



The Library & Community Guide to Citizen Science

scistarter[™]
Science we can do together.

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

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

EDITORS:**Darlene Cavalier***School for the Future of Innovation in Society
at ASU, SciStarter***Caroline Nickerson***SciStarter***Robin Salthouse***Maricopa County Library District, Adult Services
Supervisor, Southeast Regional Library, Gilbert,
Arizona***Dan Stanton***Arizona State University Library, SciStarter***ADVISORS:****Kelli Ham***Master of Library and Information Studies,
Community Engagement Librarian, National
Network of Libraries of Medicine Pacific
Southwest Region***Theresa Schwerin***Master of Library and Information Science,
Institute for Global Environmental Strategies
(IGES)***DESIGNER:****Emily Maletz****SPECIAL THANKS TO:****Cynthia Randall***Executive Director of Cornerstones of Science,
for providing the foundation for this Guide and
for her professional guidance in supporting
public libraries as vibrant community hubs for
citizen science.*

February 2020



The Librarian's Guide to Citizen Science was made possible with support from:

The Institute of Museum and Library Services, under grant number LG-95-17-0158-17. IMLS is the primary source of federal support for the nation's libraries and museums. IMLS advances, supports, and empowers America's museums, libraries, and related organizations through grantmaking, research, and policy development. Their vision is a nation where museums and libraries work together to transform the lives of individuals and communities. To learn more, visit www.imls.gov.

Developed resources reported are supported by the National Library of Medicine (NLM), National Institutes of Health, under Cooperative Agreement number UG4LM012341 with the UCLA Louise M. Darling Biomedical Library. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Connect with your National Network of Libraries of Medicine (NNLM) region to find out about NLM resources, training, and funding opportunities for libraries at <https://nnlm.gov/about>.

This is a modified version of the Librarian's Guide originally published in February of 2019.



Libraries are quickly becoming community hubs for citizen science. Your library may already be involved in innovative citizen science programming. If so, bravo! For countless others, citizen science is still a bit of a mystery. We created this guide to help you navigate the rapidly changing landscape, access resources, learn about projects and programs, and explore a menu of opportunities to bring citizen science to your library.

We hope this guide will help you:

Learn more about citizen science and connections with libraries.

Discover STEM-related issues of interest or concern to your communities.

Connect existing programs and communities to projects on SciStarter.

Access resources to help people learn about and engage in citizen science projects.

Access information, resources, projects, and even instruments needed to collect and analyze data.

Plan Citizen Science Month events.

Sustain ongoing engagement in citizen science.

This guide is available at:
SciStarter.org/CitizenScienceMonth



We'll update this guide periodically, so please drop us a line to let us know if this guide was helpful, if you want us to add or edit resources, or if you'd like us to highlight your efforts: info@SciStarter.org

CONTENTS

Quick Start Guide	5
SECTION 1: What Is Citizen Science?.....	7
SECTION 2: Using SciStarter	15
SECTION 3: Bring Citizen Science to Your Library	19
SECTION 4: Celebrate Citizen Science Month in Your Public Library ..	22
SECTION 5: Beyond Citizen Science Month.....	29
SECTION 6: Citizen Science Resources for Libraries	32
ADDENDUM A: Citizen Science Month Programming Checklist: Template For Libraries.....	35
ADDENDUM B: Email Outreach Examples.....	37

How To Get Involved in Citizen Science Month

QUICK START GUIDE

CITIZEN SCIENCE IS:

- A way for people to engage in science, from monitoring water quality, to tracking species population distributions, to analyzing and classifying images of galaxies, and more.
- A growing trend that libraries won't want to miss.
- Accessible to people everywhere, anytime, regardless of age, interests, or location.
- A perfect addition to existing library programs, event calendars, seniors/adult/teen/family activities, and more.
- Free and easily accessible through SciStarter.org, featuring thousands of searchable projects.

BECOME FAMILIAR WITH CITIZEN SCIENCE

Watch this YouTube video about citizen science. <https://bit.ly/2FvJ7dF>

Click through this PowerPoint presentation and feel free to use it as a resource to introduce citizen science to your patrons.

<http://bit.ly/LibrariansGuide>

Go to SciStarter.org/library to find examples of citizen science projects and kits being offered through public libraries.

Embed the Project Finder on your library's website to help patrons discover and join projects. <https://SciStarter.org/widget>

CELEBRATE CITIZEN SCIENCE MONTH

SciStarter (SciStarter.org), with support from the Citizen Science Association, presents Citizen Science Month, an annual event to celebrate and promote all things citizen science: amazing discoveries, incredible volunteers, hardworking practitioners, inspiring projects, and anything else citizen science related.

Citizen Science Month is **April 2020**. Hundreds of events will be held throughout the world, and there are many ways your library can participate!

SIGN UP TO RECEIVE UPDATES

We're building on **Citizen Science Day 2019** to support libraries, institutions, community groups, museums, galleries, archives, and individuals all around the world to host events and introduce millions to citizen science: real scientific research. And we heard you wanted more, so now we have a whole month to celebrate!

If you want to receive emails about Citizen Science Month, sign up at SciStarter.org/CitizenScienceMonthFAQ.

WEEKLY CALLS

We also offer weekly calls. They are open to everyone and completely optional. Think of them as "office hours" that anyone planning activities leading up to and during Citizen Science Month can share ideas, get feedback, make connections, and leverage resources and support. Check out SciStarter.org/CitizenScienceMonthFAQ for the dial-in and schedule.

Looking for planning resources? SciStarter will provide planning resources and checklists in the Librarian's Guide to Citizen Science and at **SciStarter.org/CitizenScienceMonth**. Make sure you check back in for updates.

Another activity to consider is a bioblitz. iNaturalist ([iNaturalist.org](https://www.inaturalist.org)), National Geographic, and the California Academy of Sciences have created a fun way to connect your patrons and community with the natural world around them. Libraries can invite local speakers and help challenge their communities to find as many species as possible by hosting a bioblitz event (www.inaturalist.org/pages/bioblitz+guide). With an iNaturalist app,



digital camera, or phone/tablet with camera, libraries can help people learn how to make observations with fellow naturalists and discuss findings. Some libraries offer a kit for checkout that includes a lens for close-up or telephoto shots (SciStarter.org/library).

To connect your library as a hub for citizen science, patrons can follow these steps to track the success of Citizen Science Month activities using iNaturalist and SciStarter!

1. Go to SciStarter.org and create an account.
2. Go to [iNaturalist.org](https://www.inaturalist.org), download the app on your mobile device and create an account. You can also access the website on a computer to upload digital image files. Write down your email username and password for Step 3.
3. Return to SciStarter.org to sync your iNaturalist username to your SciStarter account via "Account Settings."
 - a. Once you are logged in on SciStarter.org, click on your username at the top of the screen, then click "Account Settings" and scroll down the webpage until you see "iNaturalist Integration."
 - b. Enter your iNaturalist username.

- c. Click on the "Save Changes" button. Your project contributions from iNaturalist will be synced with SciStarter, and you will be credited for each contribution in your SciStarter dashboard moving forward.

CITIZEN SCIENCE MONTH RESOURCES

There are free tools and templates you can use to introduce citizen science to patrons and to plan a Citizen Science Month event in your library.

The Citizen Science Month webpage on SciStarter.org (SciStarter.org/CitizenScienceMonth) features resources for planning a Citizen Science Month Celebration, including:

- Logos and promotional materials
- Event calendar and map (add and find events)
- Themed Days
- Downloadable fliers and posters
- Reading lists
- Links to embeddable Project Finders
- Information on Citizen Science Kits for libraries



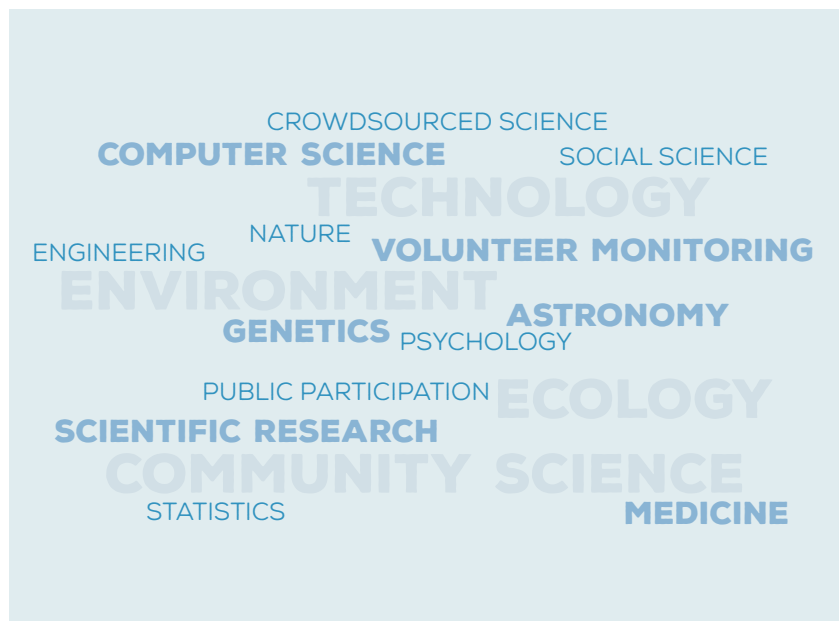
Citizen science will reveal amazing worlds to discover, interesting people to meet, and meaningful community connections. We invite you to refer to this Guide at your leisure to find tips and resources to help you bring citizen science to your library.

