University of North Carolina Greensboro
Green Fund Proposal Form
Submit completed proposals to **greenfund@uncg.edu.**

1. General Information

Project Name: Campus Nature Challenge 2022

Amount of Request: $1550

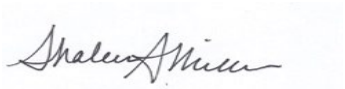
Date of Request: Funds to be used April 2022 and Oct/Nov 2022

Name, UNCG Title and Affiliation, Email Address, and Telephone of Project Contact and Partners:

Shaleen Miller, adjunct faculty, Dept of Geography, Environment, and Sustainability, samille6@uncg.edu, 713-855-7935

Jo Klein, GIS and Data Visualization Librarian, Assistant Professor, UNCG University Libraries, ejklein@uncg.edu, 336-256-0112

Original Dated Signature for Each Project Partner:

Shaleen Miller, 2/9/2022 

Jo Klein, 2/11/2022 

2. Abstract

Every year in April, Earth Day is celebrated around the world to indicate support for environmental protection. As a part of this celebration, this proposal would allow UNCG to continue to host a competition for students and faculty that would highlight local biodiversity, using the citizen science tool iNaturalist. In addition, the iNaturalist competition serves as a citizen science project that will be used to collect data on campus in two different seasons, which will be used as an opportunity to educate students on analyzing and mapping biodiversity data. The funding from Green Funds would be used to provide incentives for students to participate in photographing and identifying species of flora and fauna on campus. This will provide environmental education in the local environment and add to the baseline of knowledge about species supported by the campus.

3. Project Description (Word Count: 1,232, excluding references)

Background

According to the World Bank, over 55% of the world now lives in urban areas, and in the U.S., 82% of people live in urban areas. As urban population grows, so too, does urban area. While many people want to focus on the biodiversity of wilder, rural areas, the expansion of urban areas makes conservation and preservation of species and habitat within urban areas more important. Understanding and preserving biodiversity in urban areas is important because cities have often been built in critical habitats, such as riparian zones, the urban landscape may also provide corridors that provide habitat connections between populations of animals, and city biodiversity can look very different than native biodiversity, making it important to understand how the environment changes (Dearborn & Kark, 2010).

Involving people, especially students, in this environmental work is an important way to expand the desire to protect the environment. By engaging in environmental work through the collection of observations of flora and fauna and the analysis of those observations, students increase their interest in nature and self-efficacy for environmental action (Smith et al., 2021). Several studies have shown that environmental education and experiences connecting with nature increase perceived pro-environmental attitudes long-term, and even extend to other family members (Farmer et al., 2007; Vaughan et al., 2003). Since ecological knowledge acquisition increases awareness of conservation issues, there has been an increase in the encouragement to obtain conservation volunteers in order to receive a double dividend of help and support (Asah & Blahna, 2012).

Proposal

Desired Outcome

The goal of the Campus Nature Challenge (CNC) is to engage citizen science to increase biodiversity awareness of students and faculty while cataloging the biodiversity on campus. The biology department at UNCG runs and monitors two wetlands on campus and has begun some of this work (https://wetlands.uncg.edu). Engaging this work across campus will allow residents, students, and staff to understand the biodiversity supported by campus, while allowing the participants to gain ecological knowledge in their attempts to identify species of plants and animals, including insects. With sufficient participation, the university would gain the ability to boast of the diversity supported by campus landscaping, including Peabody Park. On the other hand, it may also identify invasive species that may need to be managed in the future.

The previous year's event was a success with 80 participants identifying over 550 species. One identified need was to compare species in the spring and the fall; therefore, the goal is to host two events in 2022 accordingly. An additional goal is to involve participants in this analysis of observations collected both for the 2022 events and the previous 2021 event. This involvement will ideally lead to

an increase in data literacy skills for participants, including the ability to organize, analyze, interpret, and create with scientific data.

