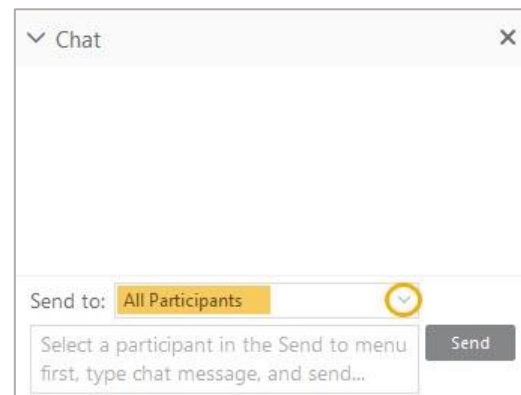
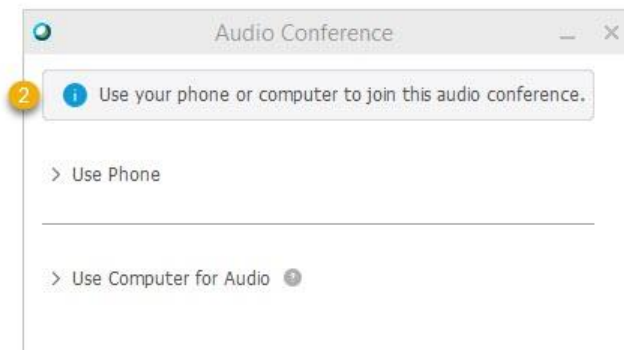
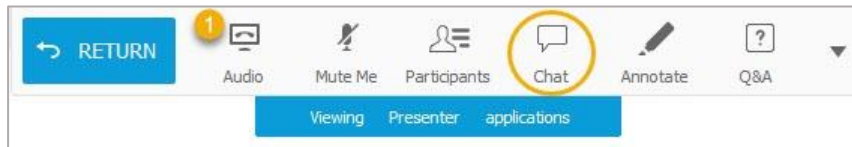


# The webinar will begin at 3pm EST

While you're waiting...

Check your audio connection and find the chat box:



# Citizen Science in the Academic Library

## Part 1

Host:

Kelsey Cowles, MLIS - NNLM MAR

Speakers:

Megan Carlton, MLIS – UNC Greensboro

Danica Lewis, MLIS – NC State University

Dan Stanton, MA – Arizona State University, SciStarter

Caroline Nickerson, MPP – SciStarter



U.S. National Library of Medicine

National Network of Libraries of Medicine  
Middle Atlantic Region

**NIH**

National Institutes of Health

**NLM**

National Library of Medicine (NLM)

**NNLM**

Network of the NLM

**MAR**

Middle Atlantic Region



**U.S. National Library of Medicine**

*National Network of Libraries of Medicine  
Middle Atlantic Region*

# Today's Topics

1. What is citizen science? (Megan)
2. How can academic librarians support faculty and students using citizen sciences in their courses? (Danica)
3. Where can I go to learn more and find citizen science projects to participate in or utilize on campus? (Dan & Caroline)



# 1. Live Poll!

**Have you participated in  
citizen science before?**

## 2. Live Poll!

**Why are you joining us today?**

# What is citizen science?

**Megan Carlton**, Science Librarian

University of North Carolina, Greensboro



# What is Citizen Science?

Scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions (Oxford English Dictionary).



# What is Citizen Science?

Public participation in scientific research.

A collaboration between scientists and those of us who are curious, concerned, and motivated to make a difference.



# A very brief History of Citizen Science

Lighthouse keepers  
collect data about  
bird strikes for  
scientists

1880

National Audubon  
Society starts  
annual Christmas  
Bird Count

1900

Public Participation  
in Ornithology  
(Cornell Lab)

