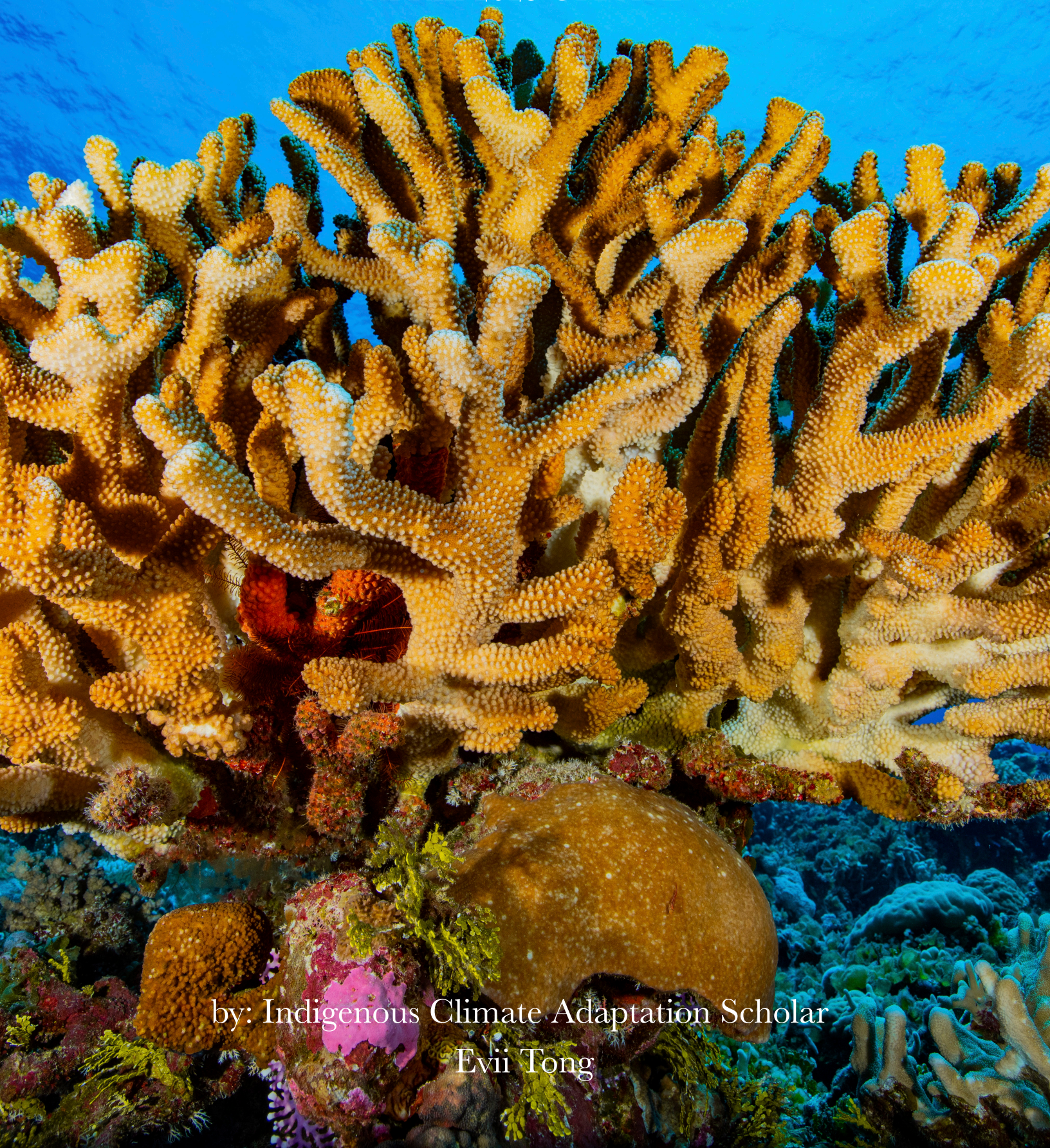
Pole to Conservation Pole

Thermal Tolerant Coral Restoration

APRIL 2023 UPDATE



by: Indigenous Climate Adaptation Scholar
Evii Tong

Before I begin, I would like to take a moment to offer a traditional blessing in my Kiribati indigenous language, "Kam Na Bane Ni Mauri," which means "I Bless Each and Everyone of You." It is always meaningful to start with a blessing, and I want to express my appreciation to Pole to Pole Conservation for being by my side and supporting me throughout the years.

