Campus Sustainability Grant Program Final Report

Project: "Build It and They Will Come: Building Bat Houses and Creating Habitat for Bat Conservation and Environmental Awareness"

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Project Description

Our project, "Build It and They Will Come: Building Bat Houses and Creating Habitat for Bat Conservation and Environmental Awareness", focused on protecting local bat species and spreading awareness of bats and their conservation among members of the Athens community. Bats across North America, including the 16 species found in Georgia, are facing numerous threats, including habitat destruction, White-nose Syndrome, and general fear and misunderstanding by the public. The goal of this project was to provide proactive conservation for Georgia's bats as well as foster understanding of bats and their importance among members of the Athens community.

With a Campus Sustainability Grant, we have built 15 bat houses (10 standard, 2-chamber boxes from Georgia company Habitat for Bats, https://estore.habitatforbats.org/bat-house-kit-two-chamber-bci-certified/; and 5 rocket boxes) (Priority 1, Specific Aim 1). Providing two styles and houses and multiple houses in each location will increase the likelihood of occupancy and will provide the optimal temperature ranges and roosting requirements for different bat species. While we have not installed the houses yet (installation expected in late summer 2018), our approved locations are: UGArden, Lake Herrick, Driftmier Woods, and Lumpkin Woods. In particular, the UGArden is excited to have bat houses installed on their property. They are excited about the opportunities to include the houses in their environmental education programs.

Another important goal of our project was to provide environmental education opportunities to members of the Athens community (Priority 2). To this end, we hosted two workshops to build the bat houses and teach attendees about the bats of Georgia (Priority 2, Specific Aim 2a). The first workshop was with two troops from the Girl Scouts of Historic Georgia. Ten girls (ages 9 – 16) and six adults spent several hours building the 10 standard houses (see photos). The second workshop was with the UGA chapter of The Wildlife Society. Kristen Lear was invited to give a presentation about bat research and the grant project at a TWS chapter meeting. Six students then attended the workshop and built the rocket boxes (see photos). These workshops were also a partnership with the "Athens Bat Connection", a Georgia Department of Natural Resources Wildlife Viewing Grant.project awarded to the Athens-Clarke County Oconee Rivers Greenway. During our projects, we built the bat houses that will be installed along the Greenway as part of the grant.

Once installation is complete, we will install educational signs next to the bat houses to inform visitors about the project, common Georgia bats that roost in bat houses, and the ecological and economic importance of bats (Priority 2, Specific Aim 2b). We are also planning several long-term activities as part of this project. First, we will continue to use the bat houses as part of outreach events and community engagement. We will host at least two outreach events during the 2018 – 2019 academic year, including STEMZone 2018 and a class with the UGA Osher Lifelong Learning Institute (Priority 2, Specific Aim 2c). When bats begin roosting in the houses, we will also record infrared and night vision videos of their behaviors (using equipment purchased with this grant and equipment already owned by Dr. Jeffrey Hepinstall-Cymerman's lab) to share during outreach events and with UGA courses (Priority 2, Specific Aim 2d). These videos will provide an up-close-and-personal look into the lives of bats, and will help dispel some of the fear and misunderstanding about them and ultimately foster a sense of environmental stewardship (UGA 2020 Strategic Plan, Strategic Direction VII). The videos can also be used as UGA course material (e.g. to develop ethograms of the bats' behaviors in an animal behavior course). This will tie into our final project priority (Priority 3, Specific Aim 3) to promote the bat houses as long-term strategic teaching and research opportunities for UGA students (UGA 2020 Strategic Plan, Strategic Direction VII). The information gathered from research projects would help

inform future bat conservation strategies on campus and in the wider community (UGA 2020 Strategic Plan, Strategic Direction IV, Strategic Priority b).

