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Issue 16



MONARCH
JOINT VENTURE



MonarchNet News
A Citizen Science Newsletter

Upcoming Events

- Monarchs and Climate Change Webinar, December 15th 2-3pm ET. [More.](#)
- Monarch Parasitoids Webinar, March 23rd 2-3pm ET [More.](#)



Photo: Joanna Gilkeson, USFWS



Photo: Joyce Pearsall

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Technology Expands the Frontiers of Citizen Science

"Surfers off the coast of California are attaching sensors to their surfboards to measure salinity and temperature, to help scientists studying coastal waters.

In Newark, New Jersey, residents of the Ironbound community, who have long been subjected to industrial and waste pollution, conduct their own air-quality studies, with help from the Environmental Protection Agency.

And in the Congo, non-literate people are using smartphones and tablets to track forest health."

(Baker 2016.)

Innovations like these, and those such as gamifying complicated scientific processes, and new apps allowing in-field data entry and access to precise GPS coordinates via smartphone are changing and expanding the world of citizen science. Technology is allowing new and diverse audiences to engage with science, rapidly increasing the number of people involved with citizen science programs and really making it true that our only limitations are our imagination and our capacity to analyze data!

In a recent article by Beth Baker published in Bioscience, Karen Oberhauser, co-founder of the [Monarch Larva Monitoring Project](#), remarks, "There's exponential growth in interest on a lot of fronts... It's being driven by technology and also by all of the attention on citizen science from the media, the federal government, and scientists" (Baker, 2016).

Who initiates a project, and the kinds of projects that are initiated are expanding as well as overall interest in citizen science. Concepts like 'gamification,' "in which online game designers collaborate with scientists to enlist volunteers to solve thorny problems" (Baker, 2016), are allowing researchers from all kinds of fields to share their projects with the public, and involve them in science through identification and discovery. Projects such as the [forest tracking program in the Congo](#) and the Cornell Lab of Ornithology's [Celebrate Urban Birds](#) program allow projects to be created by both professional researchers and citizens investigating their own scientific questions.

The accuracy of data collection in all kinds of programs is increasing as well. "On the technological front, new projects have in-the-field online data entry, and old projects are quickly getting these capabilities," says Oberhauser ... "We're getting really accurate temporal and spatial referencing, and that used to be difficult. In the beginning of monarch monitoring, if we asked volunteers to tell us longitude and latitude, we'd get entries like '45 degrees north and 90 degrees west,' and that's a very imprecise location! The accuracy of observations has really improved" (Baker, 2016).

So what's the limit on what citizen science can achieve? The sky is no longer the limit! We're only limited by the kinds of questions we ask, and the amount of data that scientists, both professional and layman, can analyze and use.

"Mostly the frontier of citizen science is magnitude. We've put the sticks on the ground for citizen science. We've gotten ready to start the fire and now it's been lit. It's growing and growing; it's happening very, very quickly, and that's really exciting."

Dr. Karen Oberhauser in Baker, 2016

Contributions of Citizen Scientists and Habitat Volunteers to Monarch Butterfly Conservation

Traditionally, citizen science volunteers have been considered primarily data collection volunteers, focused on research without direct conservation impacts. But this definition is changing, as we learn to understand how invested in conservation citizen scientists truly are with further research into the conservation outcomes of citizen science.

A new study published this month by Eva Lewandowski and Karen Oberhauser documents how participation in citizen science research can lead to habitat conservation. Monarch butterfly citizen science and habitat conservation volunteers were part of this pioneering study to discover contributions to on-the-ground conservation by citizen scientists.

Participants in the Monarch Larva Monitoring Project (MLMP), a site-based citizen science monitoring project, and the Monarch Waystation Program, a habitat creation and conservation program, were surveyed to compare and understand the change in their conservation actions after joining their projects. The positive conservation impacts of habitat creation programs have been well-documented, so this study sought to compare the participation of citizen scientists with habitat volunteers.

Both sets of volunteers are creating and maintaining habitat, showing that the conservation impacts of citizen scientists go beyond the conservation value of their data. Many citizen science projects have site-based monitoring protocols similar to those in the MLMP, so these results show an opportunity for diverse projects to create or maintain habitat for the subject organism. Most respondents reported existing or increased involvement in many conservation activities, ranging from habitat management to educating others about monarchs. One MLMP volunteer described their monarch outreach, illuminating the informal nature of most reported outreach efforts:

Share your ideas!

Are you a butterfly citizen scientist with a story, photos, or artwork to share? Would you like to nominate a volunteer or program for recognition in the newsletter? Write to us at mjr@umn.edu with your ideas.

Help us spread the word. Send this newsletter to friends who may be interested, and encourage them to sign up for our newsletter on the MonarchNet website, <http://www.monarchnet.org/newsletters>

"I'm not an activist, but I talk about my garden and butterflies to anyone who will listen, and offer free plants to anyone who wants."

