



*Danielle Claar doing field work at a reef in Kiritimati*

## Kiritimati comes early for one coral researcher at UVic

— By Angelica Pass

How does a girl from landlocked Idaho come to study coral reefs on the remote island of Kiritimati (pronounced Christmas) in the Central Pacific? For 2015 Vanier Scholarship recipient, Danielle Claar, marine exploration was a passion from childhood. “My parents met SCUBA diving so they introduced me to that at a young age,” she says. It was during her undergraduate studies at the University of Hawaii at Hilo that Claar’s love of corals truly began, a love that has translated into a PhD project and national recognition in the form of one of most prestigious graduate scholarships in Canada.

The Vanier Canada Graduate Scholarship Program was created to attract and retain world-class graduate students and the scholarships pay \$50,000 annually for up to three years. Says Claar on receiving the scholarship, “It was really overwhelming, but in a good way. I’m just so fortunate to be able to have the support to focus on my research and my passion for preserving coral reefs.” Her supervisor, Dr. Julia Baum, sings Claar’s praises, “Danielle is the whole package: brilliant, motivated, highly skilled at field research and public outreach. Mentoring exceptional young scholars like Danielle is one of the greatest rewards of my career.”

After her undergraduate studies in Hawaii and a year in Florida working as an environmental protection biologist, Claar started her MSc at UVic in September, 2013. Now Claar is a PhD candidate in the Department of Biology where she says she “brought corals to the coral reef team.” Dr. Baum’s team had studied coral reefs for a long time but the work

was more focused on the relationship between reefs and fish. “We’re studying the entire coral reef ecosystem, from the apex predators down to the microscopic organism to understand how climate change and other human impacts are changing these systems. Danielle is our coral expert,” says Baum.

Claar studies how corals react under stressful conditions, including human influence, storms and El Nino. Corals are what are known as holobionts, an entire community of organisms living together as one. Corals are tiny animals belonging to the phylum Cnidaria (which also includes jellyfish and anemones) and they live in colonies. They secrete a hard calcium carbonate skeleton, which serves as a substrate for their colonies. Coral colonies form a symbiotic relationship with *Symbiodinium*, tiny one-cell plants which act as a solar panel for the coral, providing food for it through photosynthesis in exchange for habitat.

In a process called bleaching, corals lose their symbionts. This happens when a coral undergoes stress, particularly due to pollutants or warmer ocean temperatures. If a coral is able to recover its symbionts quickly, it can regain health but otherwise it will die. The purpose of Claar’s research is twofold, first to determine what makes a coral resistant to bleaching and secondly to find out what makes them able to recover from bleaching.

Coral reefs host some of the most biodiverse ecosystems in the world. For many coastal populations such as the people of Kiritimati, these reefs are essential to life—sheltering



*A healthy reef and one impacted by multiple environmental stressors*

species of fish that are used for food and offering the coastline protection from waves and storms. They also support the island’s economy with influxes of tourists eager to explore the reefs.

Claar has been to Kiritimati five times in total and has led field studies there during her last four trips. The teams of field study participants are made up of UVic undergraduate and graduate students as well as diving technicians. Field work consists of two to four week sessions of working 16-20 hour days. In addition to collecting samples to analyze in the lab, corals are tagged with brightly coloured zip-tags to allow for observation over time.

Does Claar have any advice to young people wanting to get into her field? “That’s funny, because when I asked the same question to Sylvia Earle, one of the most prominent scientists and explorers in the world, she told me, ‘If it doesn’t exist, make it up’. So I’ll repeat that—don’t let anything prevent you from pursuing your goals; there is always a way to make it work.” Her journey from Idaho, to UVic, to Kiritimati and her acceptance of the Vanier Scholarship demonstrate that Danielle has indeed found her way.