UIS Green Projects Application

Full Project Proposal- **Step 2**

To complete your Full Project Proposal, **download this word document and type all answers** to the questions below. Save your completed word document along with any supporting documentation (excel spreadsheet of budgeted itemized items, letters of support, and so on) as new files. Supporting files in Word (.docx) format should be attached to the end of this application in order to create only one Word document. Supporting files in all other formats (pdf, excel, PP) may be submitted as separate documents.

Once completed and saved to your device, return to the Green Projects website at <http://www.uis.edu/greenprojects/get-involved/>

Click the hyperlink titled, *“****Submit your completed UIS Green Project Proposal****”*

This can be found under **Step 2** of the “Submit a Green Project Proposal” section.

You will be redirected to an external WebQ. Upload your completed application along with any supporting documentation by the deadline found in the “**Timeline**” section of the Green Projects website.

**NOTE: Please do not submit this application unless you have been formally invited to do so by the UIS Green Fee Committee.**

If you have any questions regarding the application or submission process, please contact us at greenprojects@uis.edu.

**Project Name:**

**Contact Information:**

Project Team

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| --- | --- | --- | --- |
| *Name* | *UIS Student/Faculty/Staff & Department (or Office)* | *UIS Email* | *Phone #* |
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Organization/Affiliation: UIS

**Project Information:**

*Provide a brief description of the project, its goals, and the desired outcomes:*

My project is to place native bee “hotels” around the UIS campus. Most people are familiar with honeybees and bumblebees but not our native bees. Our native bees are incredible pollinators, pollinating many of our food crops and native plants alike but they are in serious danger of going extinct (Pearson, 2018). To help our native bees many people have begun setting out wooden structures called bee hotels for the bees. I believe three bee hotels around campus will be sufficient, though more would be optimal if possible. Native bees are remarkably non-aggressive and will only sting if handled roughly (Honeybee Conservancy A, 2017). Stings are very mild even when they do occur (Pavlis, n.d). The bee “hotels” are small wooden structures filled with wood or bamboo tubes of varying sizes facing outward that native bees nest inside of. These hotels will be placed in miniature bee gardens in out of the way areas around campus. These bee gardens will include pansies, bee balm, chives, borage, and native flowers to support the bees throughout the year (Honeybee Conservancy B, 2017). Native bees are disappearing in the wild need human assistance to help them survive. Native bees are more sensitive to pesticides and habitat loss than the more famous honeybee and even though the decline of the honeybee in North America has become a rallying cry for conservationists, native bees are far more important to our ecosystems and they are in much more danger (Pearson, 2018).

*How will this project improve sustainability at UIS?*

These bees will benefit the campus by pollinating our gardens around college grounds and enriching the environment outside of the campus. The bees will also provide learning opportunities for students and potential lab or lecture material for faculty, teaching students the importance of native pollinators to our ecosystems. Each bee hotel should have a small educational sign telling passerby’s that the bees are not dangerous and how the bees are good for the environment but are actually in danger of extinction. Native bees pollinate a wider variety of plants than honeybees do, and different species are more specialized than the generalist honeybee allowing them to pollinate more flowers per bee by comparison. Native bees are critical to ecological sustainability because they help prevent ecological homogenization by pollinating native plants that honeybees cannot, helping preserve native plant populations. By protecting our native bees we are helping preserve our ecosystems (Pearson, 2018).

*Please indicate how this project will involve or impact students. What role will students play in the project?*

Having native bees on campus offers the opportunity for biology and ecology classes to examine a variety of native species and learn more about the diversity of the natural world around us. Environmental Studies classes can use the hives as props for outdoor lectures on the economic value of native pollinators as an ecosystem service. Botany classes can also use the hives as the centerpiece of lectures on how different species pollinate flowers that bloom at different times of the year and how essential that is to the ecosystem. As the hives need to have the larva removed for safe storage over the winter. Brood can be stored in any cool and dry place over the winter, even in a wooden shed outdoors. Approval for storage in the biology greenhouse has been granted but other locations may also be suitable. The Biology Club has agreed to take care of brood removal and storage. Brood removal serves to protect the insects from predators, as they can survive the winter temperatures as long as they are not encased in ice (Honeybee Conservancy A. 2017). This exercise presents an opportunity for either a biology lab on measuring the amount of brood and diversity of bee species using the hives, or for student STARS projects on the same topic.

*Where will the project be located? Do you need special permissions to enact the project at this site? If so, please explain and attach a letter of support to your application. If you are not sure, let us know! We can help.*

The majority of native bees do not sting unless handled directly but to avoid any potential discomfort to students and faculty the bee hotels will be located in low traffic areas. The areas I believe will work best are on the edge of the UIS woods, between the prairie restoration and the community garden, by the old Sangamon State columns, by the new gardens by lot C, and near the UIS sign at the intersection of 11th Street and Ernest Hemingway Drive. Dr. Thomas Rothfus has also showed interest in placing native bee hotels around the various UIS field stations in addition to those on campus. The bee hotels can be placed nearly anywhere as long as they face southeast and have a small overhang to protect it from rain (Brokaw and Isaacs, 2017). The hotels should be kept away from the butterfly garden however, due to its proximity to the day care and concerns about child safety. Mr. Brian Beckman, superintendent of ground here at UIS, has officially approved the placement of bee hotels. The letter of approval has been attached to this submission.

*Other than the project team, who will hold stake in the project? Please list other individuals, groups, or departments indirectly or directly affected by this project. This includes any funding entities (immediate, future, ongoing, etc.) and any entities that will be benefiting from this project. Communication with affected departments is encouraged ahead of time. List the names of who you spoke with and their comments.*

Dr. Bapat has expressed support for the project and protecting the native bees. Dr. Johnson has stated his interest in characterizing venoms of the bees around the campus, so this project would support his research.

