu/handle/10088/16743>.
- Amon DJ, Kennedy BRC, Cantwell K, Suhre K, Glickson D, Shank TM, Rotjan RD. 2020. Deep-Sea Debris in the Central and Western Pacific Ocean. *Frontiers in Marine Science* **7**:369. Available from <https://www.frontiersin.org/article/10.3389/fmars.2020.00369/full>.
- Anderson O, Small C, Croxall J, Dunn E, Sullivan B, Yates O, Black A. 2011. Global Seabird Bycatch in Longline Fisheries. *Endangered Species Research* **14**:91–106. Available from <http://www.int-res.com/abstracts/esr/v14/n2/p91-106/>.
- Angulo-Valdés JA, Hatcher BG. 2010. A New Typology of Benefits Derived from Marine Protected Areas. *Marine Policy* **34**:635–644. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0308597X09001882>.
- Au DWK, Pitman RL. 1986. Seabird Interactions with Dolphins and Tuna in the Eastern Tropical Pacific. *The Condor* **88**:304–317. Available from <https://academic.oup.com/condor/article/88/3/304-317/5188919>.
- Auscavitch S. 2021, June 17. Discovering Deep-sea Corals of the Phoenix Islands 2 – Mechanisms for Characterizing Deep-Sea Coral Biodiversity. Available from <https://schmidtocean.org/cruise-log-post/mechanisms-for-characterizing-deep-sea-coral-biodiversity/>.
- Auscavitch SR, Deere MC, Keller AG, Rotjan RD, Shank TM, Cordes EE. 2020. Oceanographic Drivers of Deep-Sea Coral Species Distribution and Community Assembly on Seamounts, Islands, Atolls, and Reefs Within the Phoenix Islands Protected Area. *Frontiers in Marine Science* **7**:42. Available from <https://www.frontiersin.org/article/10.3389/fmars.2020.00042/full>.
- Avila IC, Kaschner K, Dormann CF. 2018. Current Global Risks to Marine Mammals: Taking Stock of the Threats. *Biological Conservation* **221**:44–58. Available from <https://linkinghub.elsevier.com/retrieve/pii/S000632071731474X>.
- Baco AR, Roark EB, Morgan NB. 2019. Amid Fields of Rubble, Scars, and Lost Gear, Signs of Recovery Observed on Seamounts on 30- to 40-Year Time Scales. *Science Advances* **5**:eaaw4513. Available from <https://www.science.org/doi/10.1126/sciadv.aaw4513>.
- Balazs G. 1975. Marine Turtles in the Phoenix Islands. *Atoll Research Bulletin* **184**. Available from <https://repository.si.edu/bitstream/handle/10088/6052/00184.pdf>.
- Balazs G. 1985. Status and Ecology of Marine Turtles at Johnston Atoll. *Atoll Research Bulletin* **285**. Available from <https://repository.si.edu/bitstream/handle/10088/5814/00285.pdf>.
- Ban NC et al. 2019. Well-Being Outcomes of Marine Protected Areas. *Nature Sustainability* **2**:524–532. Available from <http://www.nature.com/articles/s41893-019-0306-2>.
- Barnett LAK, Baskett ML. 2015. Marine Reserves Can Enhance Ecological Resilience. *Ecology Letters* **18**:1301–1310. Available from <https://onlinelibrary.wiley.com/doi/10.1111/ele.12524>.

- Baumann-Pickering S, Wiggins SM, Roth EH, Roch MA, Schnitzler H-U, Hildebrand JA. 2010. Echolocation Signals of a Beaked Whale at Palmyra Atoll. *The Journal of the Acoustical Society of America* **127**:3790–3799. Available from <http://asa.scitation.org/doi/10.1121/1.3409478>.
- Bautista JQ, Smith S. 2018. Early Cultural and Historical Seascape of the Pacific Remote Islands Marine National Monument. PIFSC special publication; SP-19-005. National Marine Fisheries Service; Pacific Islands Fisheries Science Center (U.S.). Available from <https://doi.org/10.25923/fb5w-jw23>.
- Bell JD et al. 2013. Mixed Responses of Tropical Pacific Fisheries and Aquaculture to Climate Change. *Nature Climate Change* **3**:591–599. Available from <http://www.nature.com/articles/nclimate1838>.
- Bell JD et al. 2021. Pathways to Sustaining Tuna-Dependent Pacific Island Economies During Climate Change. *Nature Sustainability* **4**:900–910. Available from <https://www.nature.com/articles/s41893-021-00745-z>.
- Benson SR et al. 2011. Large-Scale Movements and High-Use Areas of Western Pacific Leatherback Turtles, *Dermochelys coriacea*. *Ecosphere* **2**:art84. Available from <http://doi.wiley.com/10.1890/ES11-00053.1>.
- Boerder K, Bryndum-Buchholz A, Worm B. 2017. Interactions of Tuna Fisheries with the Galápagos Marine Reserve. *Marine Ecology Progress Series* **585**:1–15. Available from <http://www.int-res.com/abstracts/meps/v585/p1-15/>.
- Bohnenstiehl DR, France SC, Cantwell K, White M. 2018. Mountains in the Deep: Exploration of the Seamounts of the Central Pacific Basin. *Oceanography* **31**:78–79. Available from <https://tos.org/oceanography/issue/volume-31-issue-01-supplement>.
- Bradley D, Conklin E, Papastamatiou YP, McCauley DJ, Pollock K, Pollock A, Kendall BE, Gaines SD, Caselle JE. 2017. Resetting Predator Baselines in Coral Reef Ecosystems. *Scientific Reports* **7**:43131. Available from <http://www.nature.com/articles/srep43131>.
- Bradley D, Gaines SD. 2014. Counting the Cost of Overfishing on Sharks and Rays. *eLife* **3**:e02199. Available from <https://elifesciences.org/articles/02199>.
- Brainard R et al. 2005. The State of Coral Reef Ecosystems of the U.S. Pacific Remote Island Areas. Pages 338–372. Available from https://www.researchgate.net/profile/Peter-Vroom/publication/253593214_Status_of_the_coral_reef_ecosystems_of_the_US_Pacific_Remote_Island_Areas/links/02e7e51f92970cbc8b000000/Status-of-the-coral-reef-ecosystems-of-the-US-Pacific-Remote-Island-Areas.pdf.
- Brainard R, Acoba T, Asher MAM. 2019. Coral Reef Ecosystem Monitoring Report for the Pacific Remote Islands Marine National Monument 2000 – 2017: Chapter 7 Howland Island. DOI: [10.25923/7K72-T460](https://doi.org/10.25923/7K72-T460). Pacific Islands Fisheries Science Center (U.S.). Available from <https://repository.library.noaa.gov/view/noaa/23426>.
- Bruno JF, Bates AE, Cacciopaglia C, Pike EP, Amstrup SC, van Hooijdonk R, Henson SA, Aronson RB. 2018. Climate Change Threatens the World's Marine Protected Areas. *Nature Climate Change* **8**:499–503. Available from <http://www.nature.com/articles/s41558-018-0149-2>.
- Bucaram SJ, Hearn A, Trujillo AM, Rentería W, Bustamante RH, Morán G, Reck G, García JL. 2018. Assessing Fishing Effects Inside and Outside an MPA: The Impact of the Galapagos Marine Reserve on the Industrial Pelagic Tuna Fisheries During the First Decade of Operation. *Marine Policy* **87**:212–225. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0308597X17303949>.

- Buente W, Baybayan CK, Hajibayova L, McCorkhill M, Panchyshyn R. 2020. Exploring the Renaissance of Wayfinding and Voyaging Through the Lens of Knowledge Representation, Organization and Discovery Systems. *Journal of Documentation* **76**:1279–1293. Available from <https://www.emerald.com/insight/content/doi/10.1108/JD-10-2019-0212/full/html>.
- Burkholder DA, Heithaus MR, Fourqurean JW, Wirsing A, Dill LM. 2013. Patterns of Top-Down Control in a Seagrass Ecosystem: Could a Roving Apex Predator Induce a Behaviour-Mediated Trophic Cascade? *Journal of Animal Ecology* **82**:1192–1202. Available from <https://onlinelibrary.wiley.com/doi/10.1111/1365-2656.12097>.
- Cantwell K, Elliott K, Kennedy BRC. 2018. Deepwater Exploration of the Pacific Remote Islands Marine National Monument and Central Pacific Basin. *Oceanography* **31**:74–75. Available from <https://tos.org/oceanography/issue/volume-31-issue-01-supplement>.
- Carlisle AB, Tickler D, Dale JJ, Ferretti F, Curnick DJ, Chapple TK, Schallert RJ, Castleton M, Block BA. 2019. Estimating Space Use of Mobile Fishes in a Large Marine Protected Area With Methodological Considerations in Acoustic Array Design. *Frontiers in Marine Science* **6**:256. Available from <https://www.frontiersin.org/article/10.3389/fmars.2019.00256/full>.
- Carter AL, Edwards CB, Fox MD, Amir CG, Eynaud Y, Johnson MD, Lewis LS, Sandin SA, Smith JE. 2019. Changes in Benthic Community Composition Associated with the Outbreak of the Corallimorph, *Rhodactis howesii*, at Palmyra Atoll. *Coral Reefs* **38**:1267–1279. Available from <http://link.springer.com/10.1007/s00338-019-01841-5>.
- Cheung W, Close C, Lam V, Watson R, Pauly D. 2008. Application of Macroecological Theory to Predict Effects of Climate Change on Global Fisheries Potential. *Marine Ecology Progress Series* **365**:187–197. Available from <http://www.int-res.com/abstracts/meps/v365/p187-197/>.
- Clark MR et al. 2010. The Ecology of Seamounts: Structure, Function, and Human Impacts. *Annual Review of Marine Science* **2**:253–278. Available from <https://www.annualreviews.org/doi/10.1146/annurev-marine-120308-081109>.
- Clarke S, Harley S, Hoyle S, Rice J. 2011. An Indicator-based Analysis of Key Shark Species based on Data Held by SPC-OFP. Page 89 9-17 August 2011 Pohnpei, Federated States of Micronesia. Available from <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.643.9239&rep=rep1&type=pdf>.
- Croll DA, Maron JL, Estes JA, Danner EM, Byrd GV. 2005. Introduced Predators Transform Subarctic Islands from Grassland to Tundra. *Science* **307**:1959–1961. Available from <https://www.science.org/doi/10.1126/science.1108485>.
- Cunningham LJ, Kranz W, Sikau M. 2006. Restoring Traditional Seafaring and Navigation in Guam. Micronesian: *Journal of the Humanities and Social Sciences* **5**:314–319. Available from https://marshall.csu.edu.au/MJHSS/Issue2006/MJHSS2006_119.pdf.
- Curnick DJ, Collen B, Koldewey HJ, Jones KE, Kemp KM, Ferretti F. 2020b. Interactions Between a Large Marine Protected Area, Pelagic Tuna and Associated Fisheries. *Frontiers in Marine Science* **7**:318. Available from <https://www.frontiersin.org/article/10.3389/fmars.2020.00318/full>.
- Curnick DJ, Feary DA, Cavalcante GH. 2021. Risks to Large Marine Protected Areas Posed by Drifting Fish Aggregation Devices. *Conservation Biology* **35**:1222–1232. Available from <https://onlinelibrary.wiley.com/doi/10.1111/cobi.13684>.