1992

1890

1958

National Weather  
Service Cooperative  
Observer Program  
begins

NSF's Public  
Understanding of  
Science Program

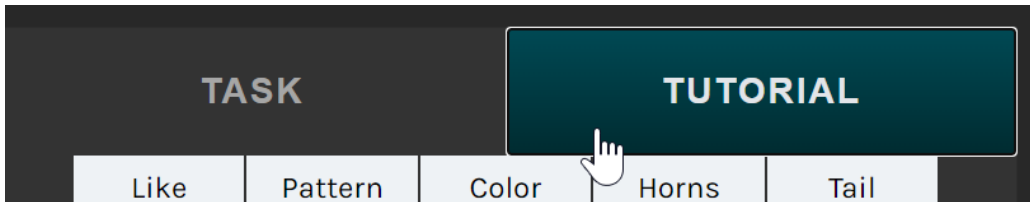


# Let's do a project!

1. Go to: [go.uncg.edu/snapshot](https://go.uncg.edu/snapshot)
2. Click on 'classify'



3. Go through the tutorial



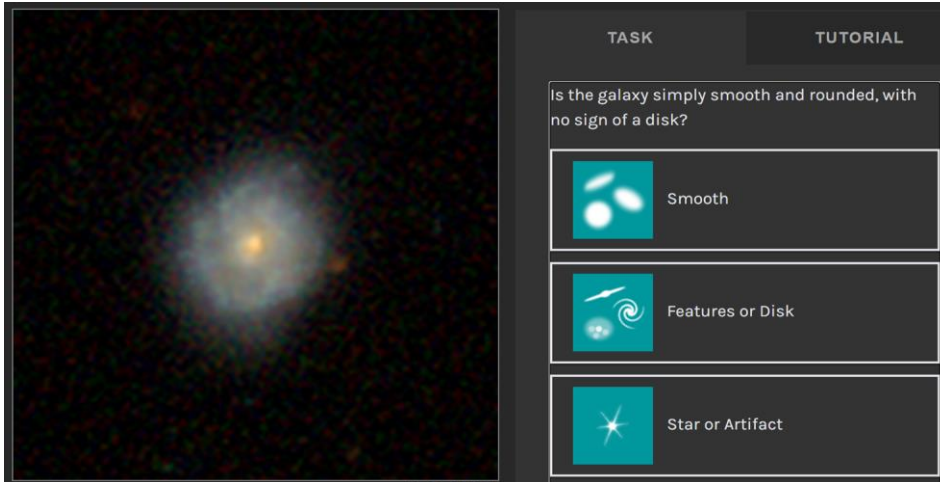
4. Classify images

# Camera Trap Technology

- Can greatly expand geographic study area
- Noninvasive
- Easy to operate
- Reduces field time commitments
- No trapping/immobilizing training needed
- Produces a large amount of data...



# Sloan Digital Sky Survey (SDSS)



## Dark Energy Survey

Produced 1 petabyte (1,000 TB) of data (2.5 TB per night)

## Large Synoptic Survey

Will collect 15-30 TB of data every night

2007: Oxford graduate student spent 1 month classifying galaxies for 12 hours/day = 50,000

## Launched Galaxy Zoo

70,000 per/hour in first days, 50 million in first year

# Accuracy of Data: Snapshot Serengeti



From June 2010 to May 2013, produced 1.2 million image sets (1–3 images taken in a single burst over approximately 1 s)

Within 3 days of launching the website, volunteers contributed 1 million species classifications and processed an 18-month backlog of images

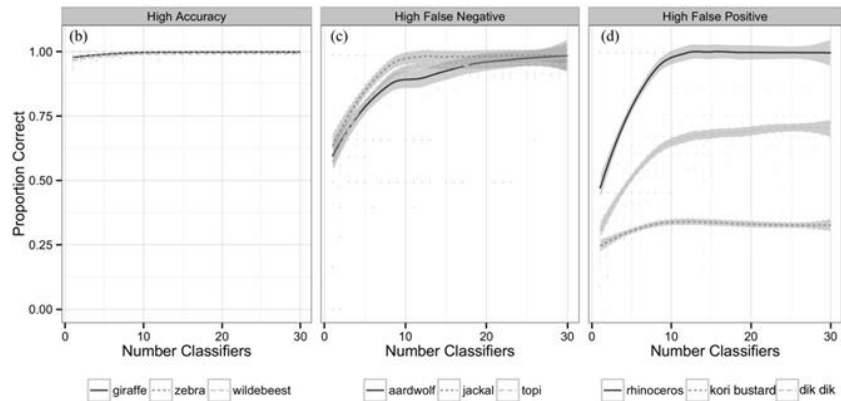
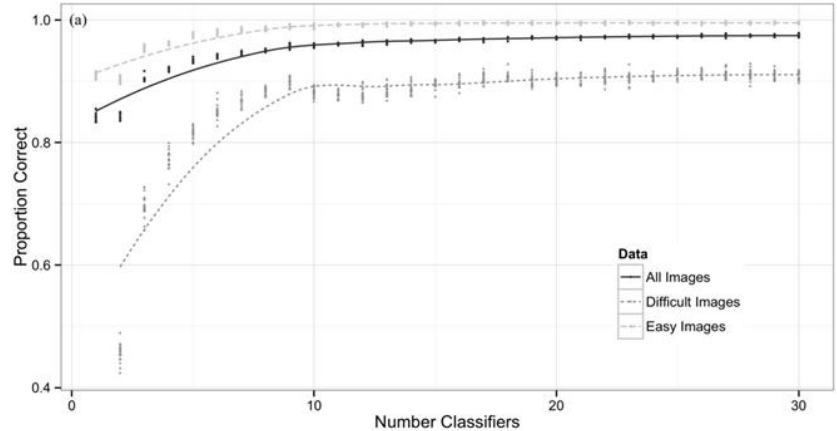
# Accuracy of Data

