

Citizen Science

The perfect partnership

By Stacy Epperson



Maryland Biodiversity Project

A group of students sends pictures of unfamiliar insects, plants and amphibians to the *Maryland Biodiversity Project* for identification... After guiding a group at Kinder Park on a bird walk, the leader posts the list of identified species to *e-Bird*... A family submits a list of frogs identified by their croaking at a local pond to *Frog Watch*.

What do these activities have in common? They are all examples of *citizen science* at work.

Simply defined, citizen science is the observation, collection and reporting of data by ordinary people, usually responding to scientists' calls for specific information. This phenomenon spans many disciplines, but lends itself particularly well to natural resources.

Research at work

The data is needed — massive amounts of data. Though historically common in the fields of astronomy and land exploration, only recently has citizen science become a feasible method for researchers. In the past, many believed this task should be left

only to professionals because training the amount of volunteers needed to assist was just not possible.

Today, through the internet and other advancements in technology, scientists elevate awareness of the need for data, while the public can easily learn collecting and reporting protocols. The resulting networks often allow scientists to accomplish tasks that would be too expensive or time-consuming to conduct through other means.

The amazing simplicity and value of citizen science speaks for itself. An example: Dr. Wansoo Im of Vertices, a mobile software company, developed a mapping app for New York City. Every time users went into a public bathroom, they uploaded the location and pertinent information about the facility. In less than a year, hundreds of public bathrooms in the city were pinpointed with appropriate details valuable to tourists, such as proximity and cleanliness.

The same company later mapped open gas stations in New Jersey during Hurricane Sandy. Overnight, stranded

DATA, DATA EVERYWHERE

Want to get involved? There are many excellent resources available to the public for tracking and reporting information.

BIRD BUFFS Arguably the largest citizen science project in the world, *eBird* is an online bird checklist program developed by the Cornell Lab of Ornithology and the National Audubon Society. With millions of submissions since its global launch in 2010, researchers have a plethora of data to mine.

Illustrating different uses of the information submitted by the public, the Bird Conservation Network manages grasslands and uses the site to monitor the success of their actions. In 2011, the State of the Birds Report was prepared using *eBird* data to develop models of summer and winter bird distribution. Those models were overlaid with maps of protected lands to understand how well certain species were being protected by existing government land.

PLANT PUNDITS *Project BudBurst* entails people observing plants. A wonderful project for families, data needed includes when the first leaf bud appears, when the first flower fully blooms, and when leaves begin to change color. With that information, scientists learn about species' responsiveness to local, regional and national changes in climate.

ANIMAL ADMIRERS *Project Noah* is a free mobile app for ages 10 and up to discover local wildlife. A *spottings* feature provides more information about photographed plants or animals; a location-based field guide shows species found nearby; and a field missions section allows users to contribute to ongoing research projects.

people could obtain the fuel needed to survive.

It's just plain fun!

Not only a valid method of data collection by researchers, citizen science has become wildly popular. It's quick and easy — sometimes only calling for five minutes a day to record wildlife visitors and an internet connection to submit findings. It requires little if any equipment (eyes and ears mostly), and it's well suited for families.

Who knew that the simple and enjoyable act of exploring parks and backyards could be so meaningful to the greater good?

An effective chain of events

There is another important, more intangible benefit too. With concerns about the health of the environment (pollution, climate change, development, oil spills, etc.), many people may feel powerless to affect change. Big problems need big solutions, and citizen science answers the call to *do something* that makes a difference. After ordinary people submit observations, researchers report trends that help community leaders make informed decisions.

A matter of accuracy

What happens if someone submits incorrect or incomplete information? Maybe participants misunderstood or didn't precisely follow protocol. Worse yet, maybe results were made up or fabricated. With masses of collected data, submissions not quite up to snuff are diluted and thus not able to skew results. Software also detects and flags unusual submissions.

Citizen science encourages innovation, learning, sharing and doing. It brings stewards together for the common good — in local, regional, national and international communities. Being a part of these large webs creates strong connections to our fellow man and to our natural world. ■

Stacy Epperson is an education specialist with DNR's Chesapeake and Coastal Service.



Monarch watch



Bluebird box at Kinder Park



USFWS horseshoe crab tagging project

MARYLAND PROJECTS

Stream Waders
Maryland Biological Stream Survey
Maryland Biodiversity Project
Maryland Ornithological Society
Christmas Bird Count
Local Listserv for Bugs

NATIONAL PROJECTS

Project BudBurst
FrogWatch USA
Hummingbird Migration Sightings
Mushrooms, Mycology
Monarch Watch
National Phenology Network

Find more information on these projects at dnr.maryland.gov/pages/citizen_science