- Cury PM et al. 2011. Global Seabird Response to Forage Fish Depletion—One-Third for the Birds. *Science* **334**:1703–1706. Available from <https://www.science.org/doi/10.1126/science.1212928>.
- Cuyvers L, Berry W, Kristina G, Torsten T, Caroline W. 2018. *Deep Seabed Mining: A Rising Environmental Challenge*, 1st edition. IUCN, International Union for Conservation of Nature. Available from <https://portals.iucn.org/library/node/47761>.
- Dalebout ML, Scott Baker C, Steel D, Robertson KM, Chivers SJ, Perrin WF, Mead JG, Grace RV, David Schofield T. 2007. A Divergent mtDNA Lineage Among Mesoplodon Beaked Whales: Molecular Evidence for a New Species in the Tropical Pacific? *Marine Mammal Science* **23**:954–966. Available from <https://onlinelibrary.wiley.com/doi/10.1111/j.1748-7692.2007.00143.x>.
- Danielle L. 2013. *A Story of the Hui Panalā'au of the Equatorial Pacific Islands*. U.S. Fish and Wildlife Service, Pacific Reefs National Wildlife Refuge and Monuments Complex Honolulu, Hawai'i. Available from https://www.fws.gov/uploadedFiles/Region_1/NWRS/Zone_1/Pacific_Remote_Islands_Marine_National_Monument/Documents/hui%20panalaaau.pdf.
- Demopoulos AWJ, Auscavitch S, Sowers D, Pawlenko N, Kennedy BRC. 2018. Discovering the Deep: Exploring Remote Pacific Marine Protected Areas. *Oceanography* **31**:76–77. Available from <http://pubs.er.usgs.gov/publication/70202535>.
- Depkin FC. 2002. Trip Report: Palmyra Atoll NWR, 6 August 2001 to 3 September 2002.
- Di Piazza A, Pearthree E. 2001a. An Island for Gardens, an Island for Birds and Voyaging: A Settlement Pattern for Kiritimati and Tabyaeran, Two “Mystery Islands” in the Northern Lines, Republic of Kiribati. *The Journal of the Polynesian Society* **110**:149–170. Polynesian Society. Available from <https://www.jstor.org/stable/20706989>.
- Di Piazza A, Pearthree E. 2001b. Voyaging and Basalt Exchange in the Phoenix and Line Archipelagoes: The Viewpoint from Three Mystery Islands. *Archaeology in Oceania* **36**:146–152. Available from <https://onlinelibrary.wiley.com/doi/10.1002/j.1834-4453.2001.tb00488.x>.
- Di Piazza A, Pearthree E, Paillé F. 2014. Wind Tunnel Measurements of the Performance of Canoe Sails from Oceania. *The Journal of the Polynesian Society* **123**:9–28. The Polynesian Society. Available from <https://www.jstor.org/stable/43285177>.
- Donovan MK, Adam TC, Shantz AA, Speare KE, Munsterman KS, Rice MM, Schmitt RJ, Holbrook SJ, Burkepile DE. 2020. Nitrogen Pollution Interacts with Heat Stress to Increase Coral Bleaching Across the Seascape. *Proceedings of the National Academy of Sciences* **117**:5351–5357. Available from <http://www.pnas.org/lookup/doi/10.1073/pnas.1915395117>.
- Drazen JC et al. 2020. Opinion: Midwater Ecosystems Must be Considered When Evaluating Environmental Risks of Deep-Sea Mining. *Proceedings of the National Academy of Sciences* **117**:17455–17460. Available from <http://www.pnas.org/lookup/doi/10.1073/pnas.2011914117>.
- Dulvy NK et al. 2014. Extinction Risk and Conservation of the World's Sharks and Rays. *eLife* **3**:e00590. Available from <https://elifesciences.org/articles/00590>.
- Dulvy NK et al. 2021. Overfishing Drives Over One-Third of All Sharks and Rays Toward a Global Extinction Crisis. *Current Biology* **31**:4773–4787.e8. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0960982221011982>.

- Eddy C, Brill R, Bernal D. 2016. Rates of At-Vessel Mortality and Post-Release Survival of Pelagic Sharks Captured with Tuna Purse Seines Around Drifting Fish Aggregating Devices (FADs) in the Equatorial Eastern Pacific Ocean. *Fisheries Research* **174**:109–117. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0165783615300849>.
- “Endangered and Threatened Wildlife and Plants; Final Rule To List Eleven Distinct Population Segments of the Green Sea Turtle (*Chelonia mydas*) as Endangered or Threatened and Revision of Current Listings Under the Endangered Species Act (Final Rule).” *Federal Register* 81:66 (April 6, 2016) p. 20058. Available from <https://www.govinfo.gov/content/pkg/FR-2016-04-06/pdf/2016-07587.pdf>.
- Filous A, Friedlander AM, Toribiong M, Lennox RJ, Mereb G, Golbuu Y. 2022. The Movements of Yellowfin Tuna, Blue Marlin, and Sailfish within the Palau National Marine Sanctuary and the Western Pacific Ocean. *ICES Journal of Marine Science* **79**:445–456. Available from <https://academic.oup.com/icesjms/advance-article/doi/10.1093/icesjms/fsac010/6519834>.
- Finney B. 1991. Myth, Experiment, and the Reinvention of Polynesian Voyaging. *American Anthropologist* **93**:383–404. Available from https://www.jstor.org/stable/681301?seq=1#metadata_info_tab_contents.
- Finney BR. 1977. Voyaging Canoes and the Settlement of Polynesia. *Science* **196**:1277–1285. Available from <https://pubmed.ncbi.nlm.nih.gov/17831736/>.
- Finney BR. 1992. Voyaging into Polynesia’s Past: The Founding of the Polynesian Voyaging Society. Available from <http://archive.hokulea.com/finneyfounding.html>.
- Finney BR, Kilonsky BJ, Somsen S, Stroup ED. 1986. Re-Learning a Vanishing Art. *The Journal of the Polynesian Society* **95**:41–90. Available from <http://www.jstor.org/stable/20705973>.
- Fonteneau A, Hallier J-P. 2015. Fifty Years of Dart Tag Recoveries for Tropical Tuna: A Global Comparison of Results for the Western Pacific, Eastern Pacific, Atlantic, and Indian Oceans. *Fisheries Research* **163**:7–22. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0165783614001155>.
- Fox MD, Carter AL, Edwards CB, Takeshita Y, Johnson MD, Petrovic V, Amir CG, Sala E, Sandin SA, Smith JE. 2019. Limited Coral Mortality Following Acute Thermal Stress and Widespread Bleaching on Palmyra Atoll, Central Pacific. *Coral Reefs* **38**:701–712. Available from <https://link.springer.com/article/10.1007/s00338-019-01796-7>.
- Freestone D, Çiçek D. 2021. Legal Dimensions of Sea Level Rise: Pacific Perspectives:82. Available from <https://openknowledge.worldbank.org/bitstream/handle/10986/35881/Legal-Dimensions-of-Sea-Level-Rise-Pacific-Perspectives.pdf?sequence=5>.
- Friedlander A. 2007. Biology and Ecology of the Recreational Bonefish Fishery at Palmyra Atoll National Wildlife Refuge with Comparisons to Other Pacific Islands. Pages 28–54 *Biology and Management of the World Tarpon and Bonefish Fisheries*. CRC Press. Available from <http://www.crcnetbase.com/doi/abs/10.1201/9781420004250.ch2>.
- Fukami T, Wardle DA, Bellingham PJ, Mulder CPH, Towns DR, Yeates GW, Bonner KI, Durrett MS, Grant-Hoffman MN, Williamson WM. 2006. Above- and Below-Ground Impacts of Introduced Predators in Seabird-Dominated Island Ecosystems. *Ecology Letters* **9**:1299–1307. Available from <https://onlinelibrary.wiley.com/doi/10.1111/j.1461-0248.2006.00983.x>.