SECTION 1:

WHAT IS CITIZEN SCIENCE?

Science is our most reliable system of gaining new knowledge and **citizen science** is the public involvement in inquiry and discovery of new scientific knowledge. A citizen science project can involve one person or millions of people collaborating toward a common goal. Typically, public involvement centers around data collection, analysis, or reporting. The National Academies of Sciences, Engineering, and Medicine recently published a report, “Learning Through Citizen Science,” which provides a comprehensive definition of citizen science.

<https://www.nap.edu/catalog/25183/learning-through-citizen-science-enhancing-opportunities-by-design>



“Amateur science,” “crowdsourced science,” “volunteer monitoring,” “public participation in scientific research,” and “community science” are also common aliases for citizen science.

Here are four common features of citizen science:

1. **Anyone can participate;**
2. Participants and professional scientists use the **same process**—or protocols—to make observations and collect, share, and analyze data so the data can be trusted and used;
3. Data can help scientists and participants **advance research and support decision-making**, and;
4. The public, as well as scientists, have **access** to and can use the data.

Citizen science is supported by government agencies, universities, nonprofit organizations, industry, start-ups, and more. Citizen science advances research in astronomy, computer science, ecology, engineering, genetics, medicine, psychology, social science, statistics, technology, and other disciplines. Concentrated and massive collaborations range from local to regional, national, and even global scales. Projects may last one day or decades, require one-time participation, or seek ongoing engagement. Citizen science can lead to discoveries an individual could never achieve alone.

Citizen science bridges gaps by harnessing the power of people who are motivated by curiosity, a desire to advance research, or a concern about local or global issues, then connecting them to projects that benefit from their energy and dedication.

Citizen science accelerates research. In the past, collecting large samples of data for research was the most challenging task of any initiative. However, with today’s interconnected world and low-cost instruments (including cell phones loaded with sensors), millions of people from around the globe can remotely contribute to a study and provide or analyze data with researchers.

Citizen science empowers the public. Increased public participation in scientific research can support individuals and communities in the scientific enterprise. Citizen science enables people to learn more about the world around them.

WHAT IS A CITIZEN SCIENTIST?

A **citizen scientist** voluntarily and actively engages in citizen science, typically in collaboration with professional scientists. Citizen scientists may be online gamers, retirees, environmental justice advocates, naturalists, technologists, fishermen, farmers, ham radio operators, stargazers, birders, weather watchers, students and teachers, Scouts, doctors, parents, children, corporate volunteers, undergraduate students, and even current and former NFL and NBA cheerleaders (**ScienceCheerleader.com**) in science professions who train and engage thousands of nontraditional audiences in citizen science.

BENEFITS TO LIBRARIES

The missions of citizen science and many public libraries align and have much in common as both strive to, democratize access to information, increase knowledge, create participatory learning experiences, and build and support communities.



Citizen Science @ Your Library Video

<http://bit.ly/2TvXNB4>

Citizens are gathering data for important scientific research. Get updates on how an Arizona State University grant and a partnership with libraries is accelerating research. Discover how you can get involved with projects that interest you. This video is a great resource for anyone interested in learning about how libraries can be activated as hubs for citizen science.

BENEFITS TO LIBRARIES

Engage/empower patrons

Build relationships with scientists and researchers

Access resources for STEM

Provide materials, instruments, and
resources required to engage in projects

BENEFITS TO CITIZEN SCIENCE

Reach new audiences

Leverage librarians' expertise in programming

Promote local or global projects

Access/distribute materials and instruments
required to engage in projects

PARTNERSHIP HIGHLIGHT:

Check It Out: Citizen Science at Your Library

Developed by Arizona State University and SciStarter, Citizen Science Kits are available to check out at seven libraries in the Phoenix area.



Thanks to support from the Institute for Museum and Library Services, the School for the Future of Innovation in Society at Arizona State University and SciStarter have partnered to help libraries connect communities to citizen science. As a result, new Citizen Science Kits are now available for loan through partner libraries in the Phoenix, AZ, region. To support engagement in dozens of projects, up to 10 types of kits—ranging from air quality sensors to macro lenses for smartphones, to light traps, to dark sky meters and water quality kits—will be in circulation by June 2019. The team anticipates national expansion starting in 2020.

Maricopa County District Libraries (AZ) invited local subject matter experts to speak about stargazing, bees, and bioblitzes—topics related to some of the kits. The libraries hosted a webinar, produced “how to” videos, and more.

CHECK IT OUT!
CITIZEN SCIENCE
AT YOUR LIBRARY

SciStarter.org/library

PARTNERSHIP HIGHLIGHT:

Neighborhood Science Kits

Los Angeles Public Library collaborates with Globe Learning and Observations to Benefit the Environment (GLOBE) program to host pilot programs.



The Los Angeles Public Library (LAPL) has collaborated with the Global Learning and Observations to Benefit the Environment (GLOBE) Program to train a group of LAPL librarians to host hands-on Neighborhood Science pilot programs at 13 of the 73 libraries in the city of Los Angeles.

These programs are designed to enhance participants' environmental and data literacy and promote community engagement. Meeting monthly, participants learn about the science behind the environmental issues in their communities, use the citizen science tools and methods to collect and interpret data needed to help accelerate the research, and work/discuss collaboratively to formulate solutions.

Currently, LAPL's Neighborhood Science kits are developed for in-house programming purposes only; they are not loaned out to the public. Each kit contains the GLOBE instructional guide and tools used for investigation and data collection that invite feedback from participants as well as the librarians. The feedback received from the pilot programs will be used to help LAPL develop circulating kits that will be made available to the Neighborhood Science program attendees to use at home or throughout Los Angeles. The kits will be available for checkout during phase two of the pilot.

PARTNERSHIP HIGHLIGHT:

Community Science Kits

The Natural History Museum of Los Angeles County collaborates with the Los Angeles County Library to prototype community science kits.



Richard Smart

The kits are a free resource for children and parents as they explore nature in and around Los Angeles. Prototypes included an instructional guide, field guides, a journal, and tools meant to encourage outdoor exploration and nature investigation. Encouragement and instruction on how to take part in the Museum's community science projects were also included.

Libraries let the Museum host kickoff events to introduce the kits to their patrons. Patrons could check the kits out, to use at home or throughout Los Angeles. Then Museum staff conducted short interviews with library patrons to learn what aspects of the kits were desirable, and which parts needed reworking.

Six different libraries were part of the prototype testing. The Museum modified the prototypes after completing testing at the first three libraries. By fall 2019, the Museum will donate 25 kits to the lending collections of 5 county libraries (5 per library). Over time, the Museum expects to donate kits to all 86 Los Angeles County Libraries.

PARTNERSHIP HIGHLIGHT:

The National Library of Medicine (NLM)

The National Library supports and provides resources for citizen science.



All of Us RESEARCH PROGRAM

National Library of Medicine Resources for Citizen Science:

MedlinePlus (<https://medlineplus.gov/>)
ToxTown (<https://toxtown.nlm.nih.gov/>)
Genetics Home Reference (<https://ghr.nlm.nih.gov/>)
ChemIDplus (<https://chem.nlm.nih.gov/chemidplus/>)

The National Network of Libraries of Medicine (NNLM), a program of the National Library of Medicine (NLM), has expanded its partnership with SciStarter. In 2019, the two organizations worked collaboratively to promote Citizen Science Day in libraries, to increase awareness of citizen science in communities across the nation, and help individuals explore the impact of their environment on health. Through citizen science and crowdsourcing, NNLM can engage communities in addressing societal needs and accelerating biomedical science, technology, and innovation. Community participation in the research process also builds trust between NNLM and the communities that we serve. NNLM has partnered with the NIH All of Us Research Program (<https://allofus.nih.gov/>) to highlight citizen science as a way to increase the involvement of people living in the U.S. in scientific research as a way to reduce some of the barriers between health researchers and research and the public.

