

Case Study: Citizen-Led Urban Environmental Restoration

Introduction: Environmental responsibility and sustainability is a great challenge for future generations. Through this grant project, funded by the American Alliance of Museums with support from the US Department of State, youth in Miami, Florida and Greater Portmore, Jamaica took action to restore urban habitats, while interacting with their international counterparts. This action and interaction built a community of environmentally-active young citizens who were invited to take ownership of positive change in their communities. The international nature of this partnership between the Patricia and Phillip Frost Museum of Science (Frost Science) in Miami, Florida, and the Natural History Museum of Jamaica (NHMJ) of the Institute of Jamaica in Kingston, Jamaica, mirrors both the challenge and opportunity of environmental restoration. In both cases, action on an individual level, as well as an understanding of the global picture, is vital.

Purpose/Expectations: Develop protocols for environmental restoration involving citizen science, establish a relationship between museums and individuals, build a network of environmentally knowledgeable young citizens, and restore green spaces in both countries for communities to enjoy. By developing meaningful, hands-on citizen science opportunities, youth were empowered to take action in their own environments, interact and collaborate with scientists, and connect with their peers through social media.

Implementation (duration, structure, partner(s)/stakeholders, financial considerations, monitoring progress): This project took nine months and the equivalent of two half-time employees to implement (one in each of the two countries). The first steps of the project were to connect with a partner institution (NHMJ) and hold a set of exchange trips for project staff from both countries. Following these trips, 30 citizen scientists and three scientists in each country from local universities/institutions were chosen to participate in the project (total of 60 citizen scientists, six scientists), nicknamed JaMUVE. Frost Science recruited student (aka citizen scientist) participants from its Upward Bound Math & Science program. NHMJ worked with the Institute of Jamaica's Programmes Coordination Division to recruit student participants from the Greater Portmore Junior Centre and surrounding community.

Frost Science led a series of 4-hour workshops in science communication for the six participating scientists. The workshop focused on creating interactive and hands-on experiences in which scientists learn effective science communication strategies and practice new skills that will help them engage youth participants in the project.

At monthly restoration events, citizen scientists divided into multiple groups, each group with a lead scientist to mentor their activities. In Jamaica, some of these activities included techniques of plant identification, collection, and preservation, insect specimen collection and analysis, and observation and quantification of bird species. In the US, some of these activities included taking transects to monitor newly planted sea oat growth, monitoring freshwater wetland water quality, and identifying and removing invasive plants while planting native species. During these restoration events, participants were always excited to connect via Skype to meet and share their work and ask questions.

Between restoration events, participants used WhatsApp to converse and share their work, ask each other questions, and get to know each other. There was a constant stream of posts to our

WhatsApp conversation, sometimes dozens of posts in a day, and included everything from asking other citizen scientists what they had accomplished that day, to posting a photo to ask scientist mentors to identify plant and animal species, to expressing excitement about an upcoming or recent trip.

We held two sets of exchange trip to the partner country, in which select scientists and citizen scientists joined project staff to learn firsthand about our partners' restoration work during on of the restoration events. Travellers also had the opportunity to learn about the country, to meet new friends as well as community leaders, officials, and the media, and to lend a hand in their restoration efforts. For many of the citizen scientists, these trips were the first time on a plane, first time to see a mountain, first time to experience a new culture.

Outcomes: This project brought together scientists and students from Miami and Greater Portmore, with the common goal of restoring and monitoring a natural environment. The citizen scientists completed the project with an increased understanding of scientific protocols and identification of flora and fauna, and an increased sense of the importance of continued stewardship in their environments. Participating scientists learned how to better communicate their science to the public, both in person, and via social media. All of the participants gained a greater understanding of the partner culture, transcending the stereotypes anyone may have had at the start.

Barriers/Lessons learned: One of the most important lessons learned was to be adaptive in our approach to project implementation, and this was vital to the success of our project. At the Greater Portmore restoration site, for example, we encountered logistical problems related to how we would deliver water to the plants after planting. This was exacerbated by an ongoing drought that is still affecting Jamaica at present. Our collaboration's efforts would be futile if the plants planted by eager volunteers failed to thrive without water. NHMJ took quick action by contacting the mayor of Greater Portmore to request his support. In Miami, this approach would be more complex, given that politicians in such a large metropolitan area are more detached from this type of issue. But the Greater Portmore officials kindly offered their assistance and assured water delivery throughout the project. The lesson is to try every potential solution when building a community project, and take into account every factor, whether it is varying access to technology, involvement of community officials, changing physical conditions, or new ideas.

Future directions: Both projects will continue in perpetuity in Miami and Greater Portmore. We intend to continue its working relationship with NHMJ whenever an opportunity becomes available. Additionally, we hope to foster new partnerships through another AAM Museums Connect grant in the coming year.

This is one of a series of case studies written by scientists and community members responding to a survey in advance of the forum, [Community Connections: Bringing Together Scientists and Local Voices](#), held in Houston, TX on September 26, 2015 by the Center for Science and Democracy at the Union of Concerned Scientists. For more information, visit ucsusa.org/scientistsandcommunities.