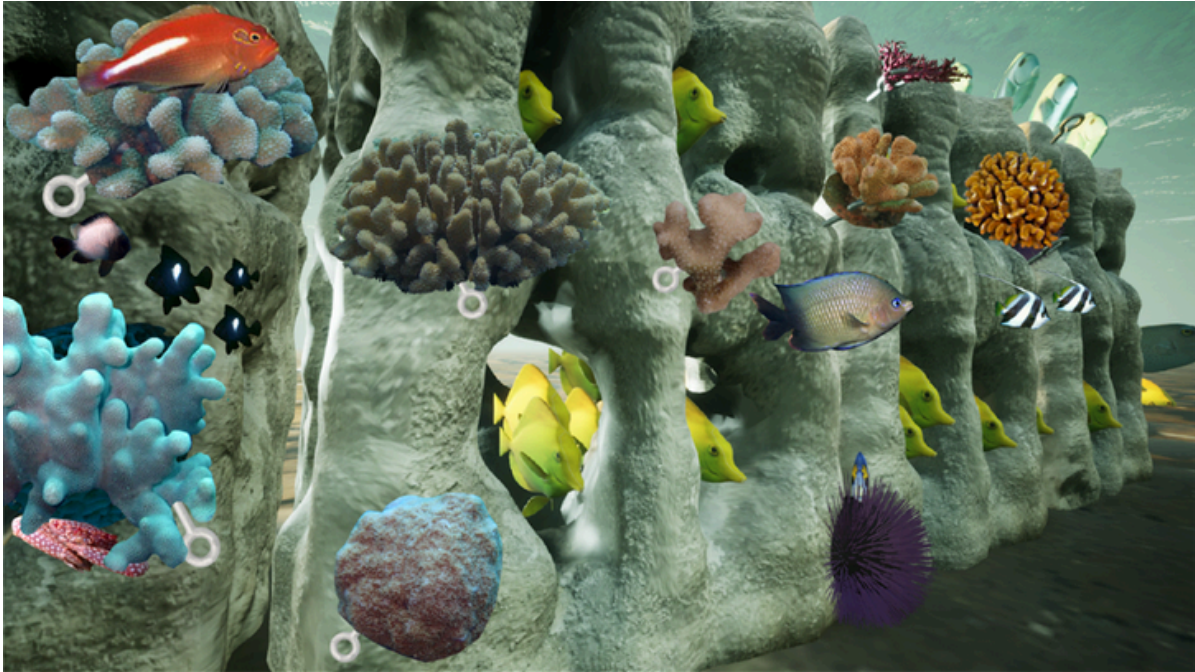




# REEFrame

— E HĀPAI WA'A KĀKOU —



**MEDIA KIT**

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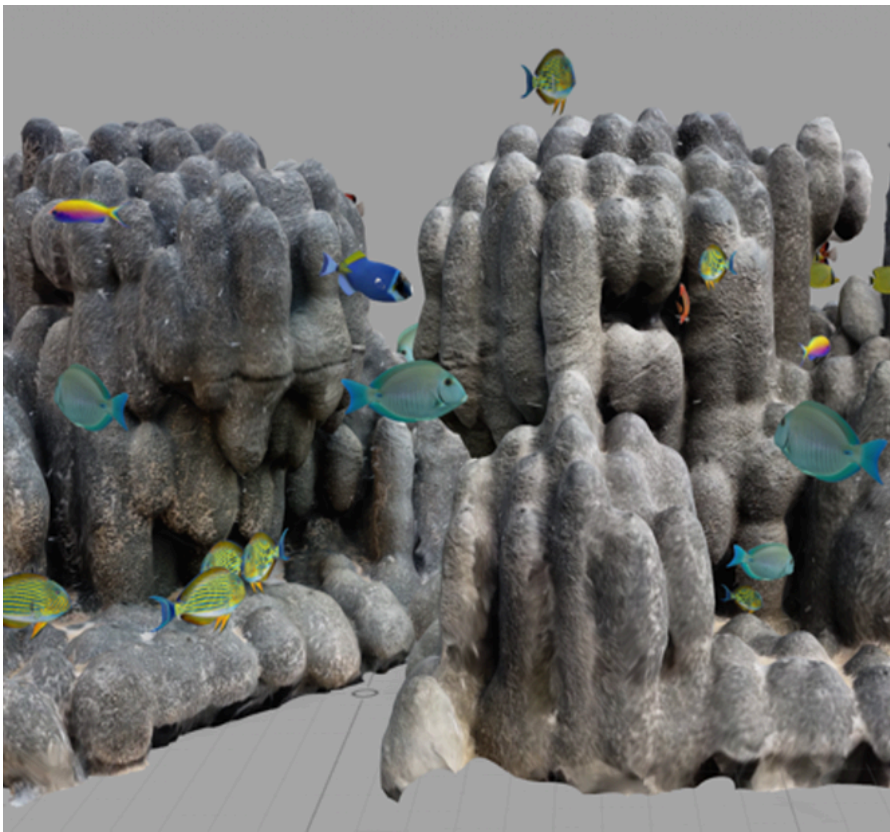
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# About REEFrame

