



U.S. Fish & Wildlife Service

Pacific Remote Islands Marine National Monument

The Pacific Remote Islands Marine National Monument falls within the Central Pacific Ocean, ranging from Wake Atoll in the northwest to Jarvis Island in the southeast. The seven atolls and islands included within the monument are farther from human population centers than any other U.S. area. They represent one of the last frontiers and havens for wildlife in the world, and comprise the most widespread collection of coral reef, seabird, and shorebird protected areas on the planet under a single nation's jurisdiction.

At Howland Island, Baker Island, Jarvis Island, Palmyra Atoll, and Kingman Reef, the terrestrial areas, reefs, and waters out to 12 nautical miles (nmi) are part of the National Wildlife Refuge System. The land areas at Wake Atoll and Johnston Atoll remain under the jurisdiction of the U.S. Air Force, but the waters from 0 to 12 nmi are protected as units of the National Wildlife Refuge System. For all of the areas, fishery-related activities seaward from the 12-nmi refuge boundaries out to the 50-nmi monument boundary are managed by the National Oceanic and Atmospheric Administration.

These areas represent the last refugia for fish and wildlife species rapidly vanishing from the remainder of the planet, including sea turtles, dolphins, whales, pearl oysters, giant clams, coconut crabs, large groupers, sharks, humphead wrasses, and bumphead parrotfishes. Fish biomass at these islands is remarkable and double that found in Papahānaumokuākea



Strawberry hermit crab. Photo: USFWS



The giant clam, *Tridacna gigas*, is a clam that is the largest living bivalve mollusk. Photo: © Kydd Pollock

Marine National Monument, and orders of magnitude greater than the reefs near heavily populated islands. Expansive shallow coral reefs and deep coral forests, with some corals up to 5,000 years old, are found here. These small dots of land in the midst of the ocean are vital nesting habitat for millions of seabirds and resting habitat for migratory shorebirds.

This collection of interconnected refuges has over geological and recent history served as key stepping stones for the colonization and dispersal of species between the eastern and western, and the northern and southern Pacific Ocean. Some of these refuges are also unique in that they benefit from localized upwelling from the Equatorial Undercurrent, and others serve as destinations for additional species transported from the western Pacific by the Equatorial Countercurrent.

All these holdings were uninhabited at the time of their "rediscovery" during the past few centuries and were never occupied for

long time periods throughout their entire cultural and geological history. These refuges are unique in that they were and are still largely pristine, though many played important roles in the military and aviation history of our Nation. Only two refuges, Palmyra Atoll and Wake Atoll, are accessible by air; the rest require ship access. In some cases, it takes up to eight days to reach a refuge from its nearest port, and it may be visited only once every two years.

From these protected waters, we can gain knowledge that can be applied elsewhere to improve coral reef management in more populated areas. They are ideal "laboratories" for assessing the effects of climate change without direct human impacts. And by protecting the Pacific Remote Islands Marine National Monument and the National Wildlife Refuges within it, future generations of Americans will still have the opportunity to sense the wonder of the world of nature in the midst of the Pacific.



Howland sign and beacon. Cindy Newton/USFWS

Howland, Baker, and Jarvis Islands

All three of these refuges hug the equator and were formed as fringing reefs around islands built by volcanoes some 65-120 million years ago. Although Polynesians were likely the first visitors to these islands, westerners “rediscovered” them in an uninhabited state in the early 1820s. Claimed by the United States in 1856 under the Guano Act, colonists helping to consolidate the U.S. claim to the islands constructed settlements and lived there from 1935 until they were rescued in 1942 after being attacked several times at the onset of World War II.

Amelia Earhart and Fred J. Noonan planned to stop over at Howland on their famous world circumnavigation flight in 1937. Radio contact was lost, the airplane never arrived, and to this day their exact fate is unknown. The Amelia Earhart Day Beacon on Howland is named in her honor.

The low coral islands are the crests of ancient coral reef caps and massive underlying volcanoes. They support shrubs and grasses adapted to the arid climate at the Equator. The islands host colonies of 11-15 different breeding seabird species, some with population sizes of international significance. Coral cover and biodiversity is much higher compared to Hawai‘i and Florida. Beyond the shallow fringing reefs and terraces, the slopes of the extinct volcanoes drop off sharply to the deep floor of the equatorial Pacific Ocean.

The Equatorial Undercurrent creates a localized nutrient-rich upwelling in the shallows near the islands, resulting in high fish biomasses and a high proportion of top predators. Up to 340 fish species inhabit these reefs, as well as giant clams, sharks, and sea turtles.

Johnston Atoll

One of the most isolated atolls in the world, Johnston is an ancient atoll, and along with Wake, is probably the oldest in the Pacific Ocean. It is the northernmost of the Line Islands.

Once claimed by both the United States and the Kingdom of Hawai‘i, the atoll was placed under control of the U.S. Navy in 1934. During World War II, it was an important aircraft and submarine refueling station; in 2004 it was abandoned after all but one facility was dismantled.

Johnston is an important genetic stepping stone from the Line Islands to the Hawaiian Islands for invertebrates, fish, and corals. It supports 45 coral species, including a thriving table coral community and a dozen species found only in the Hawaiian and northern Line Islands.

Large populations of seabirds, sea turtles, whales, and reef sharks are found at Johnston.



Stony coral forms a table-like structure. Photo: James Maragos

Wake Atoll

Wake is the northernmost atoll in the Marshall Islands geological ridge and perhaps the oldest living atoll in the world. Used by early Marshall Island navigators, and later by a cable station and Pan American Airways, the atoll has been primarily used by the U.S. military since before World War II. During the war, it was overtaken by Japanese soldiers from 1941-1945. More than 300 fish species and 100 coral species thrive on shallow coral reefs, and seabirds, giant clams, sea turtles, and spinner dolphins are found at Wake.



Red-tailed tropicbird. Photo: USFWS



Red-footed booby. Photo: James Maragos

Palmyra Atoll and Kingman Reef

Part of the Line Islands chain, Palmyra Atoll and Kingman Reef are remnants of volcanoes from some 65-120 million years ago. Kingman is known to be the most undisturbed coral reef within the U.S., complete with a greater proportion of apex predators than at any other studied coral reef ecosystem in the world.

Kingman Reef’s lagoon one was an overnight stop on the Pan American Airways clipper route. Palmyra hosted a 6,000-man Naval Air Station in World War II, complete with dock and airfield. Palmyra Atoll has one of the best remaining examples of *Pisonia grandis* forest found in the Pacific, and a large diversity of fish species (418 species). Many nationally and internationally threatened, endangered, and depleted species thrive at Palmyra and Kingman, including sea turtles, pearl oysters, giant clams, reef sharks, coconut crabs, fishes, and dolphins.

Large schools of rare melon-headed whales reside off both atolls, and a potentially new species of beaked whale was recently described. Palmyra supports 11 nesting seabird species, including the third largest red-footed booby colony in the world, the largest black noddy colony in the Central Pacific, and large numbers of bristle-thighed curlews.

The Nature Conservancy of Hawai‘i manages a small research camp at Palmyra Atoll for the Palmyra Atoll Research Consortium. Through this consortium of ten institutions from the United States and New Zealand, scientists conduct research pertaining to biodiversity, conservation, natural history, ecosystem restoration, marine ecosystem dynamics, biogeochemistry, climate dynamics, and atmospheric processes.