In Snapshot Serengeti, images achieved approximately:

90% accuracy at 5 classifiers,

95% accuracy at 10 classifiers,

approached 98% accuracy after 20 classifiers



# Supporting Established Course Integrations

**Danica Lewis**, Collections & Research  
Librarian for Life Sciences

North Carolina State University  
Libraries





# Citizen Science Challenge Examples

2016: camera trap study of mammal populations on campus

- Two course integrations



2018: widespread sampling and targeted genetic sequencing of campus microbes

- Five course integrations



# Customized Library Instruction

Selecting and Refining Your Topic - Challenges Specific to Citizen Science

Sequence Searching and NCBI Databases - Working with “Live” Data



# Library Resources and Lending

## “Traditional” Resources

- Books
- Journals and Databases

## Funding

## Technology Lending

- Tools
- Components

## Citizen Science Equipment

Technology provided by NC State University Libraries in support of the NC State University [Citizen Science Program](#)

As part of our Coronavirus Response, we have a limited number of laptops, document cameras, and other devices for instructors and students to use off campus. [Request a device](#) →



**Stratus Precision Rain Gauge**

Borrow from desk  
1 Week Borrowing Period



**Reconyx Scouting Camera**

Borrow from desk  
4 Weeks Borrowing Period



**RTL SDR Software Defined Radio Scanner**

Borrow from desk  
1 Week Borrowing Period



**Unihedron Sky Quality Meter**

Borrow from desk  
1 Week Borrowing Period



**Celestron Skymaster DX 9X63 Binoculars**

Borrow from desk  
1 Week Borrowing Period



**Checkmate Sound Pressure Level Meter**

Borrow from desk  
1 Week Borrowing Period



**Celestron Handheld Microscope**

Borrow from desk  
1 Week Borrowing Period



**Mobile Phone Macro Lens**

Borrow from desk  
1 Week Borrowing Period

# Final Presentations and Engagement

- Forums for students to present their work
- Expanding the reach and scope of course projects
- Making science “real”



# Building a Network of Cooperating Courses

Undergraduate Research &  
Metagenomics &  
First Year Writing &  
Environmental Sciences &  
Informal Science Education  
& Microbiology



# Support Through SciStarter and the Citizen Science Library Network

**Dan Stanton**

Research and Engagement Librarian  
Arizona State University Library/SciStarter



**Caroline Nickerson**, Program Manager  
SciStarter



**Organized and searchable** inventory of 3000 projects. Distribution partners include Discover, PBS, Science Friday, NSTA.

The screenshot shows the SciStarter website interface. At the top left is the SciStarter logo with the tagline "Science we can do together." To the right is a search bar and a "log out" link. Below the search bar is a navigation menu with links for "My Account", "Project Finder", "CitSciDay", "Calendar", and "Blog". A "Girl Scout?" link is also visible. The main content area features a large banner image of a person looking through a telescope against a starry night sky. Overlaid on the banner is a "FIND A PROJECT" search form with fields for "Find a location" (containing "enter a location") and "Select a topic" (containing "select a topic..."), and a "find a project" button. Below the banner, there are two sections: "Featured Projects" and "Come and Participate". The "Featured Projects" section displays a project titled "Stream Selfie" with a 3-star rating, a goal of mapping streams, a task of snapping photos, and a location of the United States. The "Come and Participate" section features a video thumbnail titled "Get Started in Citizen Science with..." and "It's birds & butterflies".

Matchmaker to help researchers connect with communities.