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REEFrame is a three-year coral reef restoration project on O‘ahu, Hawai‘i, led by Conservation International, University of Hawai‘i at Mānoa, the Hawai‘i Division of Aquatic Resources, ocean technology firm Natrx, ocean engineering firm Oceanit, and workforce development nonprofit ClimbHI.

Hawai‘i’s coral reefs are endangered due to sediment runoff, leeching sewage, excess fertilizers, and ocean warming. Funded by a \$9 million grant from the National Oceanic and Atmospheric Administration’s (NOAA) Office of Habitat Conservation, REEFrame seeks to foster coral growth by building permanent coral nurseries off Waikīkī Beach. The natural shapes of these stacked 3D-printed concrete modules create an ideal habitat for naturally growing coral and other reef life.



The modules will be designed to mimic the natural habitat of the coral reef ecosystems.

Credit: Natrx

The nurseries are proposed for an area of rock seafloor 60 feet deep approximately  $\frac{3}{4}$  mile offshore near the existing natural reef. They will initially store corals-of-opportunity (living coral colonies dislodged from other locations by storms or other disturbances) for a variety of coral restoration projects, gradually becoming

permanent natural reefs following colonization by coral larvae and other sea life.

During the design phase, REEFrame is completing a detailed permitting process at the city, county, state, and federal levels and is working closely with local stakeholders in recognition of the vital cultural, economic, and environmental value of the Waikīkī region.

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# Partners

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Conservation International protects nature for the benefit of humanity. Through science, policy, fieldwork, and finance, the organization spotlights and secures the most important places in nature for the climate, biodiversity, and people. With offices in 30 countries and projects in more than 100 countries, Conservation International partners with governments, companies, civil society, Indigenous peoples, and local communities to help people and nature thrive together. [Conservation.org](https://www.conservation.org)

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The University of Hawai'i School of Life Sciences conducts research and training to promote the understanding, appreciation, and preservation of biological diversity through excellence in research, education, service, and outreach. [Hawaii.edu/lifesciences](https://hawaii.edu/lifesciences)

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NatrX, Inc. provides nature-based coastal and marine infrastructure solutions to promote balance between the natural and built worlds. The company applies leading technology to resilience and restoration initiatives, enabling landscape scale enhancement. Natrx incorporates geospatial data analytics, patented Dry Forming advanced manufacturing, and material science innovations to deliver habitat-specific resilience systems that harness and support the adaptive power of nature. [NatrX.io](https://www.natr.io)

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The Hawai'i Division of Aquatic Resources (DAR) works with the people of Hawai'i to manage, conserve, and restore the state's unique aquatic resources and ecosystems for present and future generations. [DLNR.Hawaii.gov/dar](https://DLNR.Hawaii.gov/dar)

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Founded in Hawai'i in 1985, Oceanit is a "Mind to Market" company that creates disruptive technology from fundamental science. Oceanit practices the unique discipline of Intellectual Anarchy, reimagining innovation to break the bonds of normal and solve the impossible – delivering technologies to the market that impact humans and society. [Oceanit.com](https://www.oceanit.com)

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Founded in 2009, ClimbHI seeks to inspire students to finish high school and proceed to post-secondary or employment by exposing them to future career paths and the steps necessary to achieve those goals. [ClimbHI.org](https://www.climbhi.org)

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# REEFrame Project Leads

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## **Matt Ramsey, Senior Director, Conservation International Hawai'i**

Matt provides general oversight for REEFrame. As the senior director of Conservation International Hawai'i, he has over 30 years of experience with natural resource projects in Hawai'i, including conservation finance, resource protection, terrestrial restoration, and fisheries initiatives. Matt previously worked with the Hawai'i Department of Land and Natural Resources and the National Oceanic and Atmospheric Organization (NOAA) Fisheries Pacific Island Regional Office. He is the Hawai'i chairperson of the Western Pacific Fisheries Management Council and holds a bachelor's degree in natural resource management from Cornell University.

