NATURE

HAWAIʻI & PALMYRA

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Coral reefs at Palmyra Atoll © Ian Shive

A Marine Wilderness Like No Other

A thousand miles south of Hawai'i lies a cluster of islets surrounded by 15,000 acres of magnificent coral reefs teeming with sharks, giant clams, fish schools and more. Hundreds of thousands of sea birds nest along remote shores while giant coconut crabs and masses of tiny hermit crabs rustle loudly in the lush tropical rainforest.

It is only thanks to visionary conservation dreamers and generous donors that this spectacular marine wilderness persists: The Nature Conservancy purchased Palmyra Atoll in 2000 and created a preserve and research station that fosters globally significant scientific research while protecting one of nature's greatest hope spots.

Once privately owned, Palmyra Atoll was occupied—and dramatically altered—by the U.S. Navy during World War II, which left behind sunken ships and planes, along with other military debris. Before that, explorers and wayward mariners landed and wrecked there (including a pirate ship said to have left behind buried treasure) and private landowners attempted a coconut (*copra*) plantation.

An abandoned plane at Palmyra Atoll © Ian Shive

The area was considered for various uses, including a nuclear waste dump, an exclusive retreat or casino, an undersea mining base or a satellite launch site. Instead, Palmyra became fully protected and today generates discoveries that inform island conservation, coral reef resilience and ocean protection around the world.

Palmyra offers an ideal laboratory to reveal how nature recovers. After invasive black rats were eradicated, the native tropical rainforest began rebounding and seabirds are returning. Clearing millions of coconut trees is allowing native trees to further reclaim their domain. Removing corallimorphs (an invasive marine invertebrate) and reducing an overpopulation of crown-of-thorns starfish is freeing up corals that were being smothered.

When warm waters cause coral bleaching at Palmyra, the reefs recover quickly. Why? Research shows that robust seabird populations nesting and roosting in abundant rainforest habitat and large populations of sharks and other predators keep coral reefs healthy. These lessons about how nature's interconnected systems thrive are helping atolls and islands adapt to climate and human impacts throughout Oceania and beyond.

A water's eye view of coral reefs and islands at Palmrya Atoll © Alex Wegmann/TNC

The Ripple Effect

Our work at Palmyra Atoll falls under three broad categories that ripple across the broader Pacific to address climate change and other impacts: Coral Reef Resilience, Island Conservation and Bluewater Research.

To bolster coral reef resilience, we are assessing coral reef changes at a pace and scale never before possible, using machine learning to analyze data collected from satellites, drones and scientific scuba divers. With partners, we are developing the world's first coral reef digital twin, dubbed "Digital Reefs," to enable real time modeling of how a reef might respond to changes such as temperature, ocean currents, coral spawning, human-led interventions and more.

Island conservation actions are currently focused on reestablishing Palmyra's native rainforest to increase habitat for seabirds, a project that is adaptable and applicable to hundreds of islands. Palmyra's rat-free habitat allows introductions —or rewilding—of globally endangered birds without a safe haven.

Bluewater research includes assessing how marine species use marine protected areas (MPAs) and studying behavior and changes in their abundance using remote cameras and catch-and-release monitoring. We are also developing a standard method to measure species biodiversity using DNA samples. This work improves the effectiveness of MPAs around the globe. Learn more at nature.org/hawaiipalmyra.

A Partnership for Interception and Reuse

Through a strong partnership with commercial tuna fishing companies, TNC is tracking drifting Fish Aggregation Devices (dFADs), which are floating rafts that can impact coral reef ecosystems. Recovering dFADs before they ground protects Palmyra's reefs and marine life. Better yet, TNC can study oceanographic and fish biomass data, as well as repurpose satellite buoys from the dFADs for research and to support conservation-oriented artisanal fishing communities in Micronesia. Since 2021, we've intercepted over 55 dFADs, which equates to more than 8,000 feet of coral-destroying ropes and netting material.

Removing large, heavy FADs protects Palmyra's coral reefs © Dana Edmonds

A Passion for Science

In 2017, a $10 million unrestricted gift from a dedicated, anonymous donor launched a new TNC-led science program and infused new life into aging facilities at Palmyra Atoll. Multiple visits deeply connected this donor to Palmyra's remote marine wilderness and fostered a profound appreciation for its unique ecosystem and potential to advance strategies to protect ocean, coral reef, and island ecosystems.

Kydd Pollock, our Pelagic Conservation Strategy Lead, recalls the donor's ability to connect with nature through quiet observation, which left a lasting impression.

A staff member quietly observing manta rays in Palmyra's pristine waters © Gary Andrews

"Quietly listening and watching at Palmyra, as this person did, is when you truly understand the magic of the place," Kydd reflects.

Today, we are conducting and hosting transformative science, such as catch-and-release studies on fish that travel thousands of miles across the ocean and rewilding endangered birds like the Sihek, or Guam kingfisher.

This remarkable individual with a passion for science has passed away, but their philanthropy leaves a lasting legacy, from accelerated research to financial and operational stability.

A Sihek named Långet at Palmyra Atoll © Mollie Ginther/TNC

The Nature Conservancy

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