Such collaborations between communities and researchers build capacity to address problems and meet research goals. The partnership also aims to foster better understanding of health data and its uses in this increasingly data-driven world. NLM provides access to a variety of resources for basic health, environmental health, and genetics that can support Citizen Science outreach efforts in your community. Locate (<https://nnlm.gov/regions>) and contact your NNLM Regional Medical Library to learn more.

PARTNERSHIP HIGHLIGHT:

Citizen Science Day Expo

The San Diego Public Library hosts an annual Citizen Science Day Expo to encourage San Diegans to explore a wide variety of research projects that need their help.



As a research hub and a diverse ecological region, San Diego is home to many citizen science projects and programs. This annual library event is an exposition-style gathering that enables the public to visit booths from more than 20 local and regional organizations under one roof. The event is also a great networking opportunity for different citizen science organizations and often features a keynote speaker or hands-on event, such as a Wikipedia edit-a-thon.

On their own, citizen science organizations report difficulty raising awareness and finding volunteers. This event brings them together in the library, and with its marketing reach across every community in the city, the event assumes a critical mass that draws local media coverage. Residents with a potential interest in taking part can peruse a variety of options. Additionally, the library has carried out its own showpiece citizen science events, most notably in 2017 when 1,000 insect collection kits were checked out through 36 libraries. Once filled, the kits were returned to the library to have their DNA sequences run. In total, nearly 1,500 specimens were submitted, including 41 whose DNA sequences were new to science. The hands-on program drew participation from every demographic and area in the city and has helped provide an important environmental baseline for scientists. The program was paired with educational talks about the local environment and the importance of species diversity.

**Find other examples of citizen science in libraries.
There are many different ways to engage:**

Ask your State Library or State Library Association if they could put you in contact with other librarians participating in citizen science.

Contact your regional National Network of Libraries of Medicine office to learn about other library projects or opportunities. <https://nnlm.gov/regions>

Post a request for information on your library listserv.

Discover which libraries are engaged in loaning citizen science kits. <https://SciStarter.org/library>

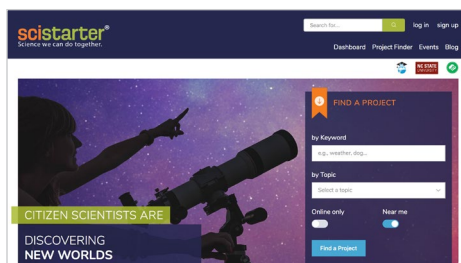
Find thousands of STEM and citizen science resources available for libraries at STAR_net.
<https://www.starnetlibraries.org>

SECTION 2:

USING SCISTARTER

ABOUT SCISTARTER

SciStarter is a globally acclaimed, online citizen science hub where more than 3,000 projects have been registered by individual project leaders or imported through partnerships with federal governments, NGOs, and universities. As a research affiliate of Arizona State University and a popular citizen science portal, SciStarter hosts an active community of more than 100,000 citizen scientists and millions of additional site visitors.



SciStarter organizes information about projects, events, and tools, sharing the combined offerings through digital tools, such as embeddable Project Finder widgets used by media partners (including PBS and Discover)

and other organizations like the National Science Teachers Association. SciStarter works with the Girl Scouts of the USA, National Geographic, school districts, campuses, and other organizations to connect them to citizen science. The projects and events on SciStarter.org represent a wide array of topics and research programs that people can engage in anywhere, anytime, just once or on an ongoing basis.

USING SCISTARTER TO INTRODUCE PATRONS TO CITIZEN SCIENCE

One of the goals of SciStarter is to assist librarians in connecting patrons with projects that need them. Scientists that lead these projects rely on public participation to advance research. In your library community, there are eager individuals and families interested in discovering and engaging in scientific endeavors, seeking to both help address an issue through science and learn something new about the world around them.

This Using SciStarter section is designed to familiarize you with the SciStarter portal and with discovering and making the most of SciStarter's free resources. SciStarter is a user-friendly tool that will help you to engage and connect your patrons to amazing research projects in your area and around the world, as well as help them choose choose projects of interest at the appropriate level of involvement. By becoming familiar with SciStarter and its resources, you will be able to find citizen science projects appropriate for your patrons (online and in person), as well as ideas and resources to use during Citizen Science Month and beyond.

As you review projects on SciStarter, consider the ways you can introduce these experiences and resources to your patrons:

- Invite local subject matter experts (including citizen scientists) to talk about topics related to projects.
- Leverage your existing programs and partners and connect them to projects and events at your library or at home.
- Make your library a hub for citizen science through hosting large-scale programs, encouraging informal citizen science meet-ups, and providing citizen science kits.

BECOMING FAMILIAR WITH THE SCISTARTER PORTAL

Step 1: Watch *Get Started in Citizen Science*. This video gives a quick introduction to citizen science. <http://bit.ly/2FNylu3>

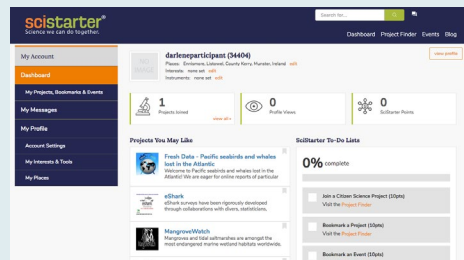
Step 2: Sign up for a SciStarter account. If you haven't already done so, now's a good time to sign up for a SciStarter account. Signing up for a SciStarter account is the best way to find relevant projects near you, bookmark projects to try later, and track your contributions to various projects.

Go to **SciStarter.org** and click the “Sign Up” link on the upper right section of any page. You’ll enter your email address so SciStarter and project leaders can reach you if needed. Don’t worry, SciStarter won’t ever sell your information. Or, from any project page, when you click the Visit or Join button under the project picture, select the “Join SciStarter” option, sign up, and you’ll be redirected to the project’s page.

In some instances, you will also need to sign up on the individual project’s webpage. In other cases, your SciStarter account can be used to sign up or sign in to other projects!

Although you do not need a SciStarter account to discover or participate in projects and events, an account allows registered users to:

- Find recommended projects in your SciStarter dashboard that match your location
- Easily send messages or questions to project scientists.
- Bookmark any interesting project and join many others using a “one-click” process
- Complete your profile page to ensure you are matched with the best projects aligned with your interests and goals
- Track your contributions to projects
- Help scientists find you when and where they need you the most!



After you’ve created an account, complete your profile. The more information you provide here, the more likely it is that you will find the best recommended projects waiting for you in your SciStarter dashboard. Your SciStarter dashboard also includes projects and events you’ve saved or clicked to join, tallies of your contributions to projects, your public profile, and occasional opportunities to earn badges, certificates and prizes. So...complete your profile and use your dashboard!

Here’s an informal video we’ve created for newcomers to SciStarter. You might find this useful, too. <http://bit.ly/2TeVtKG>

Step 3: It's time to find a project! While logged in, use the Find a Project search on the homepage to quickly find local projects that match a topic of interest.

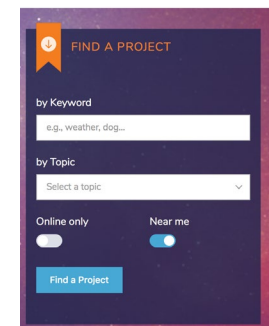
Use the Project Finder link to do an advanced search with specific parameters. For example, the Project Finder can locate projects that are appropriate for a certain age group or that you can do while hiking or at the beach.

Search for local projects:

Click the “Near me” toggle in the Project Finder on the homepage. Local projects are prioritized on the search results page. Review the list of projects and click on any that interest you.

Local projects may be of particular interest to your patrons and you may find additional connections and programming opportunities by reaching out to the local project leader and citizen scientists. We’ll show you how to connect with SciStarter community members later.

Select “online” if you want to find projects that take place entirely online. These projects can be done from anywhere. They typically serve as good projects for patrons who already come to your library and use the computers. If you have a computer room and you’re looking for interesting



programming, online citizen science projects are ideal!

Refine your search to find results based on Topic, Activity, or Age Group by using the Advanced Search.

Search by Topic:

An easy way to find citizen science projects that align with topics of interest is to click on the Topics field. Find many types of research projects currently being conducted on popular science subjects. Select as many topics as you'd like (such as ecology, birding, and gardening).

Search by Activity:

Click the Activity field to search for projects that suit your audiences. There are projects that can be done indoors or outdoors, while hiking; with a smartphone app, in less than 15 minutes, etc. Select as many Activities as you'd like.

Search by Age Group:

This advanced search feature is especially useful to find projects suitable for kids, families, adults, college/graduate students. Select as many age groups as you'd like.