- Gardner JPA, Garton DW, Collen JD, Zwartz D. 2014. Distant Storms as Drivers of Environmental Change at Pacific Atolls. *PLoS ONE* **9**:e87971. Available from <https://dx.plos.org/10.1371/journal.pone.0087971>.
- Gauthier AE et al. 2021. Deep-Sea Microbes as Tools to Refine the Rules of Innate Immune Pattern Recognition. *Science Immunology* **6**:eabe0531. Available from <https://www.science.org/doi/10.1126/sciimmunol.abe0531>.
- Gianuca D, Phillips RA, Townley S, Votier SC. 2017. Global Patterns of Sex- and Age-Specific Variation in Seabird Bycatch. *Biological Conservation* **205**:60–76. Available from <http://nora.nerc.ac.uk/id/eprint/515430/1/Global%20patterns%20of%20sex-%20and%20age-specific%20variation%20in%20seabird%20bycatch%20AAM.pdf>.
- Gilman E, Chaloupka M, Fitchett F, Cantrell DL, Merrifield M. 2020. Ecological responses to blue water MPAs. *PLoS ONE* **15**(8):e0238558. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0235129>.
- Gilman E, Chaloupka M, Peschon J, Ellgen S. 2016. Risk Factors for Seabird Bycatch in a Pelagic Longline Tuna Fishery. *PLoS ONE* **11**:e0155477. Available from <https://dx.plos.org/10.1371/journal.pone.0155477>.
- Gilmour ME, et al. 2022. Evaluation of MPA Designs that Protect Highly Mobile Megafauna Now and Under Climate Change Scenarios. *Global Ecology and Conservation* **35**:e02070. Available from <https://www.sciencedirect.com/science/article/pii/S2351989422000725>.
- Goatley CHR, Hoey AS, Bellwood DR. 2012. The Role of Turtles as Coral Reef Macroherbivores. *PLoS ONE* **7**:e39979. Available from <https://dx.plos.org/10.1371/journal.pone.0039979>.
- Gomez G, Farquhar S, Bell H, Laschever E, Hall S. 2020. The IUU Nature of FADs: Implications for Tuna Management and Markets. *Coastal Management* **48**:534–558. Available from <https://www.tandfonline.com/doi/full/10.1080/08920753.2020.1845585>.
- Gomez C, Lawson JW, Wright AJ, Buren AD, Tollit D, Lesage V. 2016. A Systematic Review on the Behavioural Responses of Wild Marine Mammals to Noise: The Disparity Between Science and Policy. *Canadian Journal of Zoology* **94**:801–819. Available from <http://www.nrcresearchpress.com/doi/10.1139/cjz-2016-0098>.
- Goñi R, Hilborn R, Díaz D, Mallol S, Adlerstein S. 2010. Net Contribution of Spillover from a Marine Reserve to Fishery Catches. *Marine Ecology Progress Series* **400**:233–243. Available from <http://www.int-res.com/abstracts/meps/v400/p233-243/>.
- Gove JM et al. 2016. Near-Island Biological Hotspots in Barren Ocean Basins. *Nature Communications* **7**:10581. Available from <http://www.nature.com/articles/ncomms10581>.
- Graham NAJ, Spalding MD, Sheppard CRC. 2010. Reef Shark Declines in Remote Atolls Highlight the Need for Multi-Faceted Conservation Action. *Aquatic Conservation: Marine and Freshwater Ecosystems* **20**:543–548. Available from <https://onlinelibrary.wiley.com/doi/10.1002/aqc.1116>.
- Graham NAJ, Wilson SK, Carr P, Hoey AS, Jennings S, MacNeil MA. 2018. Seabirds Enhance Coral Reef Productivity and Functioning in the Absence of Invasive Rats. *Nature* **559**:250–253. Available from <http://www.nature.com/articles/s41586-018-0202-3>.

- Grémillet D, Ponchon A, Paleczny M, Palomares M-LD, Karpouzi V, Pauly D. 2018. Persisting Worldwide Seabird-Fishery Competition Despite Seabird Community Decline. *Current Biology* **28**:4009–4013. e2. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0960982218314180>.
- Haefner B. 2003. Drugs from the Deep: Marine Natural Products as Drug Candidates. *Drug Discovery Today* **8**:536–544. Available from <https://linkinghub.elsevier.com/retrieve/pii/S1359644603027132>.
- Hammerschlag N, Schmitz OJ, Flecker AS, Lafferty KD, Sih A, Atwood TB, Gallagher AJ, Irschick DJ, Skubel R, Cooke SJ. 2019. Ecosystem Function and Services of Aquatic Predators in the Anthropocene. *Trends in Ecology & Evolution* **34**:369–383. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0169534719300205>.
- Hancock PA. 2009. HF/E Issues Involved in the Disappearance of and Search for Amelia Earhart. *Ergonomics in Design: The Quarterly of Human Factors Applications* **17**:19–23. Available from <http://journals.sagepub.com/doi/10.1518/106480409X12587548548128>.
- Hau'ofa E. 1994. Our Sea of Islands. *The Contemporary Pacific* **6**:148–161. Available from <https://www.jstor.org/stable/23701593>.
- Hawaiian Voyaging Traditions. 2009. Palmyra Training Voyage (2009). Available from <http://archive.hokulea.com/holokai/2009/palmyra.html>.
- Hays GC. 2003. A Review of the Adaptive Significance and Ecosystem Consequences of Zooplankton Diel Vertical Migrations. *Hydrobiologia* **503**:163–170. Available from <http://link.springer.com/10.1023/B:HYDR.0000008476.23617.b0>.
- Hays GC et al. 2020. A Review of a Decade of Lessons from One of the World's Largest MPAs: Conservation Gains and Key Challenges. *Marine Biology* **167**:159. Available from <https://link.springer.com/10.1007/s00227-020-03776-w>.
- Head CEI, Bayley DTI, Rowlands G, Roche RC, Tickler DM, Rogers AD, Koldewey H, Turner JR, Andradi-Brown DA. 2019. Coral Bleaching Impacts from Back-to-Back 2015–2016 Thermal Anomalies in the Remote Central Indian Ocean. *Coral Reefs* **38**:605–618. Available from <https://link.springer.com/article/10.1007/s00338-019-01821-9>.
- Hein JR, Conrad TA, Dunham RE. 2009. Seamount Characteristics and Mine-Site Model Applied to Exploration- and Mining-Lease-Block Selection for Cobalt-Rich Ferromanganese Crusts. *Marine Georesources & Geotechnology* **27**:160–176. Available from <https://doi.org/10.1080/10641190902852485>.
- Hernández CM, Witting J, Willis C, Thorrold SR, Llopiz JK, Rotjan RD. 2019. Evidence and Patterns of Tuna Spawning Inside a Large No-Take Marine Protected Area. *Scientific Reports* **9**:10772. Available from <http://www.nature.com/articles/s41598-019-47161-0>.
- Hirsh H. (n.d.). Discovering the Deep: Exploring Remote Pacific MPAs: Background: The Hui Panalā'au Story of the Equatorial Pacific Island of Howland, Baker, and Jarvis: 1935–1942. NOAA Ocean Exploration and Research. NOAA Ocean Exploration. Available from <https://oceanexplorer.noaa.gov/oceanos/explorations/ex1705/background/jarvis/welcome.html>.
- Hutchinson M, Itano D, Muir J, Holland K. 2015. Post-Release Survival of Juvenile Silky Sharks Captured in a Tropical Tuna Purse Seine Fishery. *Marine Ecology Progress Series* **521**:143–154. Available from https://www.int-res.com/articles/meps_oa/m521p143.pdf.

- IATTC. 2013. Inter-American Tropical Tuna Commission. Veracruz, Mexico. Available from https://www.iattc.org/Meetings/Meetings2013/IATTC-85/Docs/_English/IATTC-85-MINS_85th%20Meeting-of-the-IATTC.pdf.
- IPBES. 2019. Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Zenodo. Available from <https://zenodo.org/record/5657041>.
- IPCC. 2020. IPCC Special Report on the Ocean and Cryosphere in a Changing Climate. Available from <https://www.ipcc.ch/srocc/>.
- Irwin G, Flay RGJ. 2015. Pacific Colonization and Canoe Performance: Experiments in the Science of Sailing. *The Journal of the Polynesian Society* **124**:419–443. The Polynesian Society. Available from <https://www.jstor.org/stable/44012033>.
- IUCN. 2004, April 30. *Chelonia mydas*: Seminoff, J.A. (Southwest Fisheries Science Center, U.S.): The IUCN Red List of Threatened Species 2004: e.T4615A11037468. International Union for Conservation of Nature. Available from <http://www.iucnredlist.org/details/4615/0>.
- IUCN. 2008, June 30. *Eretmochelys imbricata*: Mortimer, J.A & Donnelly, M. (IUCN SSC Marine Turtle Specialist Group): The IUCN Red List of Threatened Species 2008: e.T8005A12881238. International Union for Conservation of Nature. Available from <http://www.iucnredlist.org/details/8005/0>.
- IUCN. 2021, January 15. *Thunnus obesus*: Collette, B.B., Boustany, A., Fox, W., Graves, J., Juan Jorda, M. & Restrepo, V.: The IUCN Red List of Threatened Species 2021: e.T21859A46912402. International Union for Conservation of Nature. Available from <https://www.iucnredlist.org/species/21859/46912402>.
- Jones DOB et al. 2017. Biological Responses to Disturbance from Simulated Deep-Sea Polymetallic Nodule Mining. *PLoS ONE* **12**:e0171750. Available from <https://dx.plos.org/10.1371/journal.pone.0171750>.
- Kagan J. 2021, June 22. Discovering Deep-sea Corals of the Phoenix Islands 2—The Ties that Bind Us. Available from <https://schmidtocean.org/cruise-log-post/the-ties-that-bind-us/&sa=D&source=docs&ust=1642791683428403&usg=AOvVaw0Q5kFzXL5ngBn2C9vnJUxT>.
- Kahanu NMKY. 2006. Enduring Legacies of the Panalā'au Expeditions. Pages xxix–xxxii. Social Science Research, Hui Panalā'au: Hawaiian Colonists in the Pacific, 1935 – 1942. Center for Oral History, Social Science Research Institute, University of Hawai'i at Manoa and Bernice Pauahi Bishop Museum, Honolulu, Hawai'i. Available from https://scholarspace.manoa.hawaii.edu/bitstream/10125/27420/4/huipanalaau_1_frontmatter_introduction.pdf.
- Kanahele G. 1979. The Hawaiian Renaissance. Available from <http://www.cliffslater.com/kanahele1.pdf>.
- Kelleher K. 2005. Discards in the World's Marine Fisheries: An Update. Food & Agriculture Org. Available from <https://www.fao.org/3/y5936e/y5936e00.htm>.
- Kelly LW et al. 2012. Black Reefs: Iron-Induced Phase Shifts on Coral Reefs. *The ISME Journal* **6**:638–649. Available from <http://www.nature.com/articles/ismej2011114>.
- Kennedy BRC et al. 2019. The Unknown and the Unexplored: Insights Into the Pacific Deep-Sea Following NOAA CAPSTONE Expeditions. *Frontiers in Marine Science* **6**:480. Available from <https://www.frontiersin.org/article/10.3389/fmars.2019.00480/full>.

