

Diving Into the Remote Pacific
By: Erin O'Reilly

After flying over the Pacific Ocean for five hours, we finally saw the small islands jutting out of the water. Our excitement levels were through the roof; for the ladies of the Bren "Remote Pacific" group project, this was home for the next three months. As we approached Oahu, we stared out the window at the lush green mountains and turquoise water. Even from 35,000 feet we could see the outline of the coral reefs: the main focus of our summer.



During our first week working for NOAA's Coral Reef Ecosystem Program, Monique, Kara and I explored the island and hiked to the Lanikai pillboxes. These old military lookouts provide a bird's-eye view of the Mokulua Islands and Cabbage Patch reef, one of the most studied reefs on Oahu. While we hiked and looked out at the reef from above, Shannon was getting up close and personal with corals on the North Shore. From our lookout, these reefs looked healthy and thriving, but underwater it is a different story. Shannon saw reefs that were primarily composed of sand and boulders. If corals were present, most of them were dead or bleached. Due to climate change, tourism, overfishing, and runoff from increased development this is the state of many of Oahu's southern and eastern coastlines.

Although we are living on and exploring the main Hawaiian Islands, our group project is focused on islands thousands of miles away in the Pacific Remote Islands Marine National Monument; they are called remote islands for a reason. Unlike the degraded reefs in Oahu, the Pacific Remote Islands contain relatively pristine reefs and are usually referred to as coral gardens. Far from the impacts of development and people, these islands create a perfect living laboratory for scientists to study the impact of climate change on reef ecosystems in the absence of significant human presence. Through our work with NOAA, our group project client, we will be synthesizing and analyzing 15 years of data to track how coral cover, fish biomass and temperature have changed over time. By determining the ecological status in the Monument, a baseline of ecosystem health will be created that can be used for comparison of future change in the Monument.

These islands provide an increasingly rare opportunity to study the unbiased impacts of climate change on coral reef communities. Understanding these effects without the confounding influence of human presence will help inform managers not just on Hawaii, but all over the world on the relative impact of humans on these sensitive habitats. In turn, this information will

hopefully be used to develop management strategies that not only mitigate human influence but also strengthen the ecosystem's resilience to climate change.

As we continue to explore the island of Oahu and work more closely with everyone at NOAA, our ocean-minded *ohana* (family) grows everyday. While we can't physically dive into the waters surrounding the Pacific Remote Islands Marine National Monument, we are diving into the data to paint a picture of the health of the Monument. We hope that the work we complete with NOAA will be used to provide a blueprint for reef conservation worldwide.



From left to right: Shannon Boyle, Erin O'Reilly, Kara Koenig, Monique Schafer (all MESM 2017).