Other search tips:

Dozens of projects on SciStarter use affiliate tools made possible by support from the National Science Foundation. These tools enable SciStarter members to track their interests in and contributions to citizen science across projects and platforms. SciStarter affiliate projects are included in curated programs offered to schools, universities, the Girl Scouts of the USA, media partners, and more. They are ideal for most libraries. Find them by selecting the search filter “SciStarter Affiliates” on the SciStarter Project Finder Advanced Search.

Also consider the rotating, curated list of featured projects on the SciStarter homepage; one of them may be the perfect fit for your library!

Step 4: Engage in Citizen Science yourself! By experiencing citizen science firsthand, you'll know what patrons can expect and the type of questions they may ask as they explore SciStarter. Plus, it's fun!

- Project Summary
- Goal and Task
- How To Join
- Ideal Age Group
- Ideal Frequency
- Average Time
- Tags
- Related Projects
- Project Website Link

As you explore projects, review the details about each project registered on SciStarter's portal, including:

These highlights will help you quickly determine if a project is right for you. If you're not sure, click “Save” to return to it later. You'll find saved projects in your dashboard.



INTRODUCTORY PROJECTS

Use the Search box on the homepage to find the following projects. We selected these because they represent a breadth of topics and experiences:



NASA GLOBE Observer – GLOBE Observer invites you to make environmental observations that complement NASA satellite observations to help scientists studying Earth and the global environment. All you need is a smartphone or

tablet, and then you can start ground-truthing satellite data.

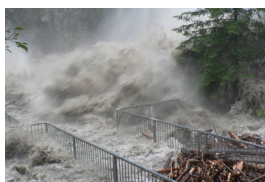
<https://SciStarter.org/NASA>

Stall Catchers - Participants help scientists analyze movies from a brain affected with Alzheimer's. The combined force of citizen scientists, on average, takes one day to analyze as much data as it takes scientists in the lab to analyze in a month.

<https://SciStarter.org/stall-catchers-by-eyesonalz>

ISeeChange – The ISeeChange app is a collaboration with NASA.

Community members document changes around them and even help



NASA document information on the ground that Earth observation satellites can't see from space, including the impact of weird weather and climate on our daily lives.

<https://SciStarter.org/iseechange>

Additonal Projects – Consider watching these short “how to” videos, provided by project leaders.

<http://bit.ly/2DYfs07>

Citizen science is essentially crowdsourcing research. The more people participate, the better the data and the quality of the results. SciStarter is a crucial platform used by Arizona State University, North Carolina State University, and others to advance research in the field by providing much-needed, anonymized analytics on the numbers and locations of participants, attrition and persistence rates of participants, and the landscape of projects.

We welcome you to our community of 100,000+ citizen scientists!

SECTION 3:

BRING CITIZEN SCIENCE TO YOUR LIBRARY

There are so many ways to bring citizen science to your library and there's no wrong way to do it. This section will help you collaborate with your patrons to find the right topics and projects, connect with scientists and subject matter experts who can come to your library to talk about their work and the selected projects, find local citizen scientists who can share their experiences, and possibly help engage and support ongoing participation among your patrons.

COLLABORATE WITH PATRONS

There are thousands of citizen science projects spanning all types of topics. Create opportunities for patrons to provide feedback on what they are interested in or concerned about—issues that can be addressed through citizen science.

Host a community dialogue. STAR_Net produced a Community Dialogue Guide (<http://bit.ly/2DCI62E>) to “Strengthen librarians’ roles in establishing a STEM Learning Environment; Identify under-

represented community groups; Identify possible collaborations and partnerships within the community; and Contribute to developing a flexible Community Dialogue framework that all libraries can use.”

Download, print and display interactive posters and fliers to generate thinking around the topic of citizen science. Have sticky notes and pencils nearby so patrons can share information about topics they are



interested or concerned about. Download these and other free materials at SciStarter.org/CitizenScienceMonth.

FIND THE RIGHT PROJECT

Now that your library community has identified topics of interest to them, it's time to home in on the right project(s)

Embed the Project Finder on your library's website and computers (SciStarter.org/widget) to make it easy for patrons to discover and try out projects.

Refer to Section 2 to use SciStarter to find projects that align with the right topic, location, age group, and other criteria. Other ways you can find citizen science projects include, searching on the internet, talking to formal and informal science providers such as park rangers and researchers at colleges/universities or museums, talking to your state agencies, and/or talking to other librarians in your state.

There are a number of questions to consider:

- Does the project need data from your location?
- Are specialized instruments required (sensors, rain gauges, etc) and, if so, can the project leader provide those instruments? Should they be installed on the grounds of your library, hosted within the library, and/or can they be loaned to patrons?
- What technological interface is used by the project and can patrons who do not own smartphones participate? Is Wi-Fi required? Would this project be ideal for your patrons to meet up at the library to do together?
- Will the project leader be available to talk about the project, either in person or virtually?
- What additional resources can the library provide to help improve the participants' experience (books, constellation guides, reference manuals, etc.)?

- How will participants see their data and understand how the data is being used? How will they learn about the results of their individual and collective efforts?

CONNECT WITH SCIENTISTS AND EXPERTS

Next, find local project leaders, citizen scientists, or related subject matter experts to invite to your library (in person or virtually).

Typically, members of the scientific community engaged in citizen science will be eager to talk about their work and your library can be an excellent outreach venue for them. Who might be interested in giving related talks at your library, activating a citizen science project, leading a bioblitz, or demonstrating a project they lead or participate in? There are many ways to find them!

- Sign in to SciStarter, select the option to find local projects, choose a project, and click “Message Project” to email the project leader. Inquire if he or she is available to come to your library to talk about the project and/or to participate in discussions virtually.
- If you’ve added a project or event to the SciStarter, use the People Finder (<https://SciStarter.org/people-finder>) to discover and connect with citizen scientists and project leaders near you. It’s as simple as placing a circle on a digital map and sending an email to everyone located in that circle.
- Reach out to your local college, museum, or nearby state and national parks to find experts to talk about their citizen science research. You may want to start simply by Googling “citizen science” and the name of the college or museum.
- Use social media to find networks of people who can help you: “Our library in Philadelphia, PA, would like to engage patrons in [x project]. Does anyone know a local [related type of scientist] who can help with training or who can talk more about [subject]?” Tag @SciStarter on Facebook, Twitter, Instagram, and LinkedIn and use the hashtags **#CitSciMonth**, **#CitizenScience** or **#CitSci**.

- Another local source might be right in front of you! Do any staff members do citizen science or know someone who does? Do they have specialized knowledge or interests related to the wide variety of citizen science projects? Leverage your personal network.

Citizen Scientists are all around you. You’ll likely find someone interested in talking about their experiences and/or leading citizen science activities or events. These individuals are among the following and other groups:

- Library administration and colleagues
- Researchers (university, museums, etc.)
- Student groups/clubs (e.g., Girl/Boy Scouts)
- Cooperative extensions (e.g., 4-H)
- Schools/teachers/education faculty and students
- Naturalist communities
- Stargazing communities
- Weather watchers
- Ham radio operators
- Bird-watching groups
- Gardening groups

PARTNER, PARTNER, PARTNER

Partnerships between librarians and citizen scientists can broaden perspectives, engage new audiences, and result in mutually beneficial outcomes. As a community anchor, the public library connects patrons with experiences and resources valuable to their daily lives. At its most

basic level, a partnership is formed by two or more people from different organizations that share a common vision or goal. The success of a durable library-citizen science partnership is based on shared values.

A good way to begin to build partnerships together is to start on a defined activity, project, or event, such as hosting a Citizen Science Month event at your library. In this case, partners are playing to their strengths while learning from each other by sharing in key roles and responsibilities, such as creating a joint message on the value of citizen science; marketing and communicating the event; developing activities and presentations that will be highlighted on the day; making sure there are enough resources, volunteers, and presenters to make the day an engaging and successful one; and building opportunities for ongoing, broader, and deeper engagement in citizen science.



What type of partnership do you want to create and what you can bring to the partnership? The following list describes some characteristics to consider.

Characteristics of sustainable partnerships

A partnership is sustainable when...

It's a win-win for all organizations involved.

Mutual trust, understanding, and respect allow individuals and organizations to take risks, express intellectual curiosity, experiment, and share lessons learned.

Each organization contributes staff, time, and financial or in-kind resources to the partnership. Libraries “convene” while researchers “enlighten,” and both “catalyze” action.

A sustainable partnership allows others to join the effort, enhance or adopt resources, and provide input on future steps.

The value of shared accomplishments is greater than what each partner would have achieved alone.

DEFINE AND MEASURE SUCCESS

How will you know if your partnerships with citizen scientists or researchers are successful for your community? Here are some general ways to view success:

Meaningful connections are made. Your partnership with citizen science connects your community with ideas and experiences that are engaging and meaningful.