- Kennedy BRC, Hakam L, Witting J, Milani R, Tai S, Smith T, Taylor E, Teemari T, Rotjan RD. 2021. Historical Trends of Sperm Whale (*Physeter macrocephalus*) Distribution in the Phoenix Archipelago. *Frontiers in Marine Science* **7**:583326. Available from <https://www.frontiersin.org/articles/10.3389/fmars.2020.583326/full>.
- Kennedy BRC, Pawlenko N. 2017a. Okeanos Explorer ROV Dive Summary. EX1703, Dive 6. NOAA Ocean Exploration. Available from <https://repository.library.noaa.gov/view/noaa/15834#tabs-3>.
- Kennedy BRC, Pawlenko N. 2017b. Okeanos Explorer ROV Dive Summary, EX1703. NOAA Ocean Exploration. Available from <https://repository.library.noaa.gov/view/noaa/15843>.
- Keogh K. 2017. Exploring the Sunken Heritage of Midway Atoll: Honoring the Legacy of the 75th Anniversary of the Battle of Midway: Background: Mission Plan. Available from <https://oceanexplorer.noaa.gov/explorations/17midway/background/plan/plan.html>.
- Kerr J et al. 2016. Pu'uhonua A Place of Sanctuary: The Cultural and Biological Significance of the Proposed Expansion for the Papahānaumokuākea Marine National Monument. DOI: [10.13140/RG.2.1.3455.3845](https://doi.org/10.13140/RG.2.1.3455.3845). Unpublished. Available from <http://rgdoi.net/10.13140/RG.2.1.3455.3845>.
- Kikiloi K. 2010. Rebirth of an Archipelago: Sustaining a Hawaiian Cultural Identity for People and Homeland. *Hūlili: Multidisciplinary Research on Hawaiian Well-Being* **6**. Available from https://www.researchgate.net/publication/228496140_Rebirth_of_an_archipelago_sustaining_a_Hawaiian_cultural_identity_for_people_and_homeland.
- Kikiloi K, Friedlander AM, Wilhelm 'Aulani, Lewis N, Quiocho K, 'Āila W, Kaho'ohalahala S. 2017. Papahānaumokuākea: Integrating Culture in the Design and Management of one of the World's Largest Marine Protected Areas. *Coastal Management* **45**:436–451. Available from <https://www.tandfonline.com/doi/full/10.1080/08920753.2017.1373450>.
- Kim S-S, Wessel P. 2011. New Global Seamount Census from Altimetry-Derived Gravity Data: New global seamount census. *Geophysical Journal International* **186**:615–631. Available from <https://academic.oup.com/gji/article-lookup/doi/10.1111/j.1365-246X.2011.05076.x>.
- Kumar MS, Pal A, K. Pal A. 2016. A Review of Bioactive Compounds from Marine Organisms with Special Mention on the Potential of Marine Sponges in Pharmacological Applications. *Journal of the Marine Biological Association of India* **58**:87–96. Available from <http://mbai.org.in/php/journaldownload.php?id=2392&bkid=115>.
- Lam CH, Tam C, Kobayashi DR, Lutcavage ME. 2020. Complex Dispersal of Adult Yellowfin Tuna From the Main Hawaiian Islands. *Frontiers in Marine Science* **7**:138. Available from <https://www.frontiersin.org/article/10.3389/fmars.2020.00138/full>.
- Lapointe BE, Brewton RA, Herren LW, Porter JW, Hu C. 2019. Nitrogen Enrichment, Altered Stoichiometry, and Coral Reef Decline at Looe Key, Florida Keys, USA: A 3-Decade Study. *Marine Biology* **166**:108. Available from <http://link.springer.com/10.1007/s00227-019-3538-9>.
- Lehodey P, Senina I, Calmettes B, Hampton J, Nicol S. 2013. Modeling the Impact of Climate Change on Pacific Skipjack Tuna Population and Fisheries. *Climatic Change* **119**:95–109. Available from <http://link.springer.com/10.1007/s10584-012-0595-1>.
- Leitner AB, Neuheimer AB, Drazen JC. 2020. Evidence for Long-Term Seamount-Induced Chlorophyll Enhancements. *Scientific Reports* **10**:12729. Available from <https://www.nature.com/articles/s41598-020-69564-0>.

- Letessier TB et al. 2019. Remote Reefs and Seamounts are the Last Refuges for Marine Predators Across the Indo-Pacific. *PLOS Biology* **17**:e3000366. Available from <https://dx.plos.org/10.1371/journal.pbio.3000366>.
- Levin LA et al. 2016. Defining “Serious Harm” to the Marine Environment in the Context of Deep-Seabed Mining. *Marine Policy* **74**:245–259. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0308597X1630495X>.
- Levin LA, Amon DJ, Lily H. 2020. Challenges to the Sustainability of Deep-Seabed Mining. *Nature Sustainability* **3**:784–794. Available from <http://www.nature.com/articles/s41893-020-0558-x>.
- Lewis D. 1974. *Voyaging Stars: Aspects of Polynesian and Micronesian Astronomy*. Philosophical Transactions of the Royal Society of London: Series A, Mathematical and Physical Sciences **276**:133–148. Available from <https://www.jstor.org/stable/74280>.
- Lewison RL, Crowder LB. 2007. Putting Longline Bycatch of Sea Turtles into Perspective. *Conservation Biology* **21**:79–86. Available from http://www.conservacionecologylab.com/uploads/1/9/7/6/19763887/lewisoncrowder_2007.pdf.
- Lorrain A et al. 2017. Seabirds Supply Nitrogen to Reef-Building Corals on Remote Pacific Islets. *Scientific Reports* **7**:3721. Available from <http://www.nature.com/articles/s41598-017-03781-y>.
- Luke K, Horrocks JA, LeRoux RA, Dutton PH. 2004. Origins of Green Turtle (*Chelonia mydas*) Feeding Aggregations around Barbados, West Indies. *Marine Biology* **144**:799–805. Available from <http://link.springer.com/10.1007/s00227-003-1241-2>.
- Lynham J, Nikolaev A, Raynor J, Vilela T, Villaseñor-Derbez JC. 2020. Impact of Two of the World’s Largest Protected Areas on Longline Fishery Catch Rates. *Nature Communications* **11**:979. Available from <https://doi.org/10.1038/s41467-020-14588-3>.
- MacNeil MA et al. 2020. Global Status and Conservation Potential of Reef Sharks. *Nature* **583**:801–806. Available from <http://www.nature.com/articles/s41586-020-2519-y>.
- Magier S, Morgan L. 2012. *A Brief History of Human Activities in the U.S. Pacific Remote Islands*. Marine Conservation Institute, Seattle, WA. Available from <http://www.npshistory.com/publications/usfws/pacific-remote-islands/human-history.pdf>.
- Maison KA, Kelly IK, Frutchey KP. 2010. Green Turtle Nesting Sites and Sea Turtle Legislation Throughout Oceania. https://www.academia.edu/23236892/Green_Turtle_Nesting_Sites_and_Sea_Turtle_Legislation_throughout_Oceania.
- Maly K, Maly O. 2004. *Ka Hana Lawai‘a A Me Nā Ko‘a O Nā Kai ‘Ewalu: Summary of Detailed Findings from Research on the History of Fishing Practices and Marine Fisheries of the Hawaiian Islands*. The Nature Conservancy, Honolulu, Hawai‘i. Available from <http://www.ulukau.org/elib/cgi-bin/library?e=d-0maly3-000Sec--11en-50-20-frameset-book--1-010escapewin&a=d&d=D0&toc=0>.
- Maragos J et al. 2008. U.S. Coral Reefs in the Line and Phoenix Islands, Central Pacific Ocean: Status, Threats and Significance. Pages 643–654 in Riegl BM, Dodge RE, editors. *Coral Reefs of the USA*. Springer Netherlands, Dordrecht. Available from http://link.springer.com/10.1007/978-1-4020-6847-8_16.

