

CHANGING THE CONVERSATION ON CLIMATE

Empowering Youth Volunteers as Climate Change Interpreters

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Introduction

The effects of climate change are being felt by people and marine mammals around the world today. Despite the overwhelming scientific consensus, great confusion still exists around the globe, and in the United States in particular, where only 54% of Americans understand that global warming is mostly human-caused (Leiserowitz et al., 2017). It has become clear that zoos, aquariums, science centers and other informal environmental organizations can serve as resource hubs and important messengers of climate science and climate solutions. Studies have shown that visits to aquariums, zoos, science centers and national parks appear to raise concern about ocean health and increased interest in conserving animals and habitats (Luebke et al., 2012). Not only do the interactions inspire interest, but 91% of visitors appear willing to change their behaviors in national parks and wildlife refuges to help mitigate threats such as climate change (Schweizer et al., 2013). Unfortunately, despite this opportunity, a cycle of silence persists in the United States with only one in five Americans hearing people they know talk about global warming at least once a month (Maibach et al., 2016). To overcome this barrier, informal education organizations can leverage their visitation and trust as scientific messengers to both provide an opportunity to engage guests about climate change, and utilize tested communication strategies to overcome cognitive barriers around climate change science.

As the world's largest marine mammal hospital, The Marine Mammal Center is uniquely positioned to rescue and rehabilitate sick and injured marine mammals from over 600 miles of California coast, with the ultimate goal of releasing the animals back

to the wild with a second chance at life. Utilizing a state-of-the-art hospital and education facility, The Marine Mammal Center cares for an average of 700 animals each year, while engaging over 100,000 visitors to the hospital. As mammals, seals and sea lions face many of the same threats posed by climate change as people, from sea level rise eliminating critical habitat for breeding and resting, to shifting fish stocks, and increases in harmful algal blooms causing neurotoxins to accumulate in the food chain (McKibben et al., 2017, Funayama et al., 2013, Simmonds & Isaacs, 2007). By connecting guests to the threats, both present and future, that marine mammals face, guests learn how they can become ocean stewards in their own communities.

In 2013, The Marine Mammal Center joined the National Network for Ocean and Climate Change Interpretation (NNOCCI), a collaboration of Woods Hole Oceanographic Institute climate scientists, communication experts from Frameworks Institute, and a collective of 170 informal education centers around the United States. Using scientifically-tested language and communication strategies, simple metaphors, value statements and messages were created to overcome traps in public thinking and redirect conversations to impactful, community-level solutions (Bales et al., 2015). These practices have been utilized among The Marine Mammal Center staff and volunteers, with high school volunteers most recently being trained as climate change interpreters. As part of our 9-month service-learning program for high school students called Youth Crew, youth ages 15-18 work alongside staff and adult volunteers providing critical life-saving care to sick and injured marine mammal patients, while also serving in education roles each summer as

either interpreters or summer camp counselors. As young community leaders and with a strong passion for climate change action, these high school students not only gain skills in public speaking and climate science, but serve as powerful messengers to our visitors with a key conservation topic.

Methods

During a four-week period in the summer of 2017, the Center's education team welcomed eight Youth Crew (seven new youth volunteers and one returning youth alumna) as Climate Change Youth Interpreters. With two days of training, the high school students were introduced to the science of climate change, scientifically-tested communication strategies, and best practices of interpretation as they prepared to engage guests at the hospital about the impacts of climate change on marine mammals and how we can take action to prevent future climate change.

Two interpretive stations were developed for the volunteers to utilize in key public areas of the hospital. One station highlighted the impact of sea level rise on Hawaiian monk seals and Northern elephant seals, utilized an interactive model showing the presence of carbon dioxide emissions in our atmosphere from different sources, and had pictures and stories of some of our most recent seal patients. After sharing the science and causes of sea level rise, along with the major sources of carbon emissions, the volunteers highlighted current solutions to take action, including utilizing renewable energy (as The Marine Mammal Center does with onsite solar panels and a partnership with Marin Clean Energy). Guests could then take a pledge at the stations by placing a physical card into a display box to reduce their carbon footprint by switching to renewable energy for their home, school or



A volunteer engages a family at the 2nd level viewing platform around the impact of sea level rise on elephant seal pups



A volunteer at a table in the Courtyard with activities highlighting the connection between our diet choices and climate change. Guests play a game where they try to identify the carbon footprint of common meal options

business, or pledge to carpool to school or work at least once a week.

