2017 NATL Minigrant Program - Application Instructions

Applications must be submitted by **November 7th, 2016** as an MS Word or PDF file attached to an email message to natl@ufl.edu, with a signed paper copy sent by campus mail to Emma Weeks, NAAC Chair, PO Box 110620, Campus Mail.

To be considered, submissions must include the **bold-faced items** indicated below, and consist of *no more* than three pages.

Designated leader of a student group

Name: Haleigh Ray
Academic classification: PhD Student
Department: Entomology and Nematology
Graduation Date: 2018
UF e-mail address: hray12@ufl.edu
Postal address: 1881 Natural Area Dr., Gainesville FL 32611
Phone number(s): 309-657-1704
Experience or training related to proposed project: My PhD project deals with the pollination ecology of native orchids in Florida. I have taken numerous graduate level entomology classes and I am interested in bees and other pollinators.

Proposers

Name: Anna Moskovitz and Grace Cope
Academic classification: Undergraduate Students
Department: Biology
Graduation Date: 2018
UF e-mail address: annamoskovitz95@ufl.edu gracecameron@ufl.edu
Postal address: 1881 Natural Area Dr., Gainesville FL 32611
Phone number(s): 267-229-4561
Experience or training related to proposed project: Anna Moskovitz has worked in the UF honey bee lab for two semesters as a student research technician. She has accomplished field and lab work that involved collecting and curating native bees and other pollinator samples. Grace Cope currently works in a retinal gene therapy lab at UF but has a desire to work in an ecological field.

Sponsor

Name: Josh Campbell
Department: Entomology and Nematology
UF e-mail address: joshuacampbell@ufl.edu
Campus-mail address: 1881 Natural Area Dr., Gainesville FL 32611
Phone number(s): 706-340-6866

Title of project: Ground-nesting bee preference among different successional habitats

Project summary- Over 300 species of native bees reside in Florida and the majority (~70%) construct nests in the ground. Despite the ecological importance of native bees, little information exists about nesting preferences of most ground-nesting species. In southeastern forests, bee abundances are known to respond positively to prescribed burning and other forest management techniques. Increased nesting sites within managed forests have been a proposed hypothesis for this trend. The Natural Area Teaching Lab (NATL) offers a unique opportunity to test whether different successional habitats and management techniques such as prescribed burning increase the number of bee nests. We will use soil emergence traps within different

forest successional habitats to determine ground nesting bee preferences. This experiment will result in a species list of ground-nesting bees in NATL and an understanding of habitat nesting preferences of these bees.

Starting date- February 2017

Completion date- May 2017 with a potential to continue data collection during summer 2017

Description of Project

Introduction and Objectives

Over 87% of all angiosperms are dependent on pollination services (primarily derived from insects) and approximately 75% of the main global food crops are dependent on insects for pollination services. In forested habitats, ground-nesting native bees are the most common pollinators. However, despite being very common, little information exists on the life histories of most ground nesting bee species. Most ground-nesting bees have small to moderate foraging ranges (Gathmann & Tscharntke 2002) and undoubtedly nest within their foraging area. Knowledge of bee nesting preferences (e.g. soil type, successional habitat, etc.) could be used by forest managers and in agricultural settings to augment native bee populations. The objective of this research would be to survey ground-nesting bees within NATL and to determine nesting preferences within different forest successional habitats.

Methods

We will use soil emergent traps (tent traps) (**Figure 1**) to capture ground-nesting bees, which have been shown to be a successful tool for monitoring ground-nesting bees (Sardiñas and Kremen 2014). Beginning February 2017, we will deploy up to 10 emergent traps within portions of the upland-pine ecosystem and old field successions. Traps will be placed at dusk and removed each morning. Traps will be active 2-4 days per week through May. Propylene glycol will be used as our trap preservative.

In addition to emergent traps, once per week we will also use sweep nets to collect bees from flowering plants within the same different successional habitats. We will make a comparison of the foraging bees with the ground-nesting bees that we collect with the emergent traps.

Figure 1. Soil emergence traps used to sample ground-nesting bees.

Impacts on NATL

NATL maintains different successional habitats which in turn drive different plant communities. The next logical step would be to document what bees visit the numerous flowering plants. The proposed project will produce a species list of foraging bees and the plants that they pollinate. Our bee species list will be compared to our ground-nesting bee data collected from the emergent traps. We believe that this research can result in a peer-reviewed article or scientific note and will provide information to the NATL committee about management practices that promote bee nesting. At the end of this project, we will produce a poster or sign that depicts the common bees of NATL. This poster/sign will be placed within NATL for educational purposes. The sign will include information on native bees and their benefits, their habitats, flowering plants that they visit, and how NATL visitors can promote habitat for the bees at their own homes.

References

Gathmann, A.; Tscharntke, T. 2002. Foraging ranges of solitary bees. Journal of Animal Ecology. 71: 757-764.

Sardiñas, H.S.; Kremen, C. 2014. Evaluating nesting microhabitat for ground-nesting bees using emergence traps. Basic and Applied Ecology. 15: 161-168.

Budget

-Soil Emergence Traps (quantity 40)- No cost- available through HBREL lab
-Replacement splints for emergence traps- $30
-Propylene glycol (1 gallon) - $45
-Ethyl alcohol and pinning supplies - $50
-Sign/poster to place within NATL- $100

Total: $225.00

Provision for periodic communication with NAAC administration
The NAAC chair will be given monthly updates on the number of bee species documented and success rates of the emergent traps. We will also periodically place photos of our field work and bees captured on the NATL Facebook page.

Signatures

Student_____ Date_____

Student_____ Date_____

Student_____ Date_____

Sponsor_____ Date_____