- Marsh L, Huvenne VAI, Jones DOB. 2018. Geomorphological Evidence of Large Vertebrates Interacting with the Seafloor at Abyssal Depths in a Region Designated for Deep-Sea Mining. *Royal Society Open Science* **5**:180286. Available from <https://royalsocietypublishing.org/doi/10.1098/rsos.180286>.
- Martin C, Entrup N. 2021, November 21. Underwater noise: The Hidden Danger of Deep-Sea Mining. Available from <https://www.oceancare.org/en/underwater-noise-the-hidden-danger-of-deep-sea-mining/>.
- Maufroy A, Chassot E, Joo R, Kaplan DM. 2015. Large-Scale Examination of Spatio-Temporal Patterns of Drifting Fish Aggregating Devices (dFADs) from Tropical Tuna Fisheries of the Indian and Atlantic Oceans. *PLoS ONE* **10**:e0128023. Available from <https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0128023&type=printable>.
- Maxon A, Kennedy BRC, Pawlenko N, Sowers D, Demopolos A, Auscavitch SR. 2021. Cruise Report: EX-17-03, Discovering the Deep: Exploring Remote Pacific Marine Protected Areas (ROV and Mapping). OER Expedition Rep. 17-05. Office of Ocean Exploration and Research, Office of Oceanic and Atmospheric Research, NOAA, Silver Spring, MD. Available from <https://repository.library.noaa.gov/view/noaa/29101>.
- Maxwell S, Morgan L. 2013. Foraging of Seabirds on Pelagic Fishes: Implications for Management of Pelagic Marine Protected Areas. *Marine Ecology Progress Series* **481**:289–303. Available from <http://www.int-res.com/abstracts/meps/v481/p289-303/>.
- McCauley DJ, DeSalles PA, Young HS, Dunbar RB, Dirzo R, Mills MM, Micheli F. 2012a. From Wing to Wing: The Persistence of Long Ecological Interaction Chains in Less-Disturbed Ecosystems. *Scientific Reports* **2**:409. Available from <http://www.nature.com/articles/srep00409>.
- McCauley DJ, Gellner G, Martinez ND, Williams RJ, Sandin SA, Micheli F, Mumby PJ, McCann KS. 2018. On the Prevalence and Dynamics of Inverted Trophic Pyramids and Otherwise Top Heavy Communities. *Ecology Letters* **21**:439–454. Available from <https://onlinelibrary.wiley.com/doi/10.1111/ele.12900>.
- McCauley DJ, McLean KA, Bauer J, Young HS, Micheli F. 2012b. Evaluating the Performance of Methods for Estimating the Abundance of Rapidly Declining Coastal Shark Populations. *Ecological Applications* **22**:385–392. Available from <http://doi.wiley.com/10.1890/11-1059.1>.
- McCauley DJ, Pinsky ML, Palumbi SR, Estes JA, Joyce FH, Warner RR. 2015. Marine Defaunation: Animal Loss in the Global Ocean. *Science* **347**:1255641. Available from <https://www.science.org/doi/10.1126/science.1255641>.
- McCauley DJ, Woods P, Sullivan B, Bergman B, Jablonicky C, Roan A, Hirshfield M, Boerder K, Worm B. 2016. Ending Hide and Seek at Sea. *Science* **351**:1148–1150. Available from <https://www.science.org/doi/10.1126/science.aad5686>.
- McCauley DJ, Young HS, Dunbar RB, Estes JA, Semmens BX, Micheli F. 2012c. Assessing the Effects of Large Mobile Predators on Ecosystem Connectivity. *Ecological Applications* **22**:1711–1717. Available from <http://doi.wiley.com/10.1890/11-1653.1>.
- McClain CR, Allen AP, Tittensor DP, Rex MA. 2012. Energetics of Life on the Deep Seafloor. *Proceedings of the National Academy of Sciences* **109**:15366–15371. Available from <http://www.pnas.org/lookup/doi/10.1073/pnas.1208976109>.

- McLaughlin JP, Morton DN, Lafferty KD. 2020. Parasites in Marine Food Webs. Pages 45–60 *Marine Disease Ecology*. Oxford University Press. Available from <https://oxford.universitypressscholarship.com/view/10.1093/oso/9780198821632.001.0001/oso-9780198821632-chapter-2>.
- McLeod E et al. 2019. The Future of Resilience-Based Management in Coral Reef Ecosystems. *Journal of Environmental Management* **233**:291–301. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0301479718312994>.
- Mee JA, Otto SP, Pauly D. 2017. Evolution of Movement Rate Increases the Effectiveness of Marine Reserves for the Conservation of Pelagic Fishes. *Evolutionary Applications* **10**:444–461. Available from <https://onlinelibrary.wiley.com/doi/10.1111/eva.12460>.
- Mellin C, Aaron MacNeil M, Cheal AJ, Emslie MJ, Julian Caley M. 2016. Marine Protected Areas Increase Resilience Among Coral Reef Communities. *Ecology Letters* **19**:629–637. Available from <https://onlinelibrary.wiley.com/doi/10.1111/ele.12598>.
- Micheli F, Saenz-Arroyo A, Greenley A, Vazquez L, Espinoza Montes JA, Rossetto M, De Leo GA. 2012. Evidence That Marine Reserves Enhance Resilience to Climatic Impacts. *PLoS ONE* **7**:e40832. Available from <https://dx.plos.org/10.1371/journal.pone.0040832>.
- Mizell K, Hein JR, Au M, Gartman A. 2022. Estimates of Metals Contained in Abyssal Manganese Nodules and Ferromanganese Crusts in the Global Ocean Based on Regional Variations and Genetic Types of Nodules. Pages 53–80 in Sharma R, editor. *Perspectives on Deep-Sea Mining: Sustainability, Technology, Environmental Policy and Management*. Springer International Publishing, Cham. Available from https://doi.org/10.1007/978-3-030-87982-2_3.
- Mizell K, Hein JR, Lam PJ, Koppers AAP, Staudigel H. 2020. Geographic and Oceanographic Influences on Ferromanganese Crust Composition Along a Pacific Ocean Meridional Transect, 14 N to 14S. *Geochemistry, Geophysics, Geosystems* **21**. Available from <https://onlinelibrary.wiley.com/doi/10.1029/2019GC008716>.
- Morais RA, Bellwood DR. 2019. Pelagic Subsidies Underpin Fish Productivity on a Degraded Coral Reef. *Current Biology* **29**:1521–1527.e6. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0960982219303422>.
- Mortimer JA, Esteban N, Guzman AN, Hays GC. 2020. Estimates of Marine Turtle Nesting Populations in the South-West Indian Ocean Indicate the Importance of the Chagos Archipelago. *Oryx* **54**:332–343. Available from https://www.cambridge.org/core/product/identifier/S0030605319001108/type/journal_article.
- MRAG Asia Pacific. 2016. Towards the Quantification of Illegal, Unreported and Unregulated (IUU) Fishing in the Pacific Islands Region. Page 101. Report for the Pacific Islands Forum Fisheries Agency (FFA) DevFish II Project. Available from <https://www.ffa.int/files/FFA%20Quantifying%20IUU%20Report%20-%20Final.pdf>.
- Mundy BC, Wass R, Demartini E, Greene B, Zgliczynski B, Schroeder RE, Musberger C. 2010. Inshore Fishes of Howland Island, Baker Island, Jarvis Island, Palmyra Atoll, and Kingman Reef. *Atoll Research Bulletin* **585**. Available from <https://repository.si.edu/handle/10088/11727>.
- Myers RA, Worm B. 2003. Rapid Worldwide Depletion of Predatory Fish Communities. *Nature* **423**:280–283. Available from <http://www.nature.com/articles/nature01610>.

- NA101: Papahānaumokuākea Marine National Monument | Nautilus Live. 2017. Available from <https://nautiluslive.org/cruise/na101>.
- Nadon MO, Baum JK, Williams ID, Mcpherson JM, Zgliczynski BJ, Richards BL, Schroeder RE, Brainard RE. 2012. Re-Creating Missing Population Baselines for Pacific Reef Sharks. *Conservation Biology* **26**:493–503. Available from <https://onlinelibrary.wiley.com/doi/10.1111/j.1523-1739.2012.01835.x>.
- Naidoo R et al. 2019. Evaluating the Impacts of Protected Areas on Human Well-Being Across the Developing World. *Science Advances* **5**:eaav3006. Available from <https://www.science.org/doi/pdf/10.1126/sciadv.aav3006>.
- Naro-Maciel E, Arengo F, Galante P, Vintinner E, Holmes K, Balazs G, Sterling E. 2018. Marine Protected Areas and Migratory Species: Residency of Green Turtles at Palmyra Atoll, Central Pacific. *Endangered Species Research* **37**:165–182. Available from <https://www.int-res.com/abstracts/esr/v37/p165-182/>.
- Naro-Maciel E, Holmes K, Ersts P, Mcfadden K, Bynum N, Sterling E. 2009. Globally Endangered Sea Turtles of the Palmyra Atoll National Wildlife Refuge: A Focus on Scientific Analysis. Network of Conservation Educators and Practitioners. Available from https://www.researchgate.net/publication/259266003_Globally_endangered_sea_turtles_of_the_Palmyra_Atoll_National_Wildlife_Refuge_A_Focus_on_Scientific_Analysis.
- National Marine Fisheries Service and U.S. Fish and Wildlife Service. 2020. Endangered Species Act Status Review of the Leatherback Turtle (*Dermochelys coriacea*) 2020. Report to the National Marine Fisheries Service Office of Protected Resources and U.S. Fish and Wildlife Service. Available from https://repository.library.noaa.gov/view/noaa/25629/noaa_25629_DS1.pdf?download=document-submit=Download.
- National Oceanic and Atmospheric Administration. 2017. Discovering the Deep: Exploring Remote Pacific MPAs: Mission Logs: Expedition Summary: NOAA Office of Ocean Exploration and Research. Available from <https://oceanexplorer.noaa.gov/oceanos/explorations/ex1703/logs/summary/welcome.html>.
- NOAA Ocean Exploration. 2021. Expedition Plan: Microbial Ecosystem Services on Seamounts in the Papahānaumokuākea Marine National Monument: NOAA Ocean Exploration. Available from <https://oceanexplorer.noaa.gov/explorations/21mess/welcome.html>.
- NOAA Ocean Exploration. 2022. E/V Nautilus: 2022 Field Season. Available from <https://oceanexplorer.noaa.gov/explorations/22nautilus/welcome.html>.
- Nicoll MAC, Nevoux M, Jones CG, Ratcliffe N, Ruhomaun K, Tatayah V, Norris K. 2017. Contrasting Effects of Tropical Cyclones on the Annual Survival of a Pelagic Seabird in the Indian Ocean. *Global Change Biology* **23**:550–565. Available from <https://discovery.ucl.ac.uk/id/eprint/1496821/1/Tropical%20cyclones%20&%20Petrel%20survival%20GCB%20accepted%20final%20UCL%20REF%20library%20version.pdf>.
- Niner HJ et al. 2018. Deep-Sea Mining With No Net Loss of Biodiversity—An Impossible Aim. *Frontiers in Marine Science* **5**:53. Available from <https://www.frontiersin.org/article/10.3389/fmars.2018.00053/full>.