Since my last update, I have continued to work with the Woods Hole Oceanographic Institution, which remains the leading private institution for ocean studies. During this time, I have had the opportunity to learn, study, and experience new things every day. As part of my capacity building, I have also given talks to WHOI students and staff, sharing my research on corals.

Furthermore, I had the privilege of being selected by Dr. Anne Cohen to be part of her team for a two-week trip to the Marshall Islands. The trip involved a workshop and fieldwork that included coring. It was eye-opening to see firsthand the impact of climate change on my neighboring country and to witness the local communities working to find solutions to prevent coastal erosion, contamination of freshwater lenses, coral bleaching, and other related issues.

Upon our arrival on Majuro Island on March 18th, we had the privilege of meeting with government officials and listening to their concerns for the people of the Marshall Islands and the impact of climate change on their nation. As someone who is intimately familiar with the frontlines of climate change as a representative of a neighboring island nation, I felt an immense sense of gratitude to be present during these discussions.

It was during this time that I had the pleasure of meeting Director Glen Joseph of the Marshall Island Marine Resources Authority. Director Joseph's passionate discussion on capacity building for the young generation of developing island states resonated deeply with me. As someone who serves as a prime example of this concept as a Micronesian, I was honored to be able to participate in his workshop and learn from his insights.

During the workshop, I had the opportunity to share my research on corals with attendees, including the heads of government of the Marshall Islands. This experience highlighted for me the capacity that exists within developing island nations to engage in scientific research, given access to the necessary resources and expertise. It was an incredibly gratifying experience to have the chance to share my passion and work with such an esteemed audience, and I remain committed to advancing the cause of scientific discovery within developing island states.