Relevant issues are addressed. The activities conducted through the partnership reflect the community's needs and interests in intentional ways.

Momentum builds. The community can see tangible results of the partnership's initial endeavors, and that enthusiasm builds momentum. You and your partners have new opportunities to deepen collaborations, welcome new partners, and accomplish shared goals.

SECTION 4:

CELEBRATE CITIZEN SCIENCE MONTH IN YOUR PUBLIC LIBRARY

SciStarter, in collaboration with the Citizen Science Association, the National Library of Medicine, and other partners, presents Citizen Science Month, an annual event to celebrate and promote all things citizen science: amazing discoveries, incredible volunteers, hardworking practitioners, inspiring projects, and anything else citizen science related!

Citizen Science Month kicks off in April 2020.

Hundreds of diverse events will be held across the globe, and there are many ways your library can participate!

HOW TO GET INVOLVED

Explore background materials and resources. Check out what Citizen Science Month is all about on SciStarter.org/CitizenScienceMonth. Here you will find developing resources (check back for updates!):

- Downloadable logos
- Event calendar and map (add and find events here)
- People Finder tools to promote and recruit people for your event
- Posters and fliers
- Press release template
- FAQs
- Librarian's Guide to Citizen Science (a downloadable version of this guide)
- Details on the featured projects.
- Embeddable Project and Event Finder from SciStarter

- Additional resources from the National Network of Libraries of Medicine
- Reading lists
- A link to sign up for continued engagement and feedback!

Participate in a citizen science project. It's much easier to talk about citizen science after you've had a chance to experience it! In Section 2 of this guide we provide tips for finding and joining your first project.

Draw inspiration from other libraries. You are not alone in your interest and planning for Citizen Science Month. Join any of the open calls for librarians interested in participating by signing up at SciStarter.org/CitizenScienceMonthFAQ. Who better to troubleshoot/work through issues with than other libraries and event organizers?

Find the right project. Citizen Science Month will be here before you know it! It's never too early to start having conversations with your patrons, as well as library staff and colleagues, to find out what issues are of most interest to them. This information will help you plan the right types of events and help provide direction for related information, resources, and experiences. See "Section 3: Bringing Citizen Science to Your Library" for ideas and resources.

Discover citizen scientists near you. Who's already involved in citizen science near you? Who might be interested in giving related talks at your library, activating a citizen science project, leading a bioblitz, or demonstrating a project they lead or participate in? See "Section 3: Bringing Citizen Science to Your Library" to learn how to connect with them.

Celebrate Citizen Science Month. Now that you have explored the world of citizen science, it's time to celebrate it with others! In addition to the resources on SciStarter.org/CitizenScienceMonth, here are additional tips for hosting a Citizen Science Month event in your library.

STEP-BY-STEP GUIDE FOR HOSTING A CITIZEN SCIENCE MONTH EVENT

There's no right or wrong way to participate in Citizen Science Month and each library will have its own needs and preferences. Here, we've organized planning activities into three levels. You may find that none of these fit your situation and that's totally fine! This entire guide is designed to be just that—a guide and not a rule book. We're happy you've taken the effort to read it.

LEVEL 1 – Turn Viewers Into Doers: Promote Citizen Science Month by simply displaying or distributing posters and fliers and creating awareness of the day for patrons with connections to citizen science projects through SciStarter.org. Find everything you need here SciStarter.org/CitizenScienceMonth.

In addition, consider hosting a “viewing party” by playing any of the following programs on monitors throughout your library. Each of these videos will provide context as to what citizen science is and how the public can become involved. This awareness will help stress the important role the public has in science through citizen science.

- PBS: The Crowd & The Cloud series: <http://CrowdandCloud.org>
- PBS: SciGirls Citizen Science series: <https://pbskids.org/scigirls/citizen-science>
- PBS: Nature TV's SpringLIVE! aired on April 30, May 1, May 2 on PBS. These shows were designed to engage people in citizen science right where they are! <https://www.pbs.org/wnet/nature/american-spring-live/>
- And dozens of short “how to” videos on SciStarter's YouTube channel: <http://bit.ly/2DYfs07>

LEVEL 2 – Give the Public a Hands-on Understanding of Citizen Science: Is your library interested in hands-on experiences? The next steps might include:

1. Complete Level 1 and introduce citizen science resources in your library.
2. Choose a few citizen science activities from SciStarter.

Tip: Regardless of the project you select, reach out to local citizen science practitioners to invite them to come talk about their research and highlight how the community can get involved. You may also want to invite government officials who are making decisions for their jurisdictions on topics related to citizen science projects. Local citizen scientists can also talk about their involvement, help onboard others, and foster a community of participants. By encouraging them to continue to meet at the library on a regular basis, your library will become a community hub for citizen science. See Section 3: Bring Citizen Science to Your Library for helpful tips and resources.

3. Embed SciStarter's free Project Finder on your library's website and/or public computers.

It's as simple as selecting filters for the types of projects you want to display and then copying and pasting the code on your website or browser. Instructions are at SciStarter.org/widget.



4. Promote activities through your library's communications and marketing distribution channels (newsletters, emails, displays, etc.), fliers, and posters displayed throughout the library and on the website. If there are presenters involved, ask them to help promote their appearance as well.

5. Evaluate outcomes. Consider sharing surveys with attendees and presenters to see what worked and what can be improved. Ask what other citizen science topics they might be interested in. If you join any of the Citizen Science Month weekly planning calls, you'll gain access to evaluation templates created by Arizona State University, specifically for Citizen Science Month.

LEVEL 3 – Plan a Citizen Science Month Event: So you want to host a Citizen Science Month event? Join any of the open calls for librarians interested in participating in Citizen Science Month.

Join the weekly calls for Citizen Science Month at SciStarter.org/CitizenScienceMonthFAQ: Agendas, FAQs, the dial-in for the weekly calls, contact information, and more can be found on the [SciStarter.org/CitizenScienceMonthFAQ](https://scistarter.org/CitizenScienceMonthFAQ) page.

Prepare by watching this webinar:

Citizen Science Month (and Beyond!) at Your Library: Ideas, Tips, and Resources from SciStarter and STAR Net

Presenters: Caroline Nickerson, SciStarter; Dan Stanton, Arizona State University Library, SciStarter; Robin Salthouse, Southeast Regional Library in Gilbert, Arizona; Vivienne Byrd, Los Angeles Public Library.

Description: Citizen science can open up a world of free STEAM learning opportunities for library patrons. From identifying butterflies to measuring light pollution, citizen science offers unique ways to engage every patron and allow them to contribute to the greater scientific community. With welcoming environments and equitable access to resources, libraries can serve as a central hub for citizen science in their communities! The STAR Library Network (STAR Net) is excited to showcase impactful STEAM learning opportunities that put a focus on the Earth, such as citizen science, in 2020. With support from the National Library of Medicine and based on feedback from the Citizen Science Association's "Citizen Science Day" working group, SciStarter and Arizona State University are pleased to announce "Citizen Science Month" (April 2020)! Watch this webinar to discover how you can access many free resources to help introduce, shape, or support citizen science in your library.

Tune in here:

<https://scistarter.org/citizen-science-month-and-beyond-at-your-library-i>

ONE MONTH: LIMITLESS POSSIBILITIES



Citizen Science Month coincides with the anniversary of Earth Day, National Library Week, and more. All of these events are opportunities for citizen science tie-ins. Head over to CitizenScienceMonth.org to learn more.

TWO MONTHS BEFORE THE EVENT

Learn more about Citizen Science Month. There are many great resources, ideas, downloadable posters and fliers, press release templates, logos, and webinars on how to host a Citizen Science Month event. There are also books and popular citizen science activities to engage your patrons leading up to the big day. Find all of this and more at: SciStarter.org/CitizenScienceMonth.

Determine the type of event you'd like to host. You can make your event as big or small as you would like it to be based on your resources! You could even just highlight one cool project and some citizen science books. Some citizen science projects may require participants to use computers. Will they be available? Do you have enough Wi-Fi to support a small crowd? Other projects require people to go outside. Do you have space and staff to lead outdoor activities? These considerations can help you select the right type of event to host.

Use the **Citizen Science Month Programming Checklist: Template for Libraries** (see Addendum A) to help outline the logistics for the event.

Reach out to SciStarter if you'd like support to find volunteers to attend your event, help facilitate your event, and/or help promote your event. Email: CarolineN@SciStarter.org

Put a Save the Date notice in your newsletter or promotional materials. Some options:

- *"Love citizen science? No clue about citizen science? All are welcome at our library for Citizen Science Month: April 2020! Find resources and activities for all ages to learn more and discover opportunities to engage in local and global projects in need of your help."*
- *"Our library is celebrating Citizen Science Month this April! Citizen science is a way for people of all ages to collect, share, or analyze data to help scientists address local or global questions. Come join us on 4/13 as we engage in outdoor, environmental research!"*

Develop Event Master Plan. Begin outlining the event timeline activities (such as finding citizen science providers and/or community partners, buying materials for activities, etc.), assignment of roles and responsibilities and budget (snacks are always a nice touch!).

