



Slaying Mosquitos and Jumping Jacks Make Climate Science Fun at the BioBlitz!

It is a challenge to communicate how climate science affects our families, communities, islands, and world. So, how do we engage in climate science conversations with diverse groups of people? Science games at the BioBlitz!

On May 15 and 16, Hawai'i Volcanoes National Park partnered with The National Geographic Society for the 2015 BioBlitz. The BioBlitz was a 24-hour inventory of vegetation and wildlife conducted by more than 850 students, 170 scientists, and 6,600 visitors. In addition, visitors took part in the annual biodiversity and cultural festival running concurrently outside the park visitor center.

This festival and BioBlitz combination was a great opportunity for the Pacific Islands CSC, the Pacific Islands Climate Change Cooperative (PICCC), University of Hawai'i at Hilo, and the National Park Service Inventory & Monitoring Program Pacific Island Network (I&M PACN) to teach students, families, and visitors about Pacific island climate change issues. Through hands-on games and experiments, the team instructed students and visitors about some of the climate change impacts affecting ocean, coastal, and mountain ecosystems.

“Standing behind a table and giving out brochures is the least engaging interaction you can have,” said Cory Nash, science communicator for I&M PACN and a member of the climate science team. “Concepts like climate change can be complex. Visitors who go to festivals often don’t want to engage in something too academic. They just want to have fun. Something I found to be more effective for engaging youth is activities like games.”

One such game involved the climate change impacts of rising temperatures on native bird (ʻiwi) habitat. ʻIwi are



Whitney Peterson (PICCC; center) teaching festival goers predicted effects of rising temperatures on native bird and mosquito populations using an interactive climate change trivia game. Photo: S. Nash

predicted to be forced farther up mountain slopes, evading the likely expansion of mosquito populations, which carry deadly avian malaria, to formerly colder habitats. The game requires players to answer trivia questions about climate change occurring or predicted to occur within Hawaiian ecosystems. A right answer earns the player a bean bag to knock a mosquito off the board, and a wrong answer moves the `iwi farther upslope until the birds run out of habitat. Students really wanted to get the trivia questions right to save the birds...and to chuck bean bags at mosquitoes.

“You can take a complex subject, make it into a game...and those in the game don’t even realize how much they are learning because they are having fun,” says Mr. Nash. This same idea of using a hands-on activity to teach challenging concepts was applied to a far more complex topic: ocean acidification.



Sarah Nash (in black; UH Hilo/PICSC) and student scientists discussing ocean acidification and its impacts on marine organisms.
Photo: C. Nash

Ocean acidification is described as the lowering of the pH levels of the world’s oceans, often due to the absorption of carbon dioxide and subsequent production of carbonic acid. Not only was the *term* ocean acidification unknown to most students, but making the connections from carbon dioxide pollution absorbed by oceans to increased ocean acidity to why higher acidity is a problem, was a challenge. In the end, the climate science team used a chemistry experiment, which has an experimenter blow bubbles into water mixed with a pH indicator to show how carbon dioxide can raise the acidity of water. But before the experimenter started blowing bubbles, all of the students were asked to do 15 jumping jacks to increase their carbon dioxide output. Incidentally, this little exercise resulted in engaging all the students further using physical activity as well as drawing more interest from festival participants. Once the

experimenter blew into the solution, students observed the color of the water change to indicate an acidic solution. Then students were shown two jars containing shells and acidic water (vinegar and water solution) or plain water and asked to make some observations. They could easily see the difference in the states of the shells—those in the acidic solution were thinner, paler, and fragile—and, therefore, some of the impacts of a more acidic environment on marine organisms. Then the connections between carbon dioxide in the oceans and increased acidity and the resulting harm to marine organisms could be observed. And the movement of the jumping

jacks, the blowing of the bubbles, and the visual observations help to link the concepts to the experiential learning.

Finally, the third climate theme for the booth was a visual exhibit about sea-level rise effects on coastal areas. Talking about sea-level rise is one way to reach your audience. But actually showing your audience how sea levels could change their hometown (Hilo) is an effective way to get people to really start thinking about the repercussions of climate change. So, using maps of Hilo Bay and predicted sea-level rise scenarios, Scott Kichman, GIS specialist for the I&M PACN, generated sequential maps showing how the coastline around Hilo Bay would change with rising sea levels. These maps were then put into a movie sequence and downloaded on iPads for visitors to view with the click of a button.

As climate science communicators we can only hope that along with memories of pounding poi, counting insects, watching hula, and collecting stamps, students and other visitors left with a better understanding of some of the complex climate issues facing our islands and our communities in the years to come. And, hopefully, they had some fun along the way.

Read more about what happened at the 2015 [BioBlitz](#)....