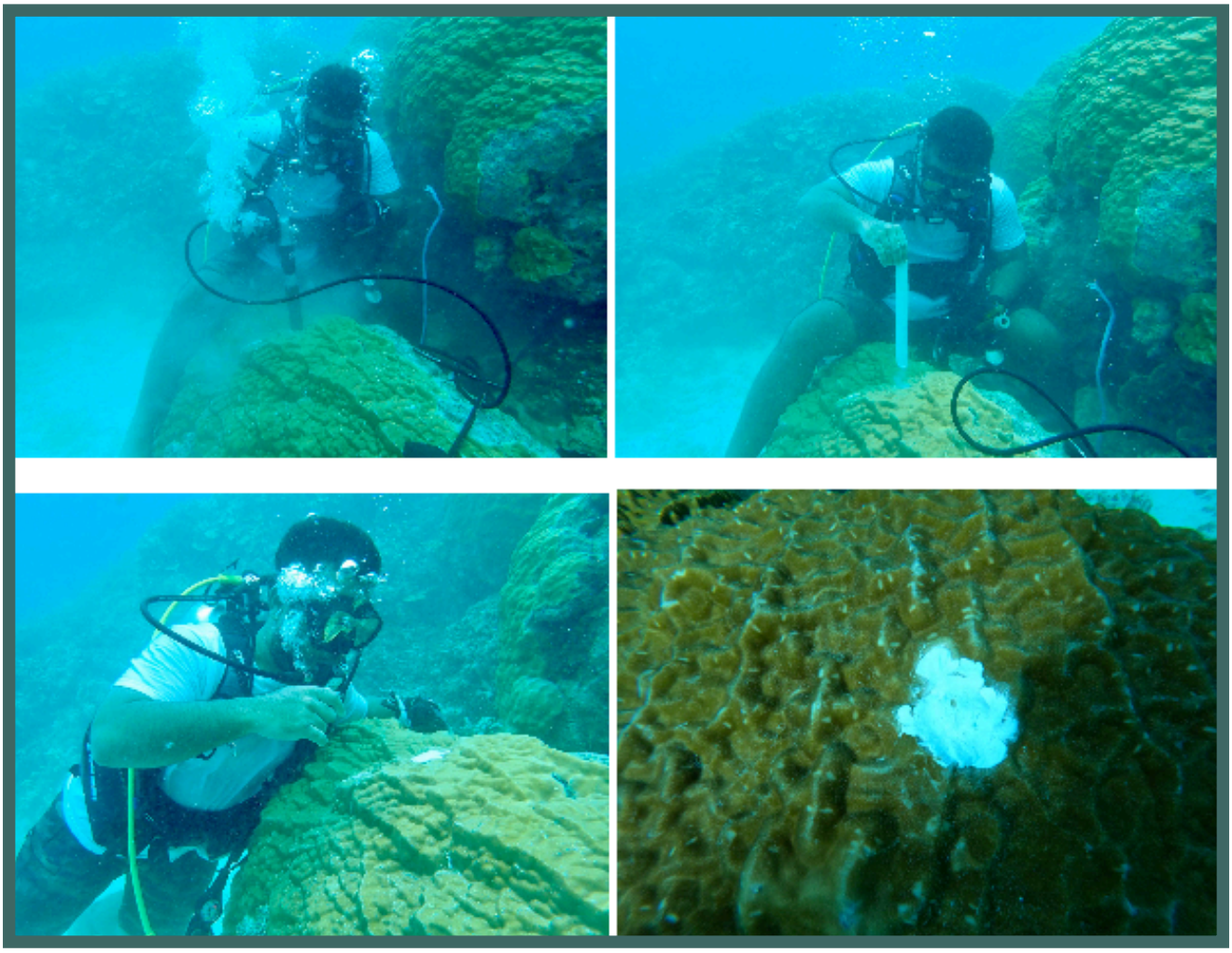
During my talk about coral research at the workshop, several students from Marshall Island College attended because they had learned that I am from Kiribati, a neighboring country, and work with the best ocean institution in the world. After the talk, I approached these students and connected with them, discussing their interests and passions. I was humbled and grateful to learn from their stories and found that I could relate to them in many ways. Despite feeling one step ahead in my studies due to the supportive network around me, I appreciated hearing about their unique perspectives and experiences.

After my talk, I was approached by Dr. Lizz from The Nature Conservancy (TNC), who initially mistook me for a postdoctoral researcher from WHOI. However, I clarified that I am a research assistant in Dr. Anne's lab. Dr. Lizz was still impressed and asked me about how I came to study in the US. I shared my story about being the pioneer of the Climate Adaptation Scholarship Program. Dr. Lizz was not familiar with the program, and we had a long conversation about it. In the end, she invited me to attend one of their upcoming coral conferences in 2024, and I happily accepted her invitation.

I had the pleasure of speaking with Dr. Steve Palumbi from Stanford University, who was also intrigued by my background and research. As we discussed my work, he shared with me his ongoing experiment on testing heat-resistant corals, and he extended an invitation for me to join him in his research at Stanford. I was thrilled at the opportunity to work with such a renowned scientist and immediately accepted his offer. It is incredible to have the support of such influential people in my field.