- Obura D, Stone G, Mangubhai S, Bailey S, Yoshinaga H, Barrel R. 2011. Baseline Marine Biological Surveys of the Phoenix Islands, July 2000. *Atoll Research Bulletin* **589**:1–61. Available from <https://repository.si.edu/handle/10088/16741>.
- Ocean Exploration Trust. 2019, August 25. Exploring Deepwater Regions of Baker and Howland Islands and Johnston Atoll. Available from <https://nautiluslive.org/blog/2019/08/25/exploring-deepwater-regions-baker-and-howland-islands-and-johnston-atoll>.
- O’Leary BC et al. 2018. Addressing Criticisms of Large-Scale Marine Protected Areas. *BioScience* **68**:359–370. Available from <https://academic.oup.com/bioscience/article/68/5/359/4953612>.
- Pacific Remote Islands Marine National Monument. (n.d.). U.S. Fish and Wildlife Service. Available from [https://www.fws.gov/uploadedFiles/Region_1/NWRS/Zone_1/Pacific_Remote_Islands_Marine_National_Monument/Documents/PRIMNM%20brief\(2\).pdf](https://www.fws.gov/uploadedFiles/Region_1/NWRS/Zone_1/Pacific_Remote_Islands_Marine_National_Monument/Documents/PRIMNM%20brief(2).pdf).
- “Pacific Remote Islands Marine National Monument; Monument Management Plan (Notice of intent; request for comments).” *Federal Register* 86:242 (December 21, 2021) p. 72214. Available from <https://www.govinfo.gov/content/pkg/FR-2021-12-21/pdf/2021-27535.pdf>.
- Papahānaumokuākea Marine National Monument. 2020. NOAA. Available from <https://www.papahanaumokuakea.gov/heritage/>.
- Papastamatiou YP, Caselle JE, Friedlander AM, Lowe CG. 2009. Distribution, Size Frequency, and Sex Ratios of Blacktip Reef Sharks (*Carcharhinus melanopterus*) at Palmyra Atoll: A Predator-Dominated Ecosystem. *Journal of Fish Biology* **75**:647–654. Available from <https://onlinelibrary.wiley.com/doi/10.1111/j.1095-8649.2009.02329.x>.
- Papastamatiou YP, Friedlander AM, Caselle JE, Lowe CG. 2010. Long-term Movement Patterns and Trophic Ecology of Blacktip Reef Sharks (*Carcharhinus melanopterus*) at Palmyra Atoll. *Journal of Experimental Marine Biology and Ecology* **386**:94–102. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0022098110000535>.
- Papastamatiou YP, Watanabe YY, Demšar U, Leos-Barajas V, Bradley D, Langrock R, Weng K, Lowe CG, Friedlander AM, Caselle JE. 2018. Activity Seascapes Highlight Central Place Foraging Strategies in Marine Predators that Never Stop Swimming. *Movement Ecology* **6**:9. Available from <https://movementecologyjournal.biomedcentral.com/articles/10.1186/s40462-018-0127-3>.
- Pierce R et al. 2008. Operational Work Undertaken to Eradicate Rats and Rabbits in the Phoenix Islands, Kiribati, May–June 2008. Page 74 *Pacific Expeditions report for NZAID*. Available from https://www.researchgate.net/publication/242331060_Operational_work_undertaken_to_eradicate_rats_and_rabbits_in_the_Phoenix_Islands_Kiribati_May-June_2008.
- Pimiento C, Leprieur F, Silvestro D, Lefcheck JS, Albouy C, Rasher DB, Davis M, Svenning J-C, Griffin JN. 2020. Functional Diversity of Marine Megafauna in the Anthropocene. *Science Advances* **6**:eaay7650. Available from <https://www.science.org/doi/10.1126/sciadv.aay7650>.
- Pitcher TJ, Morato T, Hart PJB, Clark MR, Haggan N, Santos RS, editors. 2007. *Seamounts: Ecology, Fisheries & Conservation*. Blackwell Publishing Ltd, Oxford, UK. Available from <http://doi.wiley.com/10.1002/9780470691953>.
- Polynesian Migrations - Hawaii History - Polynesian Migrations. (n.d.). Available from <http://www.hawaiihistory.org/index.cfm?CategoryID=311&fuseaction=ig.page>.

- Pukui MK, Haertig EW, Lee CA. 1972. Nana i ke kumu = Look to the source, 1st edition. Queen Lili'uokalani Children's Center Publication, Honolulu, Hawai'i. Available from <http://www.ulukau.org/elib/cgi-bin/library?e=d-0qlcc1-000Sec--11en-50-20-frameset-book--1-010escapewin&a=d&cl=&d=D0&oc=0&p=frameset&p2=book&toc=4>.
- Queen Lili'uokalani. 1897. The Kumulipo. Independently published. Available from <https://www.sacred-texts.com/pac/lku/index.htm>.
- Rauzon MJ. 2016. Isles of Amnesia: The History, Geography, and Restoration of America's Forgotten Pacific Islands. University of Hawai'i Press, Honolulu, Hawai'i. Available from <https://muse.jhu.edu/book/47413>.
- Rauzon MJ, Forsell DJ, Flint EN, Gove JM. 2011. Howland, Baker and Jarvis Islands 25 Years After Cat Eradication: The Recovery of Seabirds in a Biogeographical Context. Available from https://www.researchgate.net/publication/269764699_Howland_Baker_and_Jarvis_Islands_25_years_after_cat_eradication_the_recovery_of_seabirds_in_a_biogeographical_context/citation/download.
- Restrepo VR, Dagorn L. 2011. International Seafood Sustainability Foundation Initiatives to Develop and Test Bycatch Mitigation Options for Tropical Purse Seine Fisheries. Collect Vol Sci Pap ICCAT **66**:2026–35. Available from <https://www.bmis-bycatch.org/index.php/references/48qvwxxg>.
- Reynolds MH, Courtot KN, Berkowitz P, Storlazzi CD, Moore J, Flint E. 2015. Will the Effects of Sea-Level Rise Create Ecological Traps for Pacific Island Seabirds? PLoS ONE **10**:e0136773. Available from <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0136773>.
- Richardson AJ, Downes KJ, Nolan ET, Brickle P, Brown J, Weber N, Weber SB. 2018. Residency and Reproductive Status of Yellowfin Tuna in a Proposed Large-Scale Pelagic Marine Protected Area. Aquatic Conservation: Marine and Freshwater Ecosystems **28**:1308–1316. Available from https://onlinelibrary.wiley.com/doi/abs/10.1002/aqc.2936?casa_token=ux7xlG2CeeYAAAAA%3AqUhWEp-GwbHzMaSmw5bWp4MHqoOnWAnBpxS8EX97U3x98X1xSTpoLXwSR2WLjhRfa4B91odJlbsYHuUjy.
- Roark EB, Guilderson TP, Dunbar RB, Fallon SJ, Mucciarone DA. 2009. Extreme Longevity in Proteinaceous Deep-Sea Corals. Proceedings of the National Academy of Sciences **106**:5204–5208. Available from <http://www.pnas.org/cgi/doi/10.1073/pnas.0810875106>.
- Robbins WD, Hisano M, Connolly SR, Choat JH. 2006. Ongoing Collapse of Coral-Reef Shark Populations. Current Biology **16**:2314–2319. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0960982206022767>.
- Roberts CM et al. 2017. Marine Reserves Can Mitigate and Promote Adaptation to Climate Change. Proceedings of the National Academy of Sciences **114**:6167–6175. Available from <http://www.pnas.org/lookup/doi/10.1073/pnas.1701262114>.
- Roff G, Brown CJ, Priest MA, Mumby PJ. 2018. Decline of Coastal Apex Shark Populations Over the Past Half Century. Communications Biology **1**:223. Available from <http://www.nature.com/articles/s42003-018-0233-1>.
- Roff G, Doropoulos C, Rogers A, Bozec Y-M, Krueck NC, Aurellado E, Priest M, Birrell C, Mumby PJ. 2016. The Ecological Role of Sharks on Coral Reefs. Trends in Ecology & Evolution **31**:395–407. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0169534716000598>.