Method

The iNaturalist app is a popular citizen science tool for cataloging biodiversity. It is available for free and has a compatible website that allows uploads by those who cannot download the app. It works by allowing users to take photos of diverse plant and wildlife, which are uploaded into the app with the location geotagged. The application makes suggestions for identification based on the photos. Once the person submitting the picture attempts to id the photo, the photos are shared to the iNaturalist community. All users are asked to help make confirmations or alternative suggestions. The owner of the picture may then accept or reject the suggestions. However, after several confirmations of the id, the photo/species is cataloged as "Research-grade". In this way, it keeps a check on the data, but it also provides an additional way for the person who takes the photo to learn about the species they are seeing.

All submitted photographs, along with data about location, species, and other information, are added to the iNaturalist observations database. This database can be filtered, downloaded or otherwise imported into a data analysis tool such as Excel or Python, and used to analyze biodiversity using statistical methods and create maps and data visualizations to explore or display the data. A "Project" in iNaturalist will be opened that allows participants' posts to be gathered in one place and gives us a filter to select only data collected for this project. The project page also provides a "journal" feature where the proposal team can post updates to participants.

Members of the proposal team have successfully used the iNaturalist app in Intro to Environment courses at UNCG for several semesters. At the end of the semester, several students always comment that it was their favorite part of the course. Some continue to use it after class is concluded, which is a sign of real success. We have also successfully used the iNaturalist app for the previous CNC in 2021, and in library programming and workshops, including the 2021 Spring Scenes[1] event and the 2021 Special Libraries Association conference session, *Learning Data Naturally*.[2]

For the purpose of encouraging campus-wide participation, one week will be identified and confirmed in April (proposed April 18-24, 2022) and another to be determined in late October to mid-November. The fall event will coincide roughly with GIS Day, an international celebration and showcase of work done using geographic information systems (GIS), i.e. digital mapping and analysis of location-based data, which will be on November 16, 2022. During these identified weeks, students will be asked to use

[1] https://www.inaturalist.org/projects/spring-scenes-through-the-lens
[2] https://www.inaturalist.org/projects/learning-data-naturally-sla-special-libraries-association-2021

the iNaturalist app to identify as many *research-grade*[3] species across campus as they can. The Green Fund will support prizes for participants who identify the greatest number of species. In addition, the proposal team will identify the person who finds the most unusual species. There will also be secondary prizes for the best photo of a mammal, insect, bird, and plant/flower, and for the fall event, for the best map created using iNaturalist data collected during the CNC as determined by the proposal team based on the design and informative quality of the map.

For the purposes of increasing competition and increasing learning implications, the University Libraries will hold pre- and post-event workshops. The pre-event workshop will introduce the concept of citizen science and demonstrate the iNaturalist app and how to log and identify species. The post-event workshop will focus on data analysis and mapping using common GIS tools available to UNCG students such as ArcGIS, GIS-enabled data tools like Python, or more entry-level browser-based tools like Datawrapper.

In addition, other UNCG partners and classes will be contacted to advertise the competition and associated workshops.

Future Outlook

If the CNC program is successful, it will be implemented at more universities for a comparison of urban environments that can help to support diverse, non-invasive flora and fauna. It is also a program that could be repeated each year to catalog changes seen in the local environment.

Role of Researcher

Shaleen Miller will establish the iNaturalist project. She will also monitor random posts during the project by commenting on species identification in an attempt to encourage monitoring and learning.

Jo Klein will arrange and lead the workshops with the library and be responsible for disseminating the outcome of biodiversity data analysis. They will also establish a workflow for participants in the map challenge to submit entries.

Together, along with Sean MacInnes, we will determine winners and distribute prizes.