The study provides clear evidence of the conservation work that both citizen science and habitat volunteers conduct as part of, and outside from, their projects. Volunteers are not only "creating, improving, and protecting habitat for monarch butterflies and other wildlife, but they are also engaging in formal and informal outreach to promote conservation. Volunteers' willingness to participate in habitat protection and conservation education and outreach makes them substantial partners in conservation management" (Lewandowski & Oberhauser 2016).

A few interesting differences found between the two sets of volunteers were in location and creation of habitat, and their motivation to participate. Citizen scientists were more likely to maintain existing rural monarch habitat, and habitat volunteers were more likely to create new urban/suburban habitat. Both groups were motivated by an interest in nature and the outdoors, but citizen scientists were more likely to be motivated by an interest in contributing to science, and habitat volunteers were more likely to report strong interest in or desire to help monarchs.



Another highlight of the study was the importance of volunteers who participated in **both** projects. These 'super volunteers' had the highest percentages of reported increased participation in conservation and were consistently more likely to report participation in conservation activities. In conclusion, monarch citizen scientists are contributing to monarch conservation, and this study shows the importance of continuing to support their

This garden is both an MLMP site and Monarch Waystation!
Photo: Candy Sarikonda

Citizen Science Updates

New Ontario Directory Spreads Citizen Science Projects

- The Canadian non-profit Ontario Nature has created an online database of citizen science projects Ontarians can participate in across the province. [The Directory of Ontario Citizen Science](#) has posted a wide variety of projects, ranging from water quality to frog watching, to birding and even looking for lacewings! Monarch citizen science projects such as Monarch Health and the Monarch Larva Monitoring Project are listed. If you know of a citizen science project available in Ontario that's not on the list, get in touch with Ontario Nature, and share this resource with friends up north!

Monarch Joint Venture Crowdfunding Campaign

- The Monarch Joint Venture is [raising funds](#) to support monarch conservation projects across the U.S. Our priorities include 1) habitat conservation, 2) education and outreach, and 3) research and monitoring. Priority actions for MJV support in each of these areas are detailed in the Monarch Conservation Implementation Plan. Previously funded citizen science initiatives include the Southwest Monarch Study Education Tour, Promoting Citizen Science Monitoring of Monarchs and Milkweed by the Cibola Nature Center, and Monarch Citizen Science Training and Outreach by the University of Minnesota Monarch Lab. Please [consider a donation today](#) to support monarch monitoring and other activities to protect and restore the monarch butterfly population. [Donate here.](#)

Support MJV Monarch Conservation Projects

The monarch migration is upon us, and there is no better time to act to help protect this iconic species.

With help from supporters like you, more conservation projects across the nation will take shape and more monarchs will take flight.

[Donate here:](#)

<https://crowdfund.umn.edu/MonarchConservation>

How Can Citizen Science Help Communicate Science to the Public?

In both this and the last issue of MonarchNet News, we reported on recent papers ([Contributions of Citizen Scientists and Habitat Volunteers to Monarch Butterfly Conservation](#) and [Butterfly Citizen Science Projects Support Conservation Activities Among Their Volunteers](#)) showing that participation in citizen science can lead people to engage in conservation actions beyond participating in citizen science. Another important aspect of citizen science is that this kind of direct engagement with science and research can lead to an increased use and trust of scientific information gained through the program.

"We found all audiences use and trust information they received from colleagues and personal experience. This suggests if individuals are able to gain experience with science through hands on activities like citizen science, they can benefit from engaging directly with science and scientists" (Building Trust, 2016).

A recent survey found that while peer reviewed articles were the most trusted source of scientific information, communication of science by researchers to other groups is sometimes poor. The study recommends several ways that researchers can better interact with the audiences they want to reach in a meaningful way, including "engaging the public through experiential learning, such as citizen science activities, to increase their involvement in, communication with, and enthusiasm for science" (Building Trust, 2016). You can read a [summary of the study here](#), and the [full article here](#).



Photo: Becky Hansis-O'Neill

References

- Baker, B. (2016.) Frontiers of Citizen Science. BioScience Advance Access, pp. 1-7, doi: 10.1093/biosci/biw120
- Building Trust in Frequently Used Media: Where Does Science Fit Between Those Grumpy Cat Memes, the Nightly News, and Your Water Cooler? August 2016. Facets. <https://medium.com/facets/building-trust-in-frequently-used-media-where-does-science-fit-between-those-grumpy-cat-memes-the-ac8317e12c40#.msfopynv>
- Lewandowski, E. & K. S. Oberhauser (2016): Contributions of Citizen Scientists and Habitat Volunteers to Monarch Butterfly Conservation, Human Dimensions of Wildlife, <http://dx.doi.org/10.1080/10871209.2017.1250293>