## **Mark Hixon, Ph.D., Hsiao Endowed Chair of Marine Biology, School of Life Sciences, University of Hawai'i at Mānoa**

Mark is REEFrame's science lead. Since 1979 Mark has studied coral reefs, focusing on reef restoration since observing the severe decline of O'ahu's herbivorous reef fish. His studies helped inspire the Coral Resilience Module Experiment, which became the feasibility study for REEFrame. Mark's research on projects in California, Oregon, Hawai'i, the U.S. Virgin Islands, the Bahamas, the Great Barrier Reef, and French Polynesia, focus on the behavior, population, and community ecology of coastal marine fish. Mark holds a bachelor's degree in environmental biology, a master's degree in ichthyology and ecology, and a Ph.D. in population and aquatic biology from the University of California at Santa Barbara.

## **Matt Campbell, Ph.D., President and Head of Engineering, Natrx**

Matt Campbell is designing the project's nursery reef frames and overseeing the fabrication of the 3D-printed reef modules. He is a coastal and ocean engineer with 20 years of experience integrating traditional coastal engineering principles with biological and ecological processes to improve coastal resiliency. Matt previously founded ORA Technologies, which provides nature-based solutions in the Gulf of Mexico. In 2016, he conceptualized, patented, and developed the Natrx 3D concrete printing technology to restore natural infrastructure. Matt holds a bachelor's degree in biological engineering, a master's degree in biological engineering, and a Ph.D. in biological engineering from Louisiana State University.

## **Ryan Okano, Ph.D., State of Hawai'i Department of Land and Natural Resources Division of Aquatic Resources (DAR)**

As an East Hawai'i Biologist for DAR, Ryan supports the permitting process and provides natural resource management perspectives for REEFrame. He has over 12 years of experience in nearshore restoration including both land and water projects. He also serves as Hawai'i's point of contact on the U.S. Coral Reef Task Force. Ryan holds a bachelor's degree in natural sciences and a master's degree and Ph.D. in Botany from the University of Hawai'i.

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# REEFrame Project Leads

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## **Mike Foley, Ph.D., Senior Coastal Engineer, Principal Investigator, Project Manager, Oceanit**

Mike is helping build REEFrame's structural framework. He has a decade of experience in the ecological engineering of marine structures. His doctoral dissertation focused on breakwater reefs, their impact on coastal processes, and their ability to enhance a reef's ecological value. At the Hawai'i Institute of Marine Biology (HIMB), Mike designed a blue-green shoreline structure to mitigate coastal hazards and enhance native species habitats. He is also testing marine construction materials to learn how they can attract and grow coral. Mike holds a bachelor's degree in environmental science from Colorado College, and a master's degree and Ph.D. in civil engineering from the University of Hawai'i.

## **Julie Morikawa, President and Founder of ClimbHI**

Julie oversees REEFrame's community and industry connections and partnerships. She has over 20 years of experience in the hospitality and technology sectors worldwide. As the president and founder of the Hawai'i nonprofit ClimbHI, she actively partners with leading businesses and organizations statewide. She is also a board member of the O'ahu Visitors Bureau. Julie has launched numerous workforce development initiatives and campaigns over the past 15 years, reaching more than 140,000 keiki across Hawai'i. She holds a bachelor's degree from Cornell University.

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## Our Logo

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REEFrame was born out of the shared desire to mālama (care for) our beloved island home and protect the ocean reefs that protect us. The hoe (paddlers), wa'a (canoe), i'a (fish), and makau (fish hook) petroglyphs (ki'i pōhaku) illustrate our commitment to e hāpai wa'a kākou -- if we all help to lift and carry the canoe, we can move it forward.



Just as the number four has traditionally represented a sustainable harvest from the sea, with each fish tail fitting between the fingers on one hand, REEFrame's four petroglyphs reflect a deeply rooted passion and kuleana (responsibility) for sustaining the ocean, sea life, the land, and its people for generations to come.

Mahalo to Waikīkī cultural advisor Aunty Ku'uipo Kumukahi and artist Rosalind Leolani Solomon of the Hawaiian Music Perpetuation Society for the inspiration provided by their music, as well as their guidance and continued collaboration.