References

Asah, S. T., & Blahna, D. J. (2012). Motivational functionalism and urban conservation stewardship: Implications for volunteer involvement: Urban conservation stewardship. *Conservation Letters*, *5*(6), 470–477. https://doi.org/10.1111/j.1755-263X.2012.00263.x

[3] Research-grade refers to non-cultivated species with clear pictures that other participants can use to confirm or deny the correct species identification

Dearborn, D. C., & Kark, S. (2010). Motivations for Conserving Urban Biodiversity. *Conservation Biology*, *24*(2), 432–440. https://doi.org/10.1111/j.1523-1739.2009.01328.x

Farmer, J., Knapp, D., & Benton, G. M. (2007). An Elementary School Environmental Education Field Trip: Long-Term Effects on Ecological and Environmental Knowledge and Attitude Development. *The Journal of Environmental Education*, *38*(3), 33–42. https://doi.org/10.3200/JOEE.38.3.33-42

Smith, H., Allf, B., Larson, L., Futch, S., Lundgren, L., Pacifici, L., & Cooper, C. (2021). Leveraging Citizen Science in a College Classroom to Build Interest and Efficacy for Science and the Environment. *Citizen Science: Theory and Practice, 6*(1), 29. http://doi.org/10.5334/cstp.434

Vaughan, C., Gack, J., Solorazano, H., & Ray, R. (2003). The Effect of Environmental Education on Schoolchildren, Their Parents, and Community Members: A Study of Intergenerational and Intercommunity Learning. *The Journal of Environmental Education*, *34*(3), 12–21. https://doi.org/10.1080/00958960309603489

4. Budget

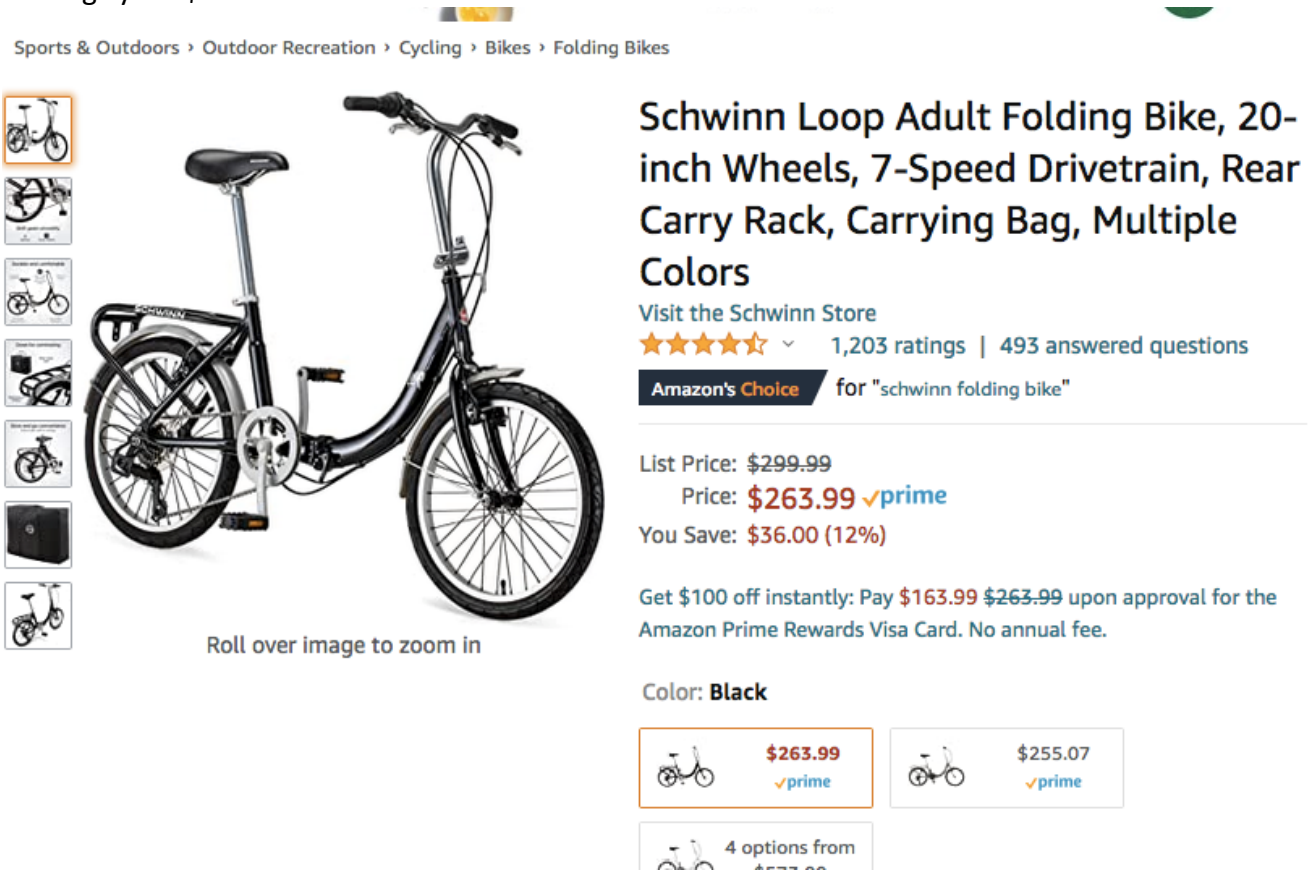
Detailed budget with line item and unit price detail for equipment, materials & supplies, labor, marketing, travel, and any other major categories of costs. Include other resources and funds secured for the project.