We have also worked to promote the project and the importance of bats through publicity and social media (Priority 4). Specifically, our project was highlighted in a video by the UGA Office of Sustainability, titled "Saving a Species: Kristen Lear's Bat House Habitat Grant Project" (https://www.youtube.com/watch?v=oTx8ciBXn8I). Our project will also be featured in an upcoming article in *The Red and Black*, and we are working with the Athens Banner Herald on an article about the project. We are also planning to continue our outreach to a wider audience by creating a website to promote bat houses and bat conservation and highlight UGA's role in conservation efforts. The website will include information about the Campus Sustainability Grant and our project (including pictures of our outreach events and videos of the bats), bat house plans and installation instructions, steps to take if a bat is found, and other useful resources.

Ultimately, our bat house project has benefited numerous community groups, including the Girl Scouts, The Wildlife Society, and the Athens Greenway Commission, and will ultimately provide conservation benefit to the bats of Athens.

Project Expenses

Note: Some of the funds were spent differently than originally proposed. In order to increase our conservation impact, we decided to use the funds budgeted for paying UGA employees to install the houses to instead purchase additional bat houses and monitoring equipment. Project personnel, along with other Warnell personnel, will be doing the installations free of charge.

Personnel Total = $0

Specific Equipment Items

1. Binoculars to monitor the bat houses (Eagle Optics)	$245
2. Bat spy camera (infrared camera) and mounting pole to view bats (Bat Conservation and Management)	$398
	Equipment Total = $643

Specific Supply Items	**Subtotal**
1. Standard, 2-chamber bat house kits (Habitat for Bats)	$674.50
2. Bat house mounting brackets (Habitat for Bats)	$224.75
3. Mounting poles for bat houses (Ferguson)	$1456.10
4. Screwdriver and drill for building bat houses	$99.00
5. Saws and blades for cutting pipes	$210.92
6. Materials for signage (wood, plexiglass)	$247.47
7. Materials for rocket box bat houses	$1715.59
	Supplies Total = $4628.33

GRAND TOTAL **$5271.33 ***

*The excess was paid for through Dr. Jeffrey Hepinstall-Cymerman's instructional account.

Academic Impact

Our project had academic impact across campus, as described below.

- Foundations of Restoration Ecology, ECOL(FANR) 4220/6220, Dr. Elizabeth King: Kristen Lear led a unit on habitat restoration for wildlife, which used the bat house project as the teaching tool.
- Sustainability Seminar, Dr. Ron Balthazor: Kristen Lear presented information about the Campus Sustainability Grants, tips for applying, etc. at two Sustainability Seminars
- The Wildlife Society UGA Chapter meeting: Kristen Lear presented the bat house project at a club meeting and solicited volunteers to help build the bat houses
- Once the bat houses are installed, they can be utilized by numerous classes on campus, including the following:
    - Natural History of Georgia (FANR/ECOL/GEOG 1200), taught by Dr. Gary Grossman
    - Natural Resources Conservation (FANR/MARS 1100), taught by Dr. Gary Green and Dr. Susan Wilde
    - Foundations of Environmental Education (FANR 4444S/6444S), taught by Dr. Kristen Irwin
    - Ecology (ECOL 3500), various faculty
    - Vertebrate Natural History (WILD/ECOL 3580), Dr. Steven Castleberry
    - Animal Biodiversity and Conservation (WILD/FISH/ECOL 8680), various faculty
    - Animal Behavior (BIOL/WILD 3700), Dr. John Maerz
    - Field Animal Behavior (BIOL 3720L), various faculty
    - Mammalogy (WILD/BIOL 4050), Dr. Steven Castleberry

Research Value

While our project did not address specific research questions, there is great potential for the bat houses to be used as research tools in the future. Our hope is that they can be incorporated into class curricula as well as student research projects (e.g. class projects, independent projects, graduate research, etc.).