- Roman J, Estes JA, Morissette L, Smith C, Costa D, McCarthy J, Nation J, Nicol S, Pershing A, Smetacek V. 2014. Whales as Marine Ecosystem Engineers. *Frontiers in Ecology and the Environment* **12**:377–385. Available from <http://doi.wiley.com/10.1890/130220>.
- Rotjan R. 2021, July 19. Discovering Deep-sea Corals of the Phoenix Islands 2—244 Coral Samples, 14 Seamounts, and 2 Glass Octopuses. Available from <https://schmidtocean.org/cruise-log-post/244-coral-samples-14-seamounts-and-2-glass-octopuses/>.
- Rotjan R, Teroroko T. 2016. Taking Exploration to New Depths in the Phoenix Islands Protected Area. NOAA Ocean Exploration. Available from <https://oceanexplorer.noaa.gov/oceanos/explorations/ex1703/background/pipa/welcome.html>.
- R/V Falkor. 2021. Discovering Deep-Sea Corals of the Phoenix Islands 2. Available from <https://schmidtocean.org/technology/live-from-rv-falkor/rov-dives-deep-sea-corals-of-the-phoenix-islands-2/>.
- Sala E, Morgan L, Elliott N, Friedlander A. 2014. Expansion of the U.S. Pacific Remote Islands Marine National Monument. Marine Conservation Institute, Seattle, WA. Available from https://marine-conservation.org/wp-content/uploads/2020/07/1.-PRI_Scientific_Report_MCI.pdf.
- Sala E et al. 2021. Protecting the Global Ocean for Biodiversity, Food and Climate. *Nature* **592**:397–402. Available from <http://www.nature.com/articles/s41586-021-03371-z>.
- Sandin SA et al. 2008. Baselines and Degradation of Coral Reefs in the Northern Line Islands. *PLoS ONE* **3**:e1548. Available from <https://dx.plos.org/10.1371/journal.pone.0001548>.
- Sandin SA et al. 2020. Considering the Rates of Growth in Two Taxa of Coral Across Pacific Islands. Pages 167–191 *Advances in Marine Biology*. Elsevier. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0065288120300389>.
- Savage C. 2019. Seabird Nutrients are Assimilated by Corals and Enhance Coral Growth Rates. *Scientific Reports* **9**:4284. Available from <http://www.nature.com/articles/s41598-019-41030-6>.
- Savoca MS, Brodie S, Welch H, Hoover A, Benaka LR, Bograd SJ, Hazen EL. 2020. Comprehensive Bycatch Assessment in U.S. Fisheries for Prioritizing Management. *Nature Sustainability* **3**:472–480. Available from <http://www.nature.com/articles/s41893-020-0506-9>.
- Schwartzmann G, da Rocha AB, Berlinck RGS, Jimeno J. 2001. Marine Organisms as a Source of New Anticancer Agents. *The Lancet Oncology* **2**:221–225. Available from <https://linkinghub.elsevier.com/retrieve/pii/S1470204500002928>.
- Senina I, Lehodey P, Calmettes B, Dessert M, Hampton J, Smith N, Gehlen M. 2018. Impact of Climate Change on Tropical Pacific Tuna and Their Fisheries in Pacific Islands Waters and High Seas Areas. 14th Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission.
- Sibert J, Hampton J. 2003. Mobility of Tropical Tunas and the Implications for Fisheries Management. *Marine Policy* **27**:87–95. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0308597X0200057X>.
- Širović A, Wiggins SM, Oleson EM. 2013. Ocean Noise in the Tropical and Subtropical Pacific Ocean. *The Journal of the Acoustical Society of America* **134**:2681–2689. Available from <http://asa.scitation.org/doi/10.1121/1.4820884>.

- Skinner C, Mill AC, Fox MD, Newman SP, Zhu Y, Kuhl A, Polunin NVC. 2021. Offshore Pelagic Subsidies Dominate Carbon Inputs to Coral Reef Predators. *Science Advances* **7**:eabf3792. Available from <https://www.science.org/doi/10.1126/sciadv.abf3792>.
- Skinner C, Newman SP, Mill AC, Newton J, Polunin NVC. 2019. Prevalence of pelagic Dependence Among Coral Reef Predators Across an Atoll Seascape. *Journal of Animal Ecology* **88**:1564–1574. Available from <https://onlinelibrary.wiley.com/doi/10.1111/1365-2656.13056>.
- Smith CR. 2006. Bigger is Better: The Role of Whales as Detritus in Marine Ecosystems. Pages 286–300 in Estes J, editor. *Whales, Whaling, and Ocean Ecosystems*. University of California Press. Available from https://www.researchgate.net/profile/Craig-Smith-15/publication/228387134_Bigger_is_better_The_role_of_whales_as_detritus_in_marine_ecosystems/links/560458d608ae5e8e3f3099f9/Bigger-is-better-The-role-of-whales-as-detritus-in-marine-ecosystems.pdf.
- Smith CR et al. 2020. Deep-Sea Misconceptions Cause Underestimation of Seabed-Mining Impacts. *Trends in Ecology & Evolution* **35**:853–857. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0169534720301828>.
- Smith CR, De Leo FC, Bernardino AF, Sweetman AK, Arbizu PM. 2008. Abyssal Food Limitation, Ecosystem Structure and Climate Change. *Trends in Ecology & Evolution* **23**:518–528. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0169534708001900>.
- Smith TD, Reeves RR, Josephson EA, Lund JN. 2012. Spatial and Seasonal Distribution of American Whaling and Whales in the Age of Sail. *PLoS ONE* **7**:e34905. Available from <https://dx.plos.org/10.1371/journal.pone.0034905>.
- Soares P et al. 2011. Ancient Voyaging and Polynesian Origins. *The American Journal of Human Genetics* **88**:239–247. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0002929711000103>
- Spatz DR, Zilliacus KM, Holmes ND, Butchart SHM, Genovesi P, Ceballos G, Tershy BR, Croll DA. 2017. Globally Threatened Vertebrates on Islands with Invasive Species. *Science Advances* **3**:e1603080. Available from <https://www.science.org/doi/10.1126/sciadv.1603080>.
- Spear LB, Ainley DG, Nur N. 1995. Population Size and Factors Affecting At-Sea Distributions of Four Endangered Procellariids in the Tropical Pacific. *The Condor* **97**:613–638. Available from <https://academic.oup.com/condor/article/97/3/613-638/5124403>.
- Sterling EJ, McFadden KW, Holmes KE, Vintinner EC, Arengo F, Naro-Maciel E. 2013. Ecology and Conservation of Marine Turtles in a Central Pacific Foraging Ground. *Chelonian Conservation and Biology* **12**:2–16. Available from <http://www.bioone.org/doi/abs/10.2744/CCB-1014.1>.
- Stuchtey M, Vincent A, Merkl A, Bucher M. 2020. Ocean Solutions That Benefit People, Nature and the Economy. World Resource Institute, Washington, DC. Available from www.oceanpanel.org/ocean-solutions.
- Studds CE, Kendall BE, Murray NJ, Wilson HB, Rogers DI, Clemens RS, Gosbell K, Hassell CJ, Jessop R, Melville DS. 2017. Rapid Population Decline in Migratory Shorebirds Relying on Yellow Sea Tidal Mudflats as Stopover Sites. *Nature communications* **8**:1–7. Available from <https://www.nature.com/articles/ncomms14895.pdf?origin=ppub>.
- Sullivan-Stack J, et al. 2022. A Scientific Synthesis of Marine Protected Areas in the United States: Status and Recommendations. *Frontiers in Marine Science* **9**:849927. doi: 10.3389/fmars.2022.849927.

- Takata C. 2021a, August 26. Papahānaumokuākea Is A Model For Our Future. Available from <https://www.civilbeat.org/2021/08/papahanaumokuakea-is-a-model-for-our-future/>.
- Takata C. 2021b, August 26. Restore The Hawaiian Names Of The Remote Pacific Islands. Available from <https://www.civilbeat.org/2021/12/restore-the-hawaiian-names-of-the-remote-pacific-islands/>.
- Tengan TPK. 2008. Re-membering Panalā'au: Masculinities, Nation, and Empire in Hawai'i and the Pacific. *The Contemporary Pacific* 20:27–53. Available from <http://hdl.handle.net/10125/14054>.
- Tengan TPK, Kikiloi KS. 2006. Hui Panalā'au. Pages xxiii–xxvii. Social Science Research, Hui Panalā'au: Hawaiian Colonists in the Pacific, 1935 – 1942. Center for Oral History, Social Science Research Institute, University of Hawai'i at Manoa and Bernice Pauahi Bishop Museum, Honolulu, Hawai'i. Available from https://scholarspace.manoa.hawaii.edu/bitstream/10125/27420/huipanalaau_1_frontmatter_introduction.pdf.
- The Kumulipo. 1981. University of Hawaii Press. Available from <https://ulukau.org/elib/cgi-bin/library?e=d-0beckwit2-000Sec--11haw-50-20-frameset-book--1-010escapew-in&a=d&d=D0&toc=0>.
- Tholan B, Caselle JE, Papastamatiou YP, Bradley D. 2020. Exploration of Apex Predators and Deep-Water Fish Biodiversity in an Unfished, Pristine Atoll. Technical report submitted to The Nature Conservancy.
- Thompson N. (n.d.). On Wayfinding. Hawaiian Voyaging Traditions. Polynesian Voyaging Society. Available from http://pvs.kcc.hawaii.edu/ike/hookele/on_wayfinding.html.
- U.S. Fish and Wildlife Service. 2008. Howland Island National Wildlife Refuge Comprehensive Conservation Plan. Pacific Remote Islands National Wildlife Refuge Complex Honolulu, Hawaii. <https://ecos.fws.gov/ServCat/DownloadFile/165852>.
- USFWS. 2007a. Baker Island National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment. Pacific Remote Islands National Wildlife Refuge Complex Honolulu, Hawaii. Available from <https://ecos.fws.gov/ServCat/DownloadFile/165848>.
- USFWS. 2007b. Howland Island National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment. Pacific Remote Islands National Wildlife Refuge Complex Honolulu, Hawaii.
- USFWS. 2007c. Jarvis Island National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment. Pacific Remote Islands National Wildlife Refuge Complex Honolulu, Hawaii. Available from <https://ecos.fws.gov/ServCat/DownloadFile/165841>.
- VanderWerf EA, Young LC. 2017. A Summary and Gap Analysis of Seabird Monitoring in the U.S. Tropical Pacific. Page 59 pp, 1 table, 45 figures, 4 appendices. Report prepared for the U.S. Fish and Wildlife Service, Region 1, Portland OR. Pacific Rim Conservation, Honolulu, HI. Available from <https://pacificrimconservation.org/wp-content/uploads/2018/03/USTP-seabird-monitoring-gap-report-Final-with-appendices.pdf>.
- Villagomez A. 2018. Connecting Conservation and Culture in Oceania. Available from <http://www.taotaotasi.com/2018/01/connecting-conservation-and-culture-in.html>.
- Villagomez A, McGuire G. 2021. Our National Monuments: Pacific Remote Islands. Available from <https://www.angelovillagomez.com/2021/11/our-national-monuments-pacific-remote.html>.