# Featured projects: [SciStarter.org/NLM](https://www.scistarter.org/NLM)



## GLOBE AT NIGHT

Help gather light pollution data.



## FLU NEAR YOU

Spread the word. Not the flu.



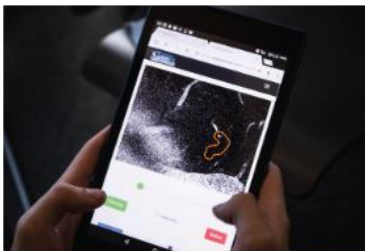
## DEBRIS TRACKER

Submit sightings of litter where you are.



## ISEECHANGE

Document change in weather and climate in your community.



## STALL CATCHERS

Accelerate Alzheimer's research by playing an online game.



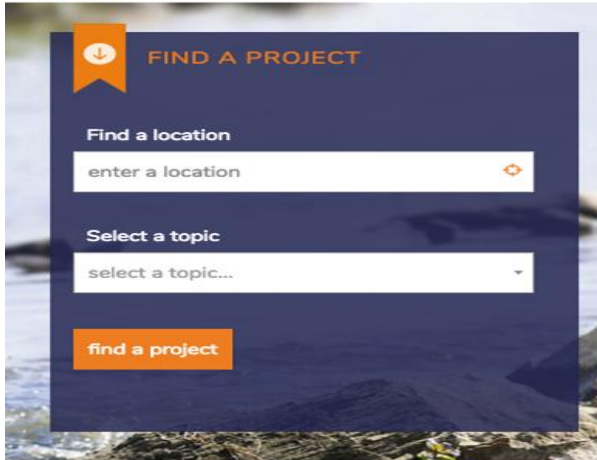
## CROWD THE TAP

As a first step towards safe drinking water, help create a national inventory of tap water pipes.



Use the **mini Project Finder**  
on the home page...

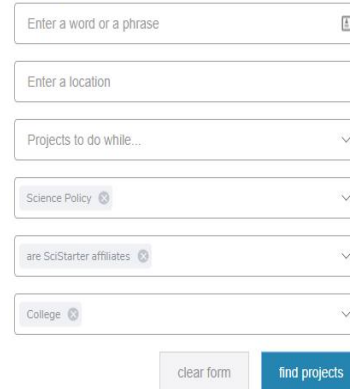
or the **Advanced Search**  
Option to find projects.



The mini Project Finder interface is a dark blue overlay with an orange ribbon icon at the top left. It features the text "FIND A PROJECT" in orange. Below this, there are two sections: "Find a location" with a text input field containing "enter a location" and a location icon, and "Select a topic" with a dropdown menu containing "select a topic...". At the bottom, there is an orange button labeled "find a project".

Search by:  
Location  
Science Interest/Discipline

## Project Finder



The Project Finder interface is a white form with several input fields and a search button. It includes a text input field for "Enter a word or a phrase", a text input field for "Enter a location", a dropdown menu for "Projects to do while...", a dropdown menu for "Science Policy", a dropdown menu for "are SciStarter affiliates", and a dropdown menu for "College". At the bottom, there are two buttons: "clear form" and "find projects".

Search by:  
Location  
Grade level  
Science Topic/Discipline  
Curricular Materials

1-8 of 8 Newest Oldest



NASA

### Globe at Night \*

Goal Raise awareness about light pollution.

Task Measure the night sky brightness.

Where Global, anywhere on the planet

# Introduction to Citizen Science



What  
it is



Who  
can do it



How  
to join



Why  
participate
































# Tools Database

FIND A CITIZEN SCIENCE TOOL

[Advanced search](#)

[Add to SciStarter](#)

Some citizen science projects require specialized tools to make an observation, record data, etc. The SciStarter Tools database will help you discover and access low-cost tools. Makers and manufacturers can [add tools](#), too.