Engagement

See the *Project Description* for more complete details.

a) Partnerships:
    - Girl Scouts of Historic Georgia
    - The Wildlife Society, UGA Chapter
    - "Athens Bat Connection" project (Athens-Clarke County Greenway Commission)

b) Beneficiaries:
    - Bat populations in Athens
    - Athens residents: Once roosting in the houses, the bats will provide pest control services for Athens residents and may reduce damage to nearby agricultural crops and ornamental plants.
    - Girl Scouts (two troops)
    - The Wildlife Society, UGA Chapter
    - "Athens Bat Connection" project (Athens-Clarke County Greenway Commission)
    - UGArden: They are excited to have bat houses installed on their property to use in environmental education programs.

c) Outreach Events and Media:
    - Outreach Events:
        - Two bat house building workshops: Girl Scout workshop = 10 girls (ages 9 – 16) and six adults; The Wildlife Society workshop = 6 undergraduate students
        - Shared a poster at the UGA Semester in Review (spring 2018)

- Future outreach events planned: STEMZone 2018, Osher Lifelong Learning Institute class, Vulture Festival 2018
- Informal engagement with Buildings and Grounds staff: We met with B&G staff numerous times to discuss the bat house designs and locations, and through these meetings we were able to provide informal education about bats to people who otherwise may not have received this information.

- Media:
  - Video created about project by the Office of Sustainability: https://www.youtube.com/watch?v=oTx8ciBXn8I, Shared on the Integrative Conservation PhD program's Facebook page and Kristen Lear's Facebook page (received 143 "likes" and 10 shares).
  - Article to be published in the "Red and Black"
  - Article to be published in the "Athens Banner Herald"
  - Project website (to be created)

Project-specific Metrics

- 15 bat houses built (10 2-chamber, standard houses and 5 rocket boxes). Each bat house can hold up to 300 bats, so a total of 4,500 bats can benefit from this project.
- 10 additional bat houses built for the "Athens Bat Connection" project by the Athens Greenway Commission.
- Two bat house building workshops held for the public.
- 22 members of UGA and the Athens community attended the bat house workshops and gained an appreciation for bats and their conservation.
- Gained interest in the bat houses and bat research from one UGA student organization (The Wildlife Society) and the Girl Scouts of Historic Georgia.
- Incorporated the project into presentations for three academic classes.
- One video produced about the project.
- Two articles written about the project for local media outlets.
- Three outreach events that will incorporate the bat houses already planned for fall 2018.

Project Assessment

Our Campus Sustainability Grant project was a challenging endeavor, but very worthwhile and rewarding.

Two of the main challenges we faced were that the construction process took much longer than expected (we still need to install the houses) and we had some difficulties in coordinating between many people, particularly for scheduling meetings and times for the workshops. Despite these challenges, I think our project was a success. Through the process, I have learned several important "lessons" for working on projects like this:

- Flexibility is key! Our project team had to be flexible in terms of where to locate the bat houses. We had some ideas in mind when we proposed the project, but after conversations with Buildings and Grounds, department members, and other campus staff, we ended up changing several locations. This was also a lesson in balancing the needs and wishes of diverse groups. As bat conservationists, our project team of course wanted to install all the houses in ideal locations for bats as well as for environmental education opportunities. However, we had to balance the wishes of Buildings and Grounds and several campus departments regarding locations. We met several times to discuss these issues, which also provided an opportunity to engage with B&G staff and explain the importance of bats and their conservation. We also had to be flexible in terms of our budget. We ended up changing some components of the project which required adjustments in the budget, but we were able to make these changes work.
- It is important to manage people's expectations. This issue came up particularly when working with the Girl Scouts for the bat house building workshop. Several troops wanted to use the bat house project as a larger project for their troops

to earn their Bronze or Silver Awards. I worked with them to ensure that the project could contribute to their goals, but I had to manage their expectations that they were going to be able to "take on" the project as their own, given the timeframe and numerous other people interested in helping. This highlights the importance of making sure that plans and expectations are made clear at the beginning of a project.

