ABSTRACTS

Does Citizen Science Really Contribute to Nature Conservation? Sharing Evidence from Natural History Museums
Lucy Robinson - Natural History Museum London; Heidi Ballard - University of California, Davis; Alison Young - California Academy of Sciences; Greg Pauly - Natural History Museum of Los Angeles County; Lila Higgins - Natural History Museum of Los Angeles

Through their unique combination of specimen collections, scientific and public education expertise, and wide audience reach and trust, Natural History Museums are obvious settings for bridging conservation science and education through citizen science. A wide range of Natural History Museum-based citizen science programs have emerged in recent years, yet no comparative studies of the conservation outcomes of this work exist. Here we share our recent research which asked: What is the evidence that Natural History Museum-led citizen science contributes to conservation, what kinds of programs and strategies do so, and how could the potential for this approach be better realized for conservation goals? We examined 43 citizen science projects across three museums (1 in the UK, 2 in the US) to assess whether and how they contribute to conservation-relevant outcomes. Conservation outcomes were defined in accordance with the Cambridge Conservation Forum's framework described in Kapos et al. (2008) which includes both direct and indirect activities that lead to targeted improvements in the status of species, ecosystems or landscapes. In this presentation we first introduce the above framework, then share the findings of the research which are applicable across the field of citizen science. We discuss the areas of success, the shortfalls in achieving conservation outcomes and possible causes of this. Finally, we propose ideas for how we as a practitioner community can best plan, design and execute citizen science programmes to achieve conservation impacts, and how such impacts can be effectively measured, monitored and replicated.

New Methods New Knowledge: The Implications of Applying a Citizen Science Method to the Pharmaceutical Industry
Leah Morris - The University of King's College

This work explores the dynamics of knowledge and power in the work of data collection and information distribution. The implication of applying citizen science, a public method of data collection, to the markedly privatized pharmaceutical industry is examined. Pharmaceutical companies currently monopolize the knowledge generated, disseminated, and accepted in the medical community. Patients and prescribers have little power in this knowledge structure. The hypothesis is presented that a citizen science method applied to data collection in the pharmaceutical industry can potentially re-distribute power by engaging citizens to create publicly owned, credible data that can inform the pharmaceutical industry and medical community. It is found that the application of this method to the medical community is challenging due to issues of confidentiality, technical complexity, reliability of publicly generated data, and funding needed. Despite this, the method has the potential to empower patients to create influential datasets, lead to new discoveries, and ensure the efficacy and safety of treatments.

Transforming How Hispanics Learn Science: An Emergent Informal Science Educational Model
Yogani Govender - Inter American University of Puerto Rico

Since 2008 the Conservation Trust of Puerto Rico (CTPR) has been developing an informal science educational model (ISE) using citizen science in Puerto Rico. Through reviewing documents and videos generated, scientific proposals, external reports, focus groups, structured and semi structure interviews, audiovisual materials, direct observations and retro-informative meetings with scientists the authors have constructed an emergent educational model. The model consists of Administrators (CTPR staff)
E-07: Transforming Institutions and Models with Citizen Science - ABSTRACTS

(ADM), Investigators (IN), Assistants to investigators (AI), Interpreters (I), Volunteer Leaders (VL), Participants (P), Collaborators (C) and Co-creators (CO), that work together to ensure the goals of the citizen science projects were achieved. The administration was done by ADM, I and VL who were primarily responsible for the design, implementation and evaluation from coordinating the field activities calendar, preparing materials for researchers and recruiting and retaining participants. The "teaching staff" consisted of Inv, AL, VL and I whose role was to develop and engage participants in various activities to impart scientific knowledge and skills, and change attitude / behavior of participants. The citizen scientist roles changed depending on their level of engagement; one timers assisted in data collection, collaborators (2-10 times) in analysis and dissemination of data and co-creators (>20 times) developed, implemented and disseminated data about their community based citizen science project. The roles of the teaching group were interchangeable to the extent that evaluators found all components were so well aligned that anyone could implement the field methodologies. The ISE model for Hispanic audiences was effective for STEM teaching and learning.

Weather, Climate and Citizens: What Can a Meteorological Institute Get from Citizen Science?
Atte Harjanne - Finnish Meteorological Institute; Heikki Tuomenvirta - Finnish Meteorological Institute
Citizen science can be a tool for many ends such as data collection, societal impact and science education. In the field of atmospheric sciences and services citizen science has particularly high potential. Atmospheric research and forecasting of weather and its impacts utilize high volumes of observations and require good spatial coverage of observations. Mitigation of climate change and adaptation to its impacts rely on public awareness of the risks. Active citizens can find new ways to refine and use the massive amounts of open data meteorological services create. In short, citizen science should be an unsurpassable opportunity for organizations in this field. Finnish Meteorological Institute (FMI) has begun to systematically assess the potential benefits of citizen science to its research and service operations. Some projects have already been finished while others are currently running or being developed. Examples include a national project combining citizen science and science education that involved over 200 high school students working on 7 research topics (Harjanne et al., 2015) and the integration of citizen observations in the official mobile weather application. Based on the experiences at FMI our presentation describes the realized and potential benefits of citizen science from the point of view of a national public research and service institution. We also discuss the practical and institutional challenges faced when engaging citizens and the specifics of citizen science within atmospheric sciences. We aim to provide an encouraging example and valuable lessons learned for any actor interested in citizen science.