Prize budget Spring: $725
Prize budget Fall: $825
Total: $1,550

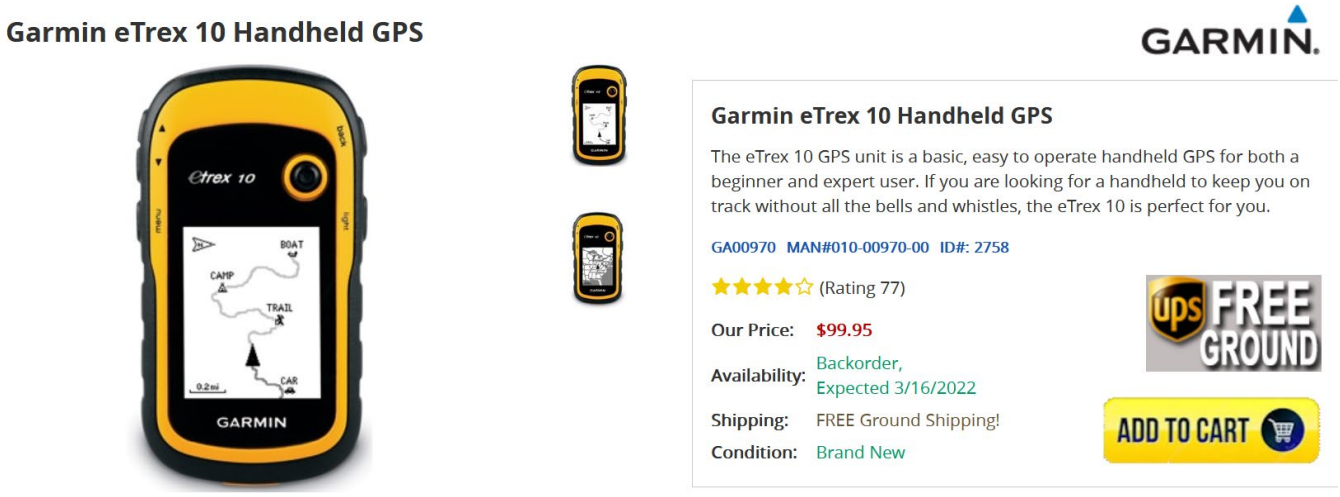
The budget will be used to fund participant awards to incentivize participation. The following costs are anticipated based on current pricing and award choice.

Winner awards: $725 ($825 for fall)

1. Folding cycle: $265



2. (Fall map challenge prize) Garmin eTrex 10 Handheld GPS: $100 (via theGPSStore.com)



3. Pop-up Camping Tent: $100

UNCG GREEN FUND

4. Second-place reward: Mushroom Grow Kit: $25

5. Second-place reward: Hammock $35

UNCG GREEN FUND

6. Photography winners (4): 1st place in each category: $75 gift certificate to REI