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Supporting Citizen Science in Libraries

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Supporting Citizen Science in Libraries

What is Citizen Science?

Citizen Science has been defined many different ways. Two popular definitions are: "scientific research conducted, in whole or in part, by amateur (or nonprofessional) scientists“ (Wikipedia) and "projects in which volunteers partner with scientists to answer real-world questions“ (Citizen Science Central Website)

Literature Review Summary

Table X. We did a title search for “citizen science”, all source types. To show the breadth of subtopics we chose 1 article from each database to be representative

Database	Results	example citation from respective database
Scopus	871	Gregory, A.J., and J.P. Atkins. 2018. Community Operational Research and Citizen Science: Two icons in need of each other? Eur. J. Oper. Res. 268(3): 1111–1124
Web of Science Core Collection	711	Dean, A.J., E.K. Church, J. Loder, K.S. Fielding, and K.A. Wilson. 2018. How do marine and coastal citizen science experiences foster environmental engagement? J. Environ. Manage. 213: 409–416
Earth, Atmospheric & Aquatic Science Database	438	Vann-Sander, S., J. Clifton, and E. Harvey. 2016. Can citizen science work? Perceptions of the role and utility of citizen science in a marine policy and management context. Mar. Policy 72: 82–93
Wildlife & Ecology Studies Worldwide	270	Robinson, O.J., V. Ruiz-Gutierrez, and D. Fink. 2018. Correcting for bias in distribution modelling for rare species using citizen science data (R Heikkinen, Ed.). Divers. Distrib. 24(4): 460–472
Compendex	256	Kocaman, S., B. Anbaroglu, C. Gokceoglu, and O. Altan. 2018. A review on citizen science (CitSci) applications for disaster management. Int. Arch. Photogramm. Remote Sens. Spat. Inf. Sci. 42(3W4): 301–306
PubMed	212	Chrisinger, B.W., A. Ramos, F. Shaykis, T. Martinez, A.W. Banchoff, S.J. Winter, and A.C. King. 2018. Leveraging Citizen Science for Healthier Food Environments: A Pilot Study to Evaluate Corner Stores in Camden, New Jersey. Front. Public Heal. 6: 89

Stream Water Quality – Squaw Creek Watershed Coalition

Through this effort of volunteers/ citizen scientists, the sampling of the watershed has been ongoing since 2001. A group of concerned citizens wanted to look at the importance of the creek as well as the impact that local businesses are having on the creek itself. This creek flows through Ames, Iowa, a city of approximately 66,000. The sampling has largely been within city limits. This CS based group samples and measures various nitrogen compounds, phosphorus, turbidity, and takes general notes of the transect and surrounding area several times each year. Although this is volunteer based, the project is supported by the Iowa Department of Natural Resources.

The mission of this volunteer group is:
- To protect and improve Iowa’s water quality by raising citizen awareness about Iowa’s watersheds
- supporting the growth and networking of Iowa’s volunteer water monitoring communities
- promoting water monitoring activities as a means of assessing and understanding Iowa’s aquatic resources

- http://www.iowadnr.gov/Environmental-Protection/Water-Quality/Water-Monitoring/Volunteer-Water-Monitoring

Iowa Butterfly Survey Network

The IBSN is located at Reiman Gardens, a 17-acre public garden owned by Iowa State University in Ames, Iowa. Each year, the group “uses volunteer citizen scientists to collect data for yearly population surveys of the 122 butterfly species in the state of Iowa.” Volunteers undergo training to learn special butterfly-specific techniques to collect the survey data.

The goals of this group are to:
- Educate Iowans about butterflies
- Monitor and survey habitat areas for butterfly populations
- Identify beneficial or potentially harmful land management practices
- Show effectiveness of habitat restoration
- Provide yearly numbers of the health of all butterfly populations in Iowa
- Encourage people to take an active role in conservation

- https://www.reimangardens.com/collections/insects/iowa-butterfly-survey-network/

Related projects:
- https://monarchjointventure.org/get-involved/study-monarchs-citizen-science-opportunities/
- https://www.fs.fed.us/wildflowers/pollinators/Monarch_Butterfly/citizenscience/index.shtml

Do Libraries Support Citizen Science?

Hypotheses

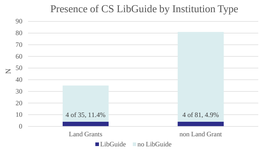
H0: There is no difference in library support of citizen science by university type
H1: Academic libraries at land grant universities are more likely to support citizen science than other academic libraries

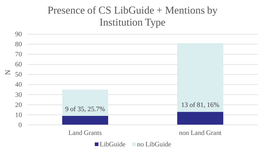
What is a Land-Grant College?