This project was also extremely valuable for me personally and professionally. Firs, it strengthened my desire to pursue a career in which I can collaborate with numerous stakeholders and connect diverse teams of people for bat conservation issues. My passion is bat conservation, and I very much enjoy working with others and connecting people for a common goal. In addition, while I had previous experience building bat houses, this was my first time leading groups of people (Girl Scouts and undergraduates) in the process. This was a personal challenge for me, since activities like construction are not my strong point. However, I gained valuable experience with bat house building and am now more confident in my abilities to lead projects like this in the future. I hope to continue leading bat house building workshops as a hobby (and potentially in my career) so this experience was incredibly valuable on a personal and professional level. Finally, the construction process also highlighted the importance of building a strong team that capitalizes on each person's strengths. While construction was not my strong point, Jack Grider and Dr. Jeffrey Hepinstall-Cymerman were much more experienced with that and I relied a lot on their experience. I contributed more to coordinating and leading the activities. Together, we formed a strong team, and while we did not progress without some issues (like scheduling conflicts) we ultimately worked well together to complete the project.

I am thankful to the UGA Office of Sustainability for granting us a Campus Sustainability Grant. Doing a bat house project on campus has been a little dream of mine since I came to UGA in 2014, so I am beyond thrilled that the OoS has helped make that dream a reality.

Photo / Video Documentation

Video: "Saving a Species: Kristen Lear's Bat House Habitat Grant Project" (https://www.youtube.com/watch?v=oTx8ciBXn8I).

Kristen Lear (right) helping members of the UGA chapter of The Wildlife Society build the rocket boxes (Photo by Rebecca Wright)

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Members of The Wildlife Society building the rocket boxes (Photo by Rebecca Wright)

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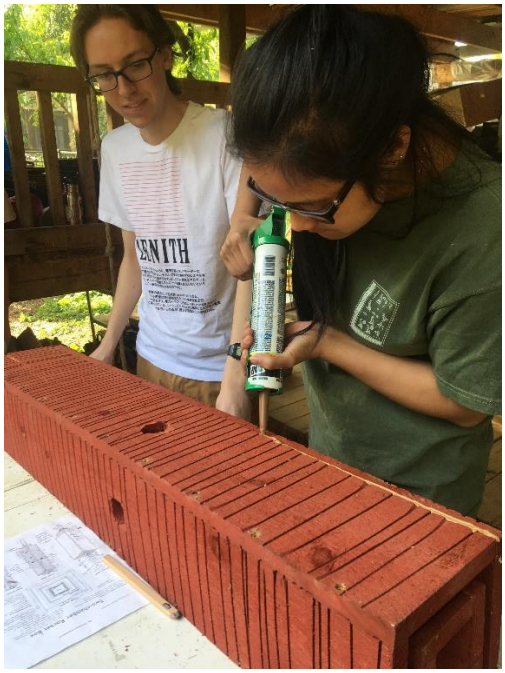

Members of The Wildlife Society building the rocket boxes (Photo by Kristen Lear)

Local Girl Scouts building a standard bat house (Photo by Kristen Lear)

The assembled bat houses (prior to painting) (Photo by Kristen Lear)

Dr. Jeffrey Hepinstall-Cymerman cutting wood for the bat houses (Photo by Kristen Lear)

Painting the bat houses (Photo by Kristen Lear)

Assembled bat houses (prior to painting) (Photo by Kristen Lear)

UGA Bat House Project

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We need bats!

- Bats help control pest insects, like mosquitos and agricultural pests.
- Bats save the U.S. agricultural industry at least $3 billion every year.

Bats need our help!

- Bat populations have been decimated by a deadly fungal disease, White-nose Syndrome.
- Bats are also losing their natural habitat due to development and agriculture.
- Bats are often feared or misunderstood.

Project Goal:
Help protect Georgia's bat species by building and installing bat houses on the University of Georgia campus and fostering public appreciation of bats.

CAMPUS SUSTAINABILITY GRANTS
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The Bat Houses

- 10 standard, 3-chamber bat houses (http://www.habitatforbats.org)
- 4 rocket boxes (Bat House Builder's Handbook)

Community Involvement

- 2 bat house building workshops
- The Wildlife Society (UGA)
- Girl Scouts

Education and Awareness

- Future education and outreach events include public bat house watching events, bat walks, school presentations, and a project website

Poster given at the UGA Semester in Review (spring 2018)