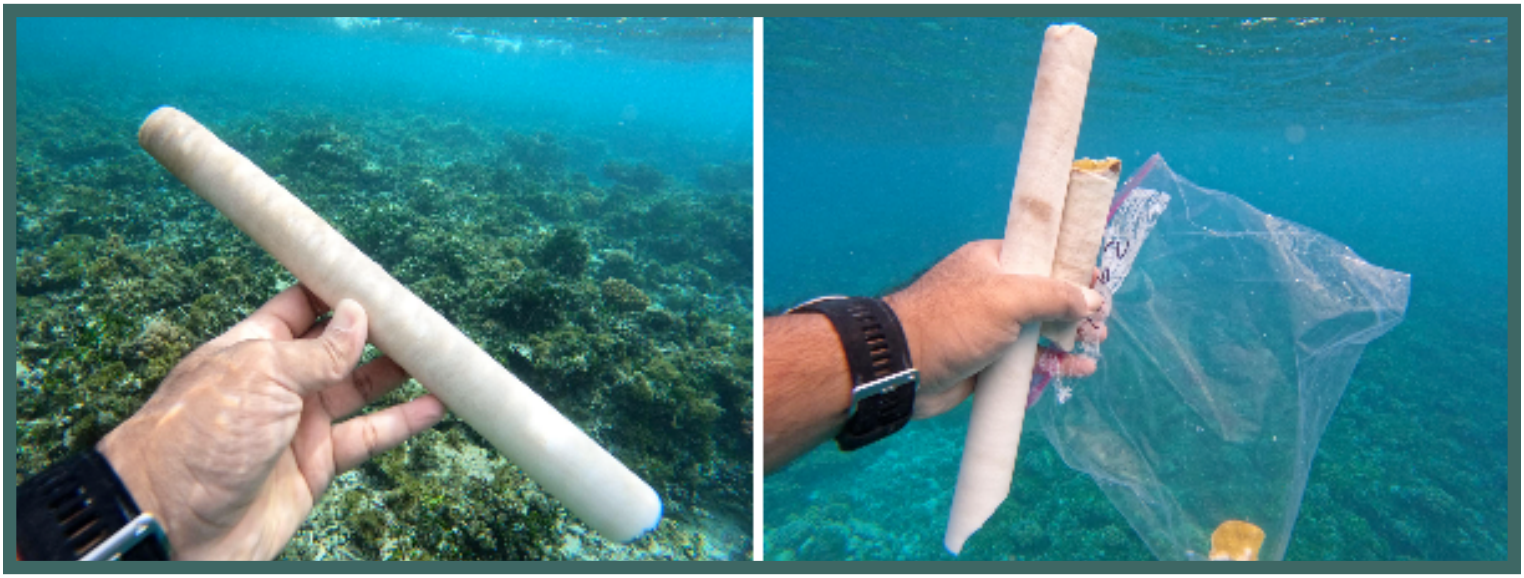
These connections provide me with the guidance, mentorship, and resources necessary to excel in my career and make a meaningful impact on the future of marine conservation.

After a fruitful week of workshop sessions with our esteemed stakeholders from the Marshall Islands, we transitioned into the fieldwork phase of our research, which involved coring and collecting coral tissue samples for genetic testing. As a first-time participant in these techniques, I was excited to learn and acquire new skills that I could potentially impart to individuals back in my home island. During the fieldwork, I was delighted to obtain my very first core, marking a significant milestone in my career and reinforcing my enthusiasm for the research.



Pole to CONSERVATION Pole

The above pictures of examples of me drilling coral cores; This particular coral species, Porite Lobata, holds a special place in my research as it has shown to be more resilient to heat stress than other coral species. By analyzing its past experiences during heat waves, I hope to gain insight not only into its individual response but also how the surrounding coral community reacts. To obtain samples, I used a coring technique where I drilled a hole in the coral colony, filled it with rubble and rocks, and sealed it with Epoxy glue. In a few months, the patch will be covered with new coral polyps, and the drilled areas will be indistinguishable from the rest of the colony. This highlights the remarkable ability of coral polyps to adapt and recover from damage.



And here are what the coral cores and tissues look like; These are made out of calcium carbonate and aragonite. I will be analyzing these coral cores to study the past heat waves on these corals. To know how long these corals were experiencing the temperature change and what their recovery was like, are they resistant, which shows no difference in growth rate, or are they resilient if they can recover after almost entirely dead? In the plastic bag is a coral tissue where we will test the genetics and see what kind of species and if they have a heat resistance genotype, making these corals very hard to kill. And this is very important to know so that the long-term goal is to protect these super reef areas. We got all our permits in time and managed to travel back to Woods Hole with our coral samples safely.

I am also looking forward to analyzing these cores and learning how to test coral genetics. It's been a fun and learning experience for me so far, and I am learning so much, and I am enjoying the process of this progress. I just wish this knowledge and capacity could be done and provided for the young generation in developing island states like my home island. It's more than science, it's about research, graphs, and data, but it's about how science can help educate and improve the livelihood of people from developing countries like Kiribati. I am grateful and happy that I get to have this amazing opportunity.

Sincerely,

Evii Tong