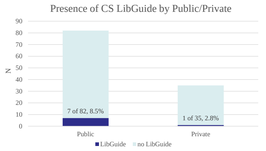
The Morrill Act, which was signed into law in 1862, created the idea of the land-grant college. One of the core principles of the land-grant college is that it exist as a *service to the people* of the respective state in which it was created. Because of this inherent aspect of the land-grant college mission, we hypothesized that land-grant universities would be more likely to be in some way involved with citizen science than non-land-grant universities and colleges, because citizen science, as its name implies and related to the concept of service to the state, encourages participation by non-scientist citizens in scientific research, data collection, and/or observations.

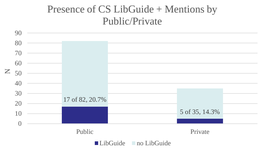
Study Methods

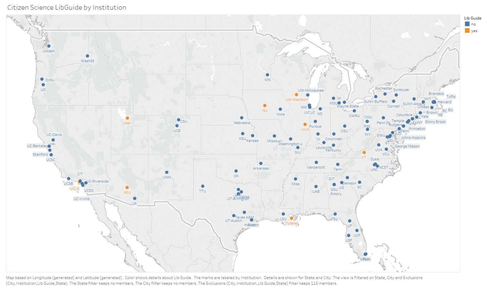
- We examined R1 universities in the United States
- This includes both private and public; land-grant and non-land-grant
- We determined if each university library had a dedicated library guide on the topic of citizen science
- Also, we searched (with whatever search function was available) within the library guides as well as the library website for any “mentions” of citizen science and recorded those as well.











How Can “We” Become More Involved?

Advocating and promoting CS programs and opportunities

- Provide/link a LibGuide/Resource pointing to available resources/projects.
- Educate other librarians on campus to “What is Citizen Science?”
- Provide selective, relevant examples to draw interest
- Test out specific CS projects before recommending them. (Maybe rate them on easy/hard scale?)
- Promote/educate instructors to “What is Citizen Science?” Tie into class projects and library resources.
- Promote/educate campus to specific nifty CS project opportunities.
- Promote Apps/Games for “fun” that are citizen science (unrelated to a class project).
- Promote CS projects already being done on campus
- Raise awareness among researchers for how to initiate their own CS projects
- “Provide opportunities for students to refine their career objectives via hands-on research in their potential fields of study.”[2]
- “A citizen science project also must have objectives that include education of the citizenry, whether it is education about a specific organism or study system, the scientific process, or conservation and natural resource management. A project that uses citizen volunteers to collect data, but does not include educational objectives and strategies for achieving them, is not a successful citizen science project.”[1]
- Explore CS projects that involve participating via cell phone apps
- Become a participant in a couple of CS projects, personally
- Promote/educate campus to specific nifty CS project opportunities
- Tie CS projects into library resources

Some Citizen Science Organizations

- ***Citizen Science Alliance*** - Originally based out of the U.K., the CSA is an international “collaboration of scientists, software developers and educators who collectively develop, manage and utilise internet-based citizen science projects in order to further science itself, and the public understanding of both science and of the scientific process.”
- ***Citizen Science Association*** - An international organization, originally developed out of the Cornell Lab of Ornithology. “The group’s goals are to promote and support citizen science best practices in such areas as data management, scientific rigor, ethics, and project evaluation.”[1]
- ***European Citizen Science Association*** - created in 2013, ECSA is a non-profit association set up to encourage the growth of the Citizen Science movement in Europe.
- ***Australian Citizen Science Association*** - created in 2014. While most of their projects are unique to the Australian area (including Malaysia), there are a wealth of project ideas that could be adapted/modified to other locales. For example, Scoop a Poop (tackling antibiotic resistance in the wild). Their Project Finder page is an excellent example of design elements for useful searches, including the ability to filter by those that have teaching materials available
- https://www.citizenscience.gov/ Designed to accelerate the use of crowdsourcing and citizen science across the U.S. government. The site provides a portal to three key assets for federal practitioners: a searchable catalog of federally supported citizen science projects, a toolkit to assist with designing and maintaining projects, and a gateway to a federal community of practice to share best practices.”
- Citizen Science Central - http://www.birds.cornell.edu/citscitoolkit/about/definition

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1. Sachs, Susan; Super, Paul E.; and Prysby, Michelle. 2008. "Citizen Science: A Best Practices Manual and How it Can be Applied." IN *Rethinking Protected Areas in a Changing World: Proceedings of the 2007 GWS Biennial Conference on Parks, Protected Areas, and Cultural Sites*. Weber, Samantha, and David Harmon, eds. Hancock, Michigan: The George Wright Society, pp. 280-284. Free online at http://digitalcommons.unl.edu/natlpark/37. Quote from page 281.
2. Cohen, Cynthia M., et al. "Identifying Opportunities in Citizen Science for Academic Libraries." *Issues in Science & Technology Librarianship*, Winter 2015. http://dx.doi.org/10.5062/F4BR8Q66