Identify and Contact Speakers and Partners. See tips in Section 3: Bring Citizen Science to Your Library. Find examples of emails to send to potential partners in Addendum B of this guide.

Activate Publicity Plan:

- Request logos from sponsors, partners, and the library for online and printed materials.
- Develop publicity pieces that library, presenters, event team, sponsors, and partners can use, such as newsletter articles, ads, radio spots, print blog posts, and newspaper articles.
- Develop a media list and prepare press release and media kits highlighting the presenters and activities of your library's event.
- Highlight the event on Facebook and other social media platforms.
- Register your event on SciStarter.org, and then use the People Finder (both are available on SciStarter.org/CitizenScienceMonth) to invite people, including local project leaders, to the event.
- Register the library event on other event and community calendars.

ONE MONTH BEFORE THE EVENT

Shore up people power. Confirm that your event will be adequately supported by staff and volunteers.

Release press announcements. Highlight keynote speakers and high-profile activities that will be taking place at your library's event. Post your event press release on the library's website and circulate to all partners, affiliated organizations, and sponsors. Add your event to SciStarter.org/CitizenScienceMonth.

Develop evaluation plan. The ASU and SciStarter teams will also ask you to participate in summative and formative evaluations. Feel free to modify our evaluation surveys for your own needs.

Finalize materials for event. Finalize all activity worksheets, signage, evaluation surveys, etc.

WEEK OF THE EVENT

Confirm details. Review the completed Citizen Science Month Programming Checklist: Template for Libraries (see Addendum A) to determine possible omissions and to ensure that backup plans are developed for any situation (e.g., more volunteers, as example).

Meet with volunteers. Prior to the event, brief them about their event roles, timelines, and other key event information. If they will be facilitating an activity, check to see that they are comfortable with the activity. Remember to thank them for their time and talents! They cannot be thanked enough!

Take to the airways and social media. Have key members of the event team and others begin to heavily promote the library's event. Also, confirm media attending event. Tag [@SciStarter](https://SciStarter.org) and use the hashtags [#CitSciMonth](https://CitSciMonth.org) and [#CitizenScience](https://CitizenScience.org).

DAY BEFORE THE EVENT

Complete setup. Ensure that all signage is up, tables and chairs for presenters are in place, hands-on materials are stocked and located where activities will take place, and AV works, if needed.

Meet with event team. Do a thorough review of the Event Master Plan and walk-through of the library or event space where Citizen Science Day will be taking place.

EVENT DAY

Open the doors and HAVE FUN. This will be awesome! Congratulations! Share highlights during your event by posting pictures and updates on social media. Tag [@SciStarter](https://SciStarter.org) and use [#CitSciMonth](https://CitSciMonth.org) and [#CitizenScience](https://CitizenScience.org) hashtags. SciStarter and partners will repost many of them!

Catalyze ongoing engagement in citizen science. Encourage everyone to create a SciStarter account to help them sustain and deepen their participation in citizen science! Find tips and resources in "Section 5: Beyond Citizen Science Month."

IMMEDIATELY FOLLOWING EVENT

Send thank-you notes to volunteers and partners.

Activate post-event publicity and member development opportunities. There may be opportunities for relationship growth after the event.

Consider hosting a follow-up event. You may have been bitten by the citizen science bug. Find tips on sustaining engagement in "Section 5: Beyond Citizen Science Month."

Review evaluations. Review the evaluation data and glean lessons learned: what went well, what didn't, etc. SciStarter and ASU will be doing the same thing on our end.

Looking for a project to feature in your program?

Check out the National Library of Medicine's featured projects. They're perfect for a program about the environment or human health!

[SciStarter.org/NLM](https://scistarter.org/NLM)



GLOBE AT NIGHT

Help gather light pollution data.



FLU NEAR YOU

Spread the word. Not the flu.



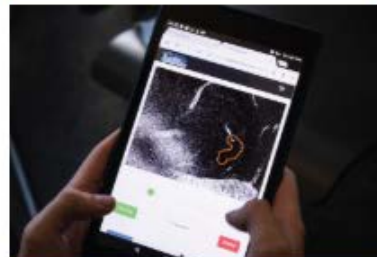
DEBRIS TRACKER

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.

SECTION 5:

BEYOND CITIZEN SCIENCE MONTH

Citizen Science Month is a great way to kick-start or expand and maintain the promotion of your library's initiatives in citizen science. Build on all the great work you did—and contacts you made. Your library is a community anchor that provides opportunities for people from all walks of life to actively contribute to important issues through citizen science. That is powerful! Now that you've introduced citizen science to your library, encourage people to stay engaged through SciStarter. Members can check their SciStarter dashboard for new and recommended projects and events. The dashboard helps them track their interests and contributions.

Here are additional ways to keep patrons interested and engaged:

Bulletin Boards/Kiosks: Invite your citizen science provider or library staff member to create an informational bulletin board around locally relevant or national citizen science issues.

- **Trivia and Voting (with sheets of sticky dots):** Let's say your library installed a rain gauge so patrons can report precipitation to a project known as CoCoRaHS ([SciStarter.org/cocorahs-rain-hail-snow-network](https://www.scistarter.org/cocorahs-rain-hail-snow-network)). Create a trivia question to see if patrons can guess the average precipitation in any given month. Patrons can use the sticky dots to vote on an answer.
- **Awesome pictures with cool facts:** There are many websites such as NASA, the National Institutes of Health, and others where libraries can download or request awesome photographs and cool facts. A good example for upper-elementary-aged youth is NASA's Space Place (spaceplace.nasa.gov). For your library's older patrons, websites such as Earth Observatory (earthobservatory.nasa.gov) and NASA Science News (science.nasa.gov/science-news) are also great sources. You can post relevant citizen science projects next to these facts! For something space related, you could try Mars Mappers ([SciStarter.org/mars-mappers](https://www.scistarter.org/mars-mappers)).

- Post reading lists, included in this guide (see page 34)
- Distribute handouts relevant to the bulletin board theme

Loanable Science Tools:

Discover information on new citizen science kits currently in circulation! PDFs of materials, instruction on how to build, borrow, or buy kits, and "how to" instructions can be found on [SciStarter.org/library](https://www.scistarter.org/library).



Library Telescope Programs and Family Activity Backpacks contain science tools, books, and activities, which are a very popular way to extend patrons' citizen science experiences. Contact your local astronomy club or Cornerstones of Science ([CornerstonesofScience.org](https://www.cornerstonesofscience.org)) about obtaining a high-quality, user-friendly telescope and starting a Library Telescope Program in your institution.

Invite your citizen science provider (e.g., local amateur astronomer, Audubon Society, cooperative extension, college/university Sea Grant office) to help advise you on the science tools, age-appropriate books, and activities that families can check out and use in the comfort of their homes to engage in citizen science. This approach will help families have conversations about science around the kitchen table.

Book Displays: Create book displays and invite patrons to provide recommendations. Book displays are particularly good when supporting an upcoming presenter's talk. Section 6: Citizen Science Resources lists a number of books that would be ideal for a book display.

Stay engaged with your citizen science partners:

Inquire about: Advice on how the library can enhance your STEM programming year-round, additional presentations, book recommendations, assistance with creating informative passive

programs such as thematic bulletin boards or loanable backpacks, recommendations about other presenters and providers, and an active continuation of patron participation in the collection of data, developing recommendations that are relevant to the community and the research.

Offer them ongoing support by: Engaging the public directly with data collection; helping with the dissemination of information; providing a safe, free space for people to learn about and do citizen science together; and, offering a venue for subject matter experts to present research, findings and get feedback from the public.

Link existing programs and communities to active citizen science projects:

Stargazing Parties: Invite your local astronomy club to bring solar and/or night viewing telescopes to the library. Local astronomers are well versed in working with the public and sharing relevant Earth and space information in a meaningful and engaging manner. They can share their data with Globe at Night (SciStarter.org/globe-at-night) to help scientists monitor light pollution in the night sky. Light pollution affects human, environmental, and animal health.

Health Awareness Fairs: Invite your local hospitals, grocery stores, and health and wellness organizations to the library. Have each group bring activities where your patrons can:

- **Look through microscopes...**then introduce them to Stall Catchers. SciStarter.org/stall-catchers-by-eyesonalz
- **Learn how to grow healthy food...**then introduce them to a soil quality monitoring project. SciStarter.org/citizen-science-soil-collection-program
- **Go on a healthy hike...**then introduce them to iNaturalist or the Wet Dry Mapping project. SciStarter.org/wet-dry-mapping

Book clubs: Select monthly topics related to a citizen science project during spring/summer months.