Dr. McEuen and Dr. Styles are also both interested in the project and looks forward to native bees pollinating the community garden as native bees have been proven to be pollinate farms and gardens just as well as they do native plants (Garibaldi et al., 2013). Dr. Ting has expressed interest in working the importance of pollinators to their ecosystems into lecture material. Dr. Thomas Rothfus has suggested also installing the bee hotels to the field stations UIS operates, and is also interested in adding content regarding native bees to his field station presentations. Dr. Lemke, the new Dean of Biology, has also put his support behind the project and recommended that the bees be could be used for urban ecology studies and thinks that identifying the species using the hives could easily be integrated into a lesson lab as a lab or an exercise.

*Have you applied for funding from the Student Green Fee previously? If so, for what project?*

I have not applied for Green Fee funding before now.

**Scope, Schedule, and Budget verification**

*Do you have a plan for project implementation? Describe the key steps of the project.*

To establish the hotels in a timely manner, post holes will need to be dug in early spring or as soon as possible, posts for the hives must be erected in the same time period. Hives will be placed in late March or early April, just before the earliest bees become active (Brokaw and Isaacs, 2017). Early blooming plants such as pansies and snowdrops will need to be purchased and planted around the post to ensure the bees are fully supported in the first season (Honeybee Conservancy B, 2017). The document Building and Managing Bee Hotels for Wild Bees by the Michigan State University Extension shows how to set up and maintain the hotels of various design in great detail; this document is attached to this submission form.

*List all budget items for which funding will be required. Include the cost for each item requested. Please be as detailed as possible, to the best of your ability. If you know where you would like to purchase materials from, please list the contact information of the retailer(s) below, along with the URL addresses to each item you will be requiring. If you need suggestions for how and where to purchase materials, please contact the Student Sustainability Projects Coordinators by email.*

I have estimated the costs of the bee hotels however I could not determine the costs of labor and certain materials. Three hotels will cost a total of $65.85 at $21.95 apiece from Gardeners Supply Company (<https://www.gardeners.com/buy/mason-bee-house/37-481.html?irecsclick>). This is the best deal I found as many either greatly overcharge for what the hotel is worth or the hives are of inferior design, being either too large for sanitation or the materials were useless for the native bees. The website did not calculate shipping on incomplete orders so I was unable to determine the shipping cost, but the website does offer free shipping on orders over $100. If more hotels are desired for placement around UIS field stations then the costs will increase as needed. I was also unable to certify the cost of the three sturdy four-foot wooden poles but in my own experience they are rarely expensive. I expect they will cost less than $40. Plant prices vary seasonally but a plant budget of $200 or less is likely to be sufficient. If reseeding plants such as borage or thistle are used then they will not need to be repurchased. The price calculator for thesignexpert.com estimates three 11”x14” signs with up to eight colors will cost $20.96 without shipping or installation costs (<https://thesignexpert.com/sign-pricing-calculators/>), though a different retailer may need to be located. Estimates from signs.com are comparable (<https://www.signs.com/>). I expect three small aluminum printed signs will cost $70 or less. Neither sign retailer website calculated shipping costs on incomplete orders. In total, I expect the full bee hotel project to cost roughly $400 for materials and labor, perhaps $450 if the hotels are also placed around UIS field stations. I expect these costs to be lower if we use in-house labor and ask for material donations from retailers or local organizations. The cost of plants in particular is a generous estimate as prices can vary greatly from year to year.

*Will this project require ongoing funding? Do you have a plan for supporting the project in order to cover replacement, operation, or renewal costs?*

This project should not require any ongoing funding. The hotels may need to be replaced in the event they are damaged or destroyed but each can be replaced for less than $22 per bee hotel.

*Every project must be publicized! Where would you like to see information about this project reported?*

It would be wonderful to have information declaring the harmlessness of the bees published in the student announcements. It would also be great to display the photographs of the bee hotels and their gardens on the UIS website after they have been installed. This same information from the announcements should also be included with the photographs on the website.

Citations:

Brokaw, J., & Isaacs, R. (2017, June). Building and managing bee hotels for wild bees. Retrieved from <https://pollinators.msu.edu/publications/building-and-managing-bee-hotels-for-wild-bees/>

Garibaldi, L. A., Steffan-Dewenter, I., Winfree, R., Aizen, M. A., Bommarco, R., Cunningham, S. A., … Klein, A. M. (2013). Wild pollinators enhance fruit set of crops regardless of honey bee abundance. Science, 339(6127), 1608–1611. doi: 10.1126/science.1230200

Honeybee Conservancy A. (2017, March 27). Get to Know Wild Bee Hotels. Retrieved October 14, 2019, from <https://thehoneybeeconservancy.org/2017/12/09/bee-hotels/>.

Honeybee Conservancy B. (2017, December 9). Grassroots gardening : 21 flowers that attract bees. Retrieved October 14, 2019, from <https://thehoneybeeconservancy.org/2017/03/27/21-flowers-that-attract-bees/>.

Macivor, J. S., & Packer, L. (2015). ‘Bee hotels’ as tools for native pollinator conservation: a premature verdict? Plos One, 10(3). doi: 10.1371/journal.pone.0122126

Pavlis, R. (n.d.). Bee hotels – do they really work? Retrieved October 14, 2019, from <https://www.gardenmyths.com/bee-hotels-really-work/>.

Pearson, G. (2018, May 9). You're worrying about the wrong bees. Retrieved October 14, 2019, from <https://www.wired.com/2015/04/youre-worrying-wrong-bees/>.