 <a href="#">All Tools</a>	 <a href="#">Agriculture</a>	 <a href="#">Animals</a>	 <a href="#">Archeology &amp; Cultural</a>
 <a href="#">Astronomy &amp; Space</a>	 <a href="#">Awards</a>	 <a href="#">Biology</a>	 <a href="#">Birds</a>
 <a href="#">Chemistry</a>	 <a href="#">Climate &amp; Weather</a>	 <a href="#">Computers &amp; Technology</a>	 <a href="#">Crowd Funding</a>
 <a href="#">Disaster Response</a>	 <a href="#">Ecology &amp; Environment</a>	 <a href="#">Education</a>	 <a href="#">Events</a>
 <a href="#">Food</a>	 <a href="#">Geography</a>	 <a href="#">Geology &amp; Earth Science</a>	 <a href="#">Health &amp; Medicine</a>
 <a href="#">Insects &amp; Pollinators</a>	 <a href="#">Nature &amp; Outdoors</a>	 <a href="#">Ocean, Water, Marine &amp; Terrestrial</a>	 <a href="#">Physics</a>
 <a href="#">Psychology</a>	 <a href="#">Social Science</a>	 <a href="#">Sound</a>	 <a href="#">Transportation</a>
 <a href="#">Science Policy</a>			

# Citizen Science Library Network

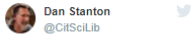
## Twitter Feeds

Tweets by @CitSciLib ⓘ



**Dan Stanton**  
@CitSciLib  
Graduating ASU seniors publish children's science book  
[asunov.asu.edu/20200430-graduating-s-science-book](https://asunov.asu.edu/20200430-graduating-s-science-book)

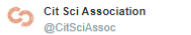
5h



**Dan Stanton**  
@CitSciLib  
<https://twitter.com/thebealies/status/1258694920476536832>

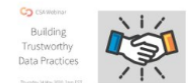
7h

**Dan Stanton Retweeted**



**Cit Sci Association**  
@CitSciAssoc  
Join us next week for a webinar introducing a new community-inspired study to co-create trustworthy data practices for #CitizenScience with @CoopSciScoop & @edobsonjones. Co-creation process launching this summer.

Register here for connection details:  
[bit.ly/webinarTrustwo...](http://bit.ly/webinarTrustwo...)



May 7, 2020

## What is Citizen Science?

Citizen Science is scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions. Citizen science allows everyone to contribute to science no matter where they are. Whether by asking questions, reporting observations, conducting experiments, collecting data, or developing low-cost technologies and open-source code, members of the public can use their talents to help advance scientific knowledge and contribute to a greater good.

With citizen science and crowdsourcing, we can help:

- Accelerate scientific research through group discovery.
- Provide information at resolutions that would otherwise be difficult to obtain given time and cost constraints.
- Improve the quality and relevance of observations due to the unique perspectives and local knowledge volunteers bring to projects.
- Increase science skills. Students can gain skills to excel in science, technology, engineering, and math. Gain hands-on experience doing real science beyond a classroom setting.
- Improve government services while lowering costs.
- Connect with public service and work for a greater good.

### [The Story of Citizen Science](#)

Caren Cooper's simple (but not simplistic) presentation of Citizen Science.



## Key Citizen Science Organizations

### [SciStarter](#)

SciStarter is the place to find, join, and contribute to science through more than 1600 formal and informal research projects and events. Our database of citizen science projects enables discovery, organization, and greater participation in citizen science.

### [Citizen Science Association](#)

CitizenScience.org aims to harness the knowledge gained by practitioners and researchers across the field of citizen science to build collaboration, community and credibility.

### [Citizenscience.gov](#)

Citizenscience.gov is an official government website designed to accelerate the use of crowdsourcing and citizen science across the U.S. government.

### [The Crowd and the Cloud](#)

Citizen science has amazing promise, but also raises questions about data quality and privacy. Its potential and challenges are explored in *The Crowd & The Cloud*, a 4-part

# Citizen Science Library Network

## Academic Libraries

Library Guides

Circulating resources

Project curation

Science literacy

Ties to Public, School, and Special Libraries

Student Clubs/Researcher Networks

Share your resources, best practices, and questions:

[academiccitscilib@gmail.com](mailto:academiccitscilib@gmail.com)



# The Librarian's Guide to Citizen Science

Understanding, planning, and sustaining ongoing engagement  
in citizen science at your library.

**scistarter**<sup>™</sup>  
Science we can do together.

**ASU** School for the  
Future of  
Innovation  
in Society  
Arizona State University

# Thank you!

## Please join us next week for Part 2!

**Further Questions?**

**Email Kelsey:** [kac221@pitt.edu](mailto:kac221@pitt.edu)

I will direct your question to the speaker(s) as appropriate!

*Developed resources reported in this program are supported by the National Library of Medicine (NLM), National Institutes of Health (NIH) under cooperative agreement number UG4LM012342 with the University of Pittsburgh, Health Sciences Library System. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.*



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