The second station focused on the role of diet choices and food with respect to climate change. Highlighting that not all food is created equal due to the resources needed to produce it and get it to your plate, youth interpreters facilitated an interactive game where guests could guess the carbon footprint resulting from their food choices. Armed with compelling stories, like how omitting just one meat dish a week is equivalent to driving 1,100 fewer miles each year, the youth interpreters engaged guests about how our food choices matter to marine mammals as well. Using pictures and stories, they shared that many of our California sea lion and Guadalupe fur seal patients are rescued due to malnutrition and appear to be struggling to catch fish in a warming ocean (as prey species dive deeper and farther offshore in search of colder, more productive water). Guests could then take a pledge by placing a card in a display box to reduce their carbon footprint by skipping one meat dish a week, or setting up a compost program at their home, school or work (to reduce harmful methane emissions from uneaten food waste).

Throughout the summer, data was collected from the visitors who engaged with our youth interpreters, as well as from the youth themselves. Data was recorded for the number of visitors who

engaged with youth interpreters at the interpretive stations (via a count clicker) and the numbers and types of pledges recorded each day. In addition to making physical pledges at the tables, guests also had the option to sign up (via an iPad) to receive helpful resources about how to fulfill their pledges, while also providing us a way to contact guests later in the summer via an online survey in order to evaluate the impact of their pledge.

Pre- and post-data was also gathered via surveys during the initial training and exit interviews at the end of the summer about the youth interpreter's experience, including their attitudes and behaviors related to climate change prior to serving as education volunteers, their satisfaction throughout the summer, their expectations, and the skills and knowledge gained from their volunteer role.

Results

The eight youth volunteers committed 450 hours of volunteer service and engaged 3,589 visitors about climate change. In addition, 864 people made a physical pledge at the stations to take action (skipping one meat dish a week was the favorite choice, followed by carpooling) for a 24% pledge rate.

In total, 197 pledge responses (154 distinct respondents) were completed through the iPad. A follow-up online survey was conducted two months after the summer concluded to elicit details on whether participants completed

their pledge. The survey was open for two weeks and received 15 responses (10% response rate). We incentivized responses by offering a raffle drawing for a \$50 Amazon Gift Card, randomly selected from survey respondents. Follow-up data revealed that two-thirds of the respondents succeeded in their pledge during the first two months, including comments such as "I stopped eating meat at least one day a week, and I talked with the community, and got the right things done to allow the community to let me build a compost bin, and my friends and I got together one day and made a permanent compost bin", "We have almost completely stopped using our car in favor of walking and taking the train, because we don't think the atmosphere needs our CO₂", and "Yes, I actually am eating a completely vegetarian diet now! I own a solar panel that charges phones, laptops, etc...". These results highlight that individuals not only took action themselves, but engaged their local communities for an even greater impact.

Exit interviews with the youth interpreters revealed significant increases in their knowledge about climate change science and solutions, comfort and confidence public speaking, and their willingness to take action related to climate change. Testimonials included statements such as, "felt like I was important and making a real impact", in addition to "doing something beneficial for the world/

environment". Post surveys showed a 29% increase among responding volunteers regarding their comfort and understanding of climate change science following the training. More than 80% of participating Youth Crew indicated that they are likely or very likely to take action on all four of the climate pledges following their summer experience (skip one meat dish a week, set up a compost program, investigate/switch to renewable energy, and carpool or use active transportation at least once a week).

Discussion

This project was successful in utilizing high school volunteers as impactful climate messengers to mixed-age audiences and increased engagement of guests with climate science and actions to reduce their carbon footprint. The implementation of our youth climate interpreter program strengthened our climate messaging through the use of interactive elements and a behavioral pledge to facilitate evaluation. As a small pilot, it appears that short, informal interactions can create a behavior change in guests following their visit and should be explored further at a larger scale. For the high school volunteers, climate training and opportunity to serve as front-line interpreters was a highly desired and appreciated experience,

along with building confidence in public speaking, climate science and increasing self-reported environmental behaviors.

In the future, we hope to increase both the number of participating high school volunteers, as well as the number of visitors engaged and making environmental pledges. This climate training for high school volunteers, interactive climate change activities and evaluative methods can serve as a template for other organizations to integrate similar messaging and opportunities into their existing programs.

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