- Wabnitz C, Balazs G, Beavers S, Bjorndal K, Bolten A, Christensen V, Hargrove S, Pauly D. 2010. Ecosystem Structure and Processes at Kaloko Honokohau, Focusing on the Role of Herbivores, Including the Green Sea Turtle, *Chelonia mydas*, in Reef Resilience. *Marine Ecology Progress Series* **420**:27–44. Available from <http://www.int-res.com/abstracts/meps/v420/p27-44/>.
- Wallace BP, Kot CY, DiMatteo AD, Lee T, Crowder LB, Lewison RL. 2013. Impacts of Fisheries Bycatch on Marine Turtle Populations Worldwide: Toward Conservation and Research Priorities. *Ecosphere* **4**:art40. Available from <http://doi.wiley.com/10.1890/ES12-00388.1>.
- Wallace BP, Lewison RL, McDonald SL, McDonald RK, Kot CY, Kelez S, Bjorkland RK, Finkbeiner EM, Helmbrecht S, Crowder LB. 2010. Global Patterns of Marine Turtle Bycatch: Global Patterns of Marine Turtle Bycatch. *Conservation Letters* **3**:131–142. Available from <https://onlinelibrary.wiley.com/doi/10.1111/j.1755-263X.2010.00105.x>.
- WCPFC. 2021d. North Pacific Albacore Tuna (*Thunnus alalunga*) Stock Status and Management Advice. Available from <https://www.wcpfc.int/doc/05/north-pacific-albacore-tuna>.
- WCPFC. 2019e. Oceanic Whitetip Shark (*Carcharhinus longimanus*) Stock Status and Management Advice. <https://www.wcpfc.int/doc/12/oceanic-whitetip-shark>.
- WCPFC. 2021b. Pacific Bluefin Tuna (*Thunnus orientalis*) Stock Status and Management Advice. Available from <https://www.wcpfc.int/doc/06/pacific-bluefin-tuna>.
- WCPFC. 2021a. Bigeye Tuna (*Thunnus obesus*) Stock Status and Management Advice. Available from <https://www.wcpfc.int/doc/01/bigeye-tuna>.
- WCPFC. 2021c. Yellowfin Tuna (*Thunnus albacares*) Stock Status and Management Advice. Available from <https://www.wcpfc.int/doc/02/yellowfin-tuna>.
- Wedding LM et al. 2015. Managing Mining of the Deep Seabed. *Science* **349**:144–145. Available from <https://www.science.org/doi/10.1126/science.aac6647>.
- Weeks S, Steinberg C, Congdon B. 2013. Oceanography and Seabird Foraging: Within-Season Impacts of Increasing Sea-Surface Temperature on the Great Barrier Reef. *Marine Ecology Progress Series* **490**:247–254. Available from <http://www.int-res.com/abstracts/meps/v490/p247-254/>.
- Weilgart LS. 2007. The Impacts of Anthropogenic Ocean Noise on Cetaceans and Implications for Management. *Canadian Journal of Zoology* **85**:1091–1116. Available from <http://www.nrcresearchpress.com/doi/10.1139/Z07-101>.
- Weinning A. 2021, June 29. Discovering Deep-sea Corals of the Phoenix Islands 2—Illuminating Coral Environments from Shallow to Deep. Available from https://schmidtocean.org/cruise-log-post/illuminating-coral-environments-from-shallow-to-deep/&sa=D&source=docs&ust=1642791683428450&usg=AOvVaw09MYkY48mLZaX4Yq_n_ye.
- White TD, Carlisle AB, Kroodsma DA, Block BA, Casagrandi R, De Leo GA, Gatto M, Micheli F, McCauley DJ. 2017. Assessing the Effectiveness of a Large Marine Protected Area for Reef Shark Conservation. *Biological Conservation* **207**:64–71. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0006320717300678>.
- White TD, Ong T, Ferretti F, Block BA, McCauley DJ, Micheli F, De Leo GA. 2020. Tracking the Response of Industrial Fishing Fleets to Large Marine Protected Areas in the Pacific Ocean. *Conservation Biology* **34**:1571–1578. Available from <https://onlinelibrary.wiley.com/doi/10.1111/cobi.13584>.

- Williams GJ, Gove JM, Eynaud Y, Zgliczynski BJ, Sandin SA. 2015. Local Human Impacts Decouple Natural Biophysical Relationships on Pacific Coral Reefs. *Ecography* **38**:751–761. Available from <https://onlinelibrary.wiley.com/doi/10.1111/ecog.01353>.
- Williams JJ, Papastamatiou YP, Caselle JE, Bradley D, Jacoby DMP. 2018. Mobile Marine Predators: An Understudied Source of Nutrients to Coral Reefs in an Unfished Atoll. *Proceedings of the Royal Society B: Biological Sciences* **285**:20172456. Available from <https://royalsocietypublishing.org/doi/10.1098/rspb.2017.2456>.
- Wilson JR, Bradley D, Phipps K, Gleason MG. 2020. Beyond Protection: Fisheries Co-Benefits of No-Take Marine Reserves. *Marine Policy* **122**:104224. Available from <https://linkinghub.elsevier.com/retrieve/pii/S0308597X20308708>.
- Woodworth BK, Fuller RA, Hemson G, McDougall A, Congdon BC, Low M. 2020. Trends in seabird breeding populations across the Great Barrier Reef. *Conservation Biology* **35**:846–858. Available from <https://onlinelibrary.wiley.com/doi/10.1111/cobi.13630> (accessed December 28, 2021).
- Work TM, Aeby GS, Maragos JE. 2008. Phase Shift from a Coral to a Corallimorph-Dominated Reef Associated with a Shipwreck on Palmyra Atoll. *PLoS ONE* **3**:e2989. Available from <https://dx.plos.org/10.1371/journal.pone.0002989>.
- Yasuhara M et al. 2020. Past and Future Decline of Tropical Pelagic Biodiversity. *Proceedings of the National Academy of Sciences* **117**:12891–12896. Available from <http://www.pnas.org/lookup/doi/10.1073/pnas.1916923117>.
- Young H, McCauley D, Dirzo R, Dunbar R, Shaffer S. 2010a. Niche Partitioning Among and Within Sympatric Tropical Seabirds Revealed by Stable Isotope Analysis. *Marine Ecology Progress Series* **416**:285–294. Available from <http://www.int-res.com/abstracts/meps/v416/p285-294/>.
- Young H, Shaffer S, McCauley D, Foley D, Dirzo R, Block B. 2010b. Resource Partitioning by Species But not Sex in Sympatric Boobies in the Central Pacific Ocean. *Marine Ecology Progress Series* **403**:291–301. Available from <http://www.int-res.com/abstracts/meps/v403/p291-301/>.
- Young HS, Maxwell SM, Conners MG, Shaffer SA. 2015. Pelagic Marine Protected Areas Protect Foraging Habitat for Multiple Breeding Seabirds in the Central Pacific. *Biological Conservation* **181**:226–235. Available from <https://linkinghub.elsevier.com/retrieve/pii/S000632071400408X>.
- Young HS, McCauley DJ, Dunbar RB, Dirzo R. 2010c. Plants Cause Ecosystem Nutrient Depletion Via the Interruption of Bird-Derived Spatial Subsidies. *Proceedings of the National Academy of Sciences* **107**:2072–2077. Available from <http://www.pnas.org/lookup/doi/10.1073/pnas.0914169107>.
- Young HS, McCauley DJ, Dunbar RB, Hutson MS, Ter-Kuile AM, Dirzo R. 2013. The Roles of Productivity and Ecosystem Size in Determining Food Chain Length in Tropical Terrestrial Ecosystems. *Ecology* **94**:692–701. Available from <http://doi.wiley.com/10.1890/12-0729.1>.
- Young HS, Miller-ter Kuile A, McCauley DJ, Dirzo R. 2017. Cascading Community and Ecosystem Consequences of Introduced Coconut Palms (*Cocos nucifera*) in Tropical Islands. *Canadian Journal of Zoology* **95**:139–148. Available from https://cdnsiencepub.com/doi/abs/10.1139/cjz-2016-0107?journalCode=cjz#.XsQ52xNKg_X.