Remembering What a Healthy Reef Looks Like: A community-based reef restoration and education program in Humåtak, Guam

“I remember when I was little, what a healthy reef looked like,” said Joseph Quinata, chairman of the Humåtak Community Foundation in the village of Humåtak on the southern coast of Guam. The reef in Humåtak, also spelled Umatac, hasn’t looked healthy for a while. The silty skeleton of a once prolific and colorful reef stretches around the bay. “We realized that our reef was in a really bad state,” said Quinata. “So we wanted to, as a part of the whole exercise, look at the whole cause so that we can address that.”

Quinata is referring to the “whole exercise” of establishing the Umatac Coral Reef Ambassadors (URCA) program, a community movement that teaches youth in the village about environmental issues and climate threats facing their ecosystem, from the verdant hills down to the bay. Human-caused and climate-induced soil erosion has led to sediment runoff into the bay and several coral bleaching events in recent years have left patches of the reef dead.

Due to its location in the Pacific, Guam is heavily influenced by the quasi-cyclical climate phenomenon, the El Niño Southern Oscillation (ENSO), which swings between its two phases, El Niño and La Niña, causing dramatic changes in temperature, rainfall, and sea level, among other variables. Humåtak can expect more rain at the onset of an El Niño followed by a period of drought afterwards. Increased rain will wash more sediment into
the bay while drought will contribute to the extremity of hillside fire ignited by hunters in the village, further increasing soil erosion.

Climate change will only add to those impacts of climate variability and human activity with accelerated sea-level rise, warming sea surface temperatures and ocean acidification. As the Humåtak community continues to restore their reefs, it will be important for them to monitor and understand how climate variability and climate change impact their bay.

By educating youth on these impacts, UCRA empowers them to become advocates for environmental stewardship in their community and implement research and restoration projects on the reef. The Humåtak Community Foundation and UCRA were established in 2011 to fill a gap in their education system.

“lt sort of triggered when they closed our school down at the village. And so we were all thinking that perhaps maybe we need to do things – take things into our own hands – and address these issues ourselves and not depend on the government to do it for us,” said Quinata.

“Before we even formed the foundation, we did a household survey in the village and our surveys asked these questions regarding conservation and regarding preservation work, and regarding all the missions that we would like to see.” The survey responses illustrated the need for a forum in which the community could discuss conservation and restoration and address the underlying human and climate impacts leading to the environmental degradation their community was observing. Quinata emphasized the importance of engaging with the community before and throughout the development of the foundation to be sure the program was aligned with the desires of the community.

“There are different ways we need to address it,” said Quinata of improving the health of the reef. “The first step we needed to do was education. And the people we needed to work with initially were the youth. Because they speak to their parents, and they are much more effective in speaking to their parents than perhaps even the media is, or even scientists.”

**Key Message**

Be aware that impacts due to a changing climate exist along with (and often exacerbate) impacts from a myriad of non-climate stressors – this means that climate adaptation will be most effective when it is integrated with disaster risk reduction, sustainable development, and other such multi-sectoral approaches to planning and policy development...

The reefs in Humåtak have not looked healthy for quite some time. Source: Humåtak Community Foundation
The 30 or so youth in the program, ranging from elementary school age to mid-twenties, meet on Tuesday and Thursday evenings in their community center. Quinata and other volunteer teachers talk to the youth about impacts to the environment, including the deleterious effects hillside burning has on reefs. Hunters from Humåtak and other nearby towns burn the hillside so that a few weeks later, the new shoots that grow out of the ashes will attract deer and pigs to the now open field where hunters can have a clear shot at their prey. If the fire is lit during dry La Niña conditions, these fires could spread farther and faster.

“The kids are taught that if you burn the hills, the rain comes and erosion happens and it goes down to the river. And the river takes that eroded silt out to the reef, smothers the reef. When the corals spawn, it can’t get into a place where it can grow.” El Niños, which occur about every 3 to 7 years and persist for about 6 to 18 months, tend to increase rainfall on the island amplifying runoff.

“We impart the information and help them develop the skills, and once they start to advocate for whatever it is, then that’s an indicator that we have accomplished what we wanted to accomplish in the first place,” said Quinata. The program hoped that this knowledge would enable the youth to advocate for better environmental practices in the town and they have been seeing the results. “At least for the last 2 years, we have not seen any hill burning at the village area.”

Now that human influences on the reef have diminished, the youth engage in conservation work on the weekends to restore the reef. Part of this restoration work includes experiments in coral growing. “They’ve collected dead corals. They’ve tied them up on a rope and they suspend them right before full moon,” said Quinata. “And during spawning, they pray and hope that the corals attach to the suspended coral.” Tracking climate conditions that are favorable to coral growth will also help to ensure their restoration efforts are more effective. The kids made their own documentary about their coral spawning experiments.

**KEY MESSAGE**

Engage with the community and other stakeholders early and often – building community ownership and participation from the beginning leads to more positive, sustainable outcomes.
The education and restoration efforts of the Humåtak Community Foundation are making their reef more resilient to the impacts of climate change and variability – though the community doesn’t talk about it in the same terms. In the survey that Quinata and his co-founders posed to their community, they tried to gauge literacy about climate change and other environmental threats facing their bay. “The community didn’t know much about it – at least the jargon that we’re talking about, or that the scientists talk about.”

“We talked about climate change, and the concept of climate change is not something they see as that important, because to them,” Quinata said, “that’s the scientist’s job.” But if you frame an issue such as climate change-induced accelerated sea level rise differently – stripped of the technical jargon – you get a different response. “When we talk about the waters coming up to their property, then it is a great concern to them.”

Coral bleaching, similarly is an aspect of climate change that resonates with the community. “We see – and the kids understand about – coral bleaching. And they’re able to detect that,” said Quinata. The kids have witnessed the white bleached corals that result when the tiny symbiotic algae that inhabit coral tissue and provide coral with nutrients are expelled under stressful conditions – both human- and climate-induced – such as increased temperature, sediment runoff or pollution. The elders in Humåtak tell the youth that, in their lifetime, they have also seen coral bleaching. Coral bleaching events will become more common as sea surface temperatures rise in a changing climate. Though they don’t talk about the connection between climate change and coral bleaching in the same way that western scientists do, they are addressing the problem all the same. Educating the community about the impacts of climate variability and change on their bay – and available information on the forecasts for those impacts – will further their resilience.

Quinata and his fellow board members at the foundation want to continue to restore Humåtak Bay to the healthy reef of Quinata’s youth by fostering the traditional knowledge and practices from past generations alongside modern science. “The foundation provides that mechanism for us to continue doing what we’re supposed to be doing. Like how we were doing sixty years ago, when it was controlled by our clan – our head of clan. But now that generation is gone.”

As the UCRA program proves to be continually successful in engaging the whole community in protecting the reef, the foundation hopes to expand the afterschool program into a full K-12 charter school. The plan is still in a nascent stage, but they aim to design a school wherein the students can learn traditional knowledge from mentors and elders.

By tapping into the traditional knowledge of sustainable practices in their bay and educating the youth about human and climate impacts on their ecosystem, the foundation aims reclaim the abundant, colorful, healthy reefs of Humåtak’s past. “And that’s what keeps us going, is the vision that we see at the end.”