

Ohio Wesleyan Community Apiary: Managing Bees in the Absence of Pesticides

A Theory-to-Practice Grant by Megan Elizabeth Deeter (Class of 2017)

Part 1: Project Objectives

The primary objective of my project is to establish and maintain a campus apiary that applies the theory of pesticide-free integrated pest management studied in Entomology (ZOOL 313). In the process of establishing a student-led apiary, interested students and faculty will gain valuable hands-on experience working with bee colonies. These skills shall be acquired through a series of interactive lectures under the instruction of professional apiarist, Dave Noble. The lecture series component serves not only as an introduction to beekeeping, but also as an educational source on honey bee biology and natural history. Through the development of an apiary program, we hope to ultimately contribute to Ohio Wesleyan's sustainability mission and promote our university as a leader in applied environmental theory.

Part 2: Description

Partnered with Stratford Ecological Center, we aim to establish a student-led apiary on campus over the course of the spring semester of 2016, intertwined with an interactive lecture series to prepare students for the arrival of the hives. The apiary will be immediately managed by students, but ultimately under the control of Stratford Ecological Center so as to ensure its longevity following the graduation of the principal applicant.

Although the hives will not arrive on campus until mid April, the aforementioned lecture series begins in early January. Below is a developed itinerary for the lecture series, including the corresponding topics.

January

Lecture 1: Social and Economic Implications of the Pollination Industry

Lecture 2: Taxonomy and Distribution of Genus *Apis*

February

Lecture 3: Threats to Honey Bees

Lecture 4: Honey Bee Genetics Overview: Genetic Bottleneck

March

Lecture 5: How to Interact with Bees

April

Lecture 6: Introduction of Campus Apiary

The lecture series concludes with the unveiling of the bees, a photogenic event that initiates the establishment of the colonies within their new homes. My project, however, does not conclude here. Upon the establishment of the colonies, other students and I will be monitoring the health of the hives with weekly visits. With each visit, I will record the

location and state of the queen bees, dispersal of the honey bee workforce, the presence or absence of parasites, the internal brood temperature, and other points of interest. Although the apiary is intended to be a long-term project, the timeline concerning the Theory-to-Practice program concludes in the middle of July when the honey is harvested. I am planning on staying on campus throughout the majority of the summer in order to oversee the hives.

Having shadowed a beekeeper in the past, I believe there are few learning experiences that are as hands-on as apicultural management. The practicality of apiculture goes beyond harvesting honey. Truly, the ability to raise and maintain an entire society of eusocial insects is, in itself, a remarkable experience, one that I want to share with my fellow Bishops. Through the development of an on-campus apiary, my project promotes a better understanding of insect lifestyles through practical applications of insect management.

This concept of eusociality extends beyond the realm of my relevant coursework in entomology and wanders into other disciplines, particularly psychology and environmental studies. The growing practice of urban apiculture draws attention to global issues concerning food security, industry, grassroots movements, and bioethics. The interdisciplinary nature of apiculture can be put to good use across various academic departments.

Finally, developing an on-campus apiary furthers Ohio Wesleyan's sustainability mission. Any agricultural entity managed in the absence of pesticides is indicative of environmental commitment on an institutional level. Many liberal arts colleges across the country have already established successful, student-led apiaries. This growing interest in urban apiculture reflects not only the relevance of community apiaries, but also the realistic quality of the project. In doing so, Ohio Wesleyan would further its sustainability goals and dedication to hands-on learning.

Part 3: Evaluation, Assessment and Sharing

The project will be assessed through participant testimonials collected at the end of April and the conclusion of the project in mid-July. These testimonials shall illustrate the triumphs and challenges of community-supported apiculture. Logs detailing the state of the hives over time shall be compiled into two separate reports: a scientific account of hive health in the absence of pesticides and an editorial account of the effectiveness of community apiaries.

The unveiling of the bees will be an exciting event for OWU students and the Delaware community. I aim to help our community become more comfortable around bees. Finally, honey will be available for sale by the end of summer, an interesting and unique gift for both current Bishops, community members, and prospective students.

Part 4: Personal Statement

Part A.

My interests in apiculture blossomed over the summer when I shadowed a beekeeper and attended beekeeping association meetings while interning with the US Fish and Wildlife Service at the Trinity River Wildlife Refuge in Texas. Coping with the sudden passing of my dad this past summer, I found beekeeping to be a highly therapeutic hobby. I find that the

mental health applications of beekeeping could prove to be highly beneficial to our community. I want other students to feel this same sort of mental empowerment.

I am also excited by the possibilities of teaching local elementary and middle school students about apiculture, as my public outreach experience while working with the U.S Fish & Wildlife Service taught me that I absolutely love teaching people, especially children, about animals and the environment. I want the program to emphasize community outreach, teaching and educating the public on the importance of bees and what can be done to help local pollinators. Our future food security depends on our collective efforts to save pollinators.

My fondness for both beekeeping and insect collecting have culminated in an ambition to become an entomologist. Not only does the project provide me and my fellow students with hands-on animal husbandry experience, but it also has potential to support further research, particularly within the Zoology department. I want to produce an honor's thesis, possibly concerning hymenopteran behavior and bee colony health, so as to prepare me for a graduate program in entomology. If approved, my project will provide support for student and faculty research, hopefully, for years to come.

Part B.

As previously mentioned, I shadowed a beekeeper over the summer and attended a county-wide beekeeper's association meeting as an introduction to apiculture. Currently, I am working with a professional apiarist who has established hives throughout Delaware County. Starting in March, I plan on participating in an intensive eight month-long beekeeping class.

As part of my internship with the Fish and Wildlife Service, I became certified in General and Aquatic Pest Management. Certification required basic knowledge of common invasive species and integrated pest management, upon which the theory aspect of my grant is based.

I continue to study integrated pest management and other relevant topics in my