Story time: Include hands-on citizen science activities for families. See Section 6: Citizen Science Resources for a children's book list.



GLOBE Clouds Citizen Science: Guide Libraries

Whether you're planning for a special event or an ongoing program, there are many ways to bring citizen science into your library programs. Using the free NASA GLOBE Observer mobile app, citizen scientists of all ages can learn more about clouds and contribute

to NASA science by taking photographs of clouds and recording sky observations. This guide provides a step-by-step guide to NASA's GLOBE Observer Clouds, including ideas and resources for library programming. observer.globe.gov/libraries_clouds

For the naturalists and nature lovers: Organize a local bioblitz using the iNaturalist app (iNaturalist.org) and share local observations of biodiversity. See the Quick Start Guide section of this guide for tips on hosting a bioblitz.

Civic Engagement Connections: City planners, for example, are seeking ways to protect and shape the future of our cities. To do their job, they rely on data about population, water quality and availability, air quality, and infrastructure. Citizen scientists can help inform their decisions by collecting and sharing data about these issues. Host discussions between planners and publics to catalyze or enhance connections and involve communities in formulating research agendas and collecting and analyzing data to help inform decision-making. Find resources at Expert and Citizen Assessment of Science and Technology (ECAST). www.ECASTnetwork.org

Embed the SciStarter project finder on library computers. Introduce your patrons to other citizen science experiences and connect

with project leaders and other citizen scientists in your community! This could take the form of a citizen science club or regularly scheduled meet-up. SciStarter.org/widget

Install instruments and sensors at your library. Consider installing a “Purple Air” air quality sensor to monitor local air quality conditions and to give your patrons access to the data (SciStarter.org/air-quality-citizen-science). Or consider installing the CoCoRaHS rain gauge so interested patrons can volunteer to record precipitation data for the National Weather Service (SciStarter.org/cocorahs-rain-hail-snow-network). Another option is a Picture Post (SciStarter.org/picture-post), which allows patrons to place their cameras and phones on a fixed base to share pictures of changing landscapes. Find tools and instruments on SciStarter.com/tools.



Congratulations! We hope this Guide has helped you:

Learn more about Citizen Science and benefits to libraries

Discover STEM-related issues of interest or concern in your communities

Connect existing programs and communities to projects on SciStarter

Access resources to help people learn about and engage in citizen science projects in need of their assistance

Facilitate access to information, resources, projects, and even instruments needed to collect and analyze data

Plan Citizen Science Month events

Sustain ongoing engagement in citizen science

SECTION 6:

CITIZEN SCIENCE RESOURCES FOR LIBRARIES

WEBINARS

Citizen Science Month (and Beyond!) at Your Library : Ideas, Tips, and Resources from SciStarter and STAR Net

Prepare by watching this webinar:

Presenters: Caroline Nickerson, SciStarter; Dan Stanton, Arizona State University Library, SciStarter; Robin Salthouse, Southeast Regional Library in Gilbert, Arizona; Vivienne Byrd, Los Angeles Public Library.

Description: Citizen science can open up a world of free STEAM learning opportunities for library patrons. From identifying butterflies to measuring light pollution, citizen science offers unique ways to engage every patron and allow them to contribute to the greater scientific community. With welcoming environments and equitable access to resources, libraries can serve as a central hub for citizen science in their communities! The STAR Library Network (STAR Net) is excited to showcase impactful STEAM learning opportunities that put a focus on the Earth, such as citizen science, in 2020. With support from the National Library of Medicine and based on feedback from the Citizen Science Association's "Citizen Science Day" working group, SciStarter and Arizona State University are pleased to announce

"Citizen Science Month" (April 2020)! Watch this webinar to discover how you can access many free resources to help introduce, shape, or support citizen science in your library.

Tune in here:

<https://scistarter.org/citizen-science-month-and-beyond-at-your-library-i>

Citizen Science @ Your Library

Presenter: Robin Salthouse, Adult Services Supervisor, Southeast Regional Library, Maricopa County, Arizona

Description: Citizens are gathering data for important scientific research. Get updates on how an Arizona State University grant and a partnership with libraries is accelerating research. Discover how you can get involved with projects that interest you.

View a recording here:

<http://bit.ly/2TvXNB4>

Citizen Science in Libraries: Fostering Community Connections on Citizen Science Day and Beyond

Presented by NNLM:

<https://nnlm.gov/class/citizen-science-libraries-fostering-community-connections-citizen-science-day-and-beyond/9041>

Citizen Science Day 2018 Webinar

Presented by the Citizen Science Association: <http://bit.ly/2RN6Ht0>

Harnessing Human Power for Health: Medical Librarians and Citizen Science

Presented by NNLM:

<https://news.nnlm.gov/sea/2018/03/30/seaside-webinar-harnessing-human-power-for-health-medical-librarians-citizen-science/>

Citizen Science Day 2019: Add Real Scientific Research to Your Library Programming

View a recording here:

<https://nnlm.gov/class/citizen-science-day-2019>

WEBSITES

SciStarter
<https://SciStarter.org>

Citizen Science Association
<https://www.citizenscience.org>

Zooniverse
<https://www.zooniverse.org>

iNaturalist
<https://www.inaturalist.org>

CitSci.org
<https://www.citsci.org>

Federal Inventory of Citizen Science Projects
<https://www.citizenscience.gov>

Science-Technologies Activities and Resources for Libraries
<https://www.starnetlibraries.org>

Policy connections to citizen science: Expert and Citizen
Assessment of Science and Technology
<https://ecastnetwork.org/>

Arizona State University Libraries Citizen Science page
<https://libguides.asu.edu/citizenscience>

*The National Network of Libraries of Medicine provides resources
specifically for librarians, including:*
A Focus on Public Libraries
<https://nnlm.gov/public-libraries>

Citizen Science Libraries: Fostering Community Connections
<https://nnlm.gov/class/citizen-science-libraries-fostering-community-connections-citizen-science-day-and-beyond/9041>

Tox Town
<https://toxtown.nlm.nih.gov>

Genetics Home Reference
<http://ghr.nlm.nih.gov>

Help Me Understand Genetics handbook
<https://ghr.nlm.nih.gov/primer>

MedlinePlus
<https://medlineplus.gov>

*If your library has citizen science program ideas that align with the NNLM
mission, check out NNLM Funding Opportunities:*
<https://nnlm.gov/funding>

*Connect with your NNLM region to find out about NLM resources,
training, and funding opportunities for libraries:*
<https://nnlm.gov/about>

ARTICLES

Ignat, T., Ayris, P., Labastida i Juan, I., Reilly, S., Dorch, B., Kaarsted, T., &
Overgaard, A. K. (2018). *Merry work: libraries and citizen science*. Insights,
31, 35. DOI: <http://doi.org/10.1629/uksg.431>

Ayris, P. & Ignat, T. (2018). *Defining the role of libraries in the Open Science
landscape: a reflection on current European practice*. Open Information
Science, 2(1), pp. 1-22. Retrieved 17 Oct. 2018, from
<http://doi.org/10.1515/opis-2018-0001>

BOOKS

Help your patrons discover citizen science by creating a display of these books and others, which describe how to engage in citizen science and the impacts that the public has had on scientific investigations.

Apt Russel, Sharman. *Diary of a Citizen Scientist: Chasing Tiger Beetles and Other New Ways of Engaging the World*. Oregon State University Press, 2014.

Busch, Akiko and Debby Cotter Kaspari (Illustrations). *The Incidental Steward: Reflections on Citizen Science*. Yale University Press, 2013.

Buzzeo, Toni and Holly Berry. *A Passion for Elephants: The Real Life Adventure of Field Scientist Cynthia Moss*. New York, NY: Dial Books (Penguin Young Readers), 2015.

Cavalier, Darlene and Eric B. Kennedy. *The Rightful Place of Science: Citizen Science*. Consortium for Science, Policy & Outcomes, Arizona State University, 2016.

Cavalier, Darlene; Hoffman, Catherine; Cooper, Caren. *The Field Guide to Citizen Science How You Can Contribute to Scientific Research and Make a Difference*. Timber Creek Press, 2020. Pre-order here: <http://bit.ly/FieldGuideCitSci>

Coburn, Jason. *Street Science: Community Knowledge and Environmental Health Justice*. MIT Press, 2005.

Cooper, Caren. *Citizen Science: How Ordinary People are Changing the Face of Discovery*. New York: Overlook Press, 2016.

Cousteau, Phillippe, Deborah Hopkinson and Meilo So. *Follow the Moon Home: A Tale of One Idea, Twenty Kids, and a Hundred Sea Turtles*. San Francisco, CA: Chronicle, Books, LLC, 2016.

Dickinson, Janis L., Rick Bonney and Richard E. Bonney. *Citizen Science: Public Participation in Environmental Research*. Ithaca: Cornell University Press, 2012.

Griffin Burns, Loree and Ellen Harasimowicz. *Citizen Scientists: Be a Part of Scientific Discovery from Your Own Backyard*. New York: Henry Holt and Company, LLC, 2012.

Hannibal, Mary Ellen. *Citizen Scientist: Searching for Heroes and Hope in an Age of Extinction*. New York: The Experiment, 2016.

Kurlansky, Mark and Frank Stockton. *World Without Fish*. New York, NY: Workman Publishing Company, 2011.

Landgraf, Greg. *Citizen Science Guide for Families: Taking Part in Real Science*. Chicago, IL: American Library Association, Huron Street Press, 2013.

Trautmann, Nancy M. *Citizen Science: 15 Lessons That Bring Biology to Life, 6-12*. Arlington, Virginia : NSTA Press, National Science Teachers Association, 2013.

BOOKS FOR CHILDREN

Bathala, Neeti, Jennifer Keats Curtis and Veronica V. Jones (Illustrator). *Moonlight Crab Count*. Arbordale Publishing, 2017.

Cousteau, Phillippe, Deborah Hopkinson, and Meilo So (Illustrator). *Follow the Moon Home: A Tale of One Idea, Twenty Kids, and a Hundred Sea Turtles*. Chronicle Books, 2016.

Forrester, Anna. *Bat Count: A Citizen Science Story*. Arbordale Publishing, 2017.

Fontichiaro, Kristin. *Citizen Science*. Cherry Lake Publishing, 2018.

Griffin Burns, Loree and Ellen Harasimowicz (Photographer). *Citizen Scientists: Be a Part of Scientific Discovery from Your Own Backyard*. Henry Holt, LLC, 2012.

Kovacs, Vic. *Get into Citizen Science*. Crabtree Publishing Company, 2018.

Lee Heinecke, Liz. *Outdoor Science Lab for Kids: 52 Family-Friendly Experiments for the Yard, Garden, Playground, and Park*. Quarry Books, 2016.



Programming Checklist: Template for Libraries

Even more resources available at SciStarter.org/CitizenScienceMonth

Program Details	
Staff Lead:	Date:
Title of Program:	Time:
Program Description:	Location:
Intended Audience:	Room:
Intended Outcome:	Supervisor Approved: Date
	Approved:
Pre-Program To-Do List	Program Support
Room Booked:	At Least One Volunteer Recruited to Help Facilitate:
Program Calendar Description:	Participate in at Least Two SciStarter Weekly Calls:
Submitted to Manager for Approval:	Internet-friendly Devices or WiFi for Patron Devices Available:
Program Placed on Calendar of Events:	Do One Pre-event Meet-up and Run-of-Show:
Registration Required:	
# of Participants:	
Waiting List:	
# on Waiting List:	
Posters:	
Flyers:	
Bookmarks:	
Ask Collection Management for any Requested Materials:	
	Outreach
	Outreach to Local Community Organization Partners:
	Recruitment of Volunteer Facilitators:
	Outreach to Local Media (Newspapers, Community Calendars, etc.):

Day-of Checklist	Post-Event Follow Up
Room Set Up: Volunteer Check-In: Snacks Available: Collect attendee emails: Post pictures on social media #CitSciMonth: Have fun!	Survey Attendees: Participate in SciStarter/ASU Evaluation: Host a Follow-up Citizen Science Event: Activate your Library as a Hub for Citizen Science! SciStarter can help.
Notes	
Empty space for notes	



Special thanks to the Maricopa County Library District, Arizona for providing inspiration for this document.

EMAIL OUTREACH EXAMPLES

EXAMPLE EMAIL TO UNIVERSITY CONTACT

Hello,

I am contacting you in regards to a [bioblitz](#) being held at the Best City Library and County Preserve on **Saturday, December 1 at 9am**. We would like to invite you to participate in recording and identifying observations made in the County Preserve that morning and act as a biology/nature expert. We would also encourage you to enlist the help of any other Best State University undergraduate, graduate biology students or instructors that would be willing to join the community for this citizen science event.

This bioblitz is supporting two efforts at our library. First, the Best City Library encourages children and adults to connect with, enjoy, and preserve the nature in their “backyards” through library programming for all ages. Second, the Bay City Library is committed to partnering with other community organizations to identify, study, and address local/national/global issues of interest to the community through facilitating citizen science.

During the bioblitz, we will be breaking participants into groups of 5-10 people, and assigning them to a specific area of the County Preserve to make observations and take photos through the iNaturalist app on their phone or on their digital camera. If using cameras, the photos can then be uploaded to their iNaturalist account on computers we will have set up in the library. We are hoping to include experts in each group, not as a tour guide or to lead a nature walk, but rather to model searching and observing and encourage participants to use iNaturalist. Our schedule for the morning is as follows:

9am: Best City Library, Science Room; 123 Library Lane, Best City, ST 12345

- Introduce iNaturalist, encourage last minute app uploads and iNaturalist and SciStarter.org account creations.
- Introduce biologist/nature subject experts
- Review goals of bioblitz
- Break into groups and assign to Riparian Preserve location

9:30am: Head out to assigned areas in County Preserve and begin making observations.

11:30am Meet back in the Science Room to share findings, make identifications if possible, and upload digital camera photos to iNaturalist.

Noon: Program ends.

Please reply to this email with your ability to participate. We would love to have you join us.

If you have any questions contact:

Regards,



EXAMPLE EMAIL TO SCIENCE FESTIVAL ORGANIZATION

Dear XX:

I'm writing to invite you to join SciStarter and Arizona State University to celebrate Citizen Science Month this April. In particular, I'm hoping you will engage your network of librarians to organize meet-ups in libraries across Atlanta on Citizen Science Day. We will provide promotional materials (downloadable bookmarks, fliers, posters, a Librarian's Guide to Citizen Science, and more), digital resources (embeddable project/event finders), and training for librarians, staff and volunteer facilitators (through open, weekly calls each Thursday EST and webinars). The central project is NASA GLOBE Observer: Clouds. GLOBE Observer invites you to make environmental observations that complement NASA satellite observations to help scientists studying Earth and the global environment. All you need is a smartphone or tablet, and then you can begin ground-truthing satellite data.

We're asking people to meet-up in local libraries by 1:30 PM EST. They'll need access to tablets and/or smart phones and wifi. so they can download the GLOBE Observer app.

1:30-2 PM: The team will demo how to use the GLOBE Observer: Clouds app to ground-truth satellite data by recording observations of and taking pictures of clouds.

2-3 PM: The group will go outside and make observations through the app.

3-3:30 PM: We'll end by viewing videos from the GLOBE team about the importance of our contributions.

Here's a little more information and link to a sign-up form librarians and other interested event hosts should complete:

SciStarter.org/CitizenScienceMonthFAQ

You all are wizards at drumming up interest, finding partners, and organizing pretty amazing public STEM events. I hope you will consider working with us to blow this out of the water throughout Atlanta as a post-Atlanta Science Festival activity...perhaps?

Sincerely,

EXAMPLE EMAIL TO COMMUNITY ORGANIZATION:



Dear Community Partner,

I'm writing to you from NAME OF LIBRARY. Our library is hosting a Citizen Science Month Celebration on April 13, 2019 from 12:00 PM to 4:30 PM. Citizen Science Month is an annual event created by SciStarter.org and the Citizen Science Association to celebrate and promote all things citizen science: amazing discoveries, incredible volunteers, hardworking practitioners, inspiring projects, and anything else citizen science-related! **Citizen science** is the public involvement in inquiry and discovery of new scientific knowledge. A citizen science project can involve one person or millions of people collaborating towards a common goal. Typically, public involvement centers around data collection, analysis, or reporting.

Our library will also present posters about citizen science, have speakers **[note: add whatever activities/projects your library is considering]** ...

We'd like to discuss with you the possibility of inviting volunteers from your organization to come to our library to participate in our citizen science activities or facilitate citizen science projects for other volunteers. Students may appreciate this opportunity to acquire volunteer hours and we will provide volunteer certification letters.

No experience is needed. Our library and our collaborators (including SciStarter and Arizona State University) can provide training leading up to and during the event. Ideally, this will spark opportunities for ongoing collaborations.

Thank you for your consideration and I look forward to hearing back from you to explore this further. I can be reached at PHONE and EMAIL.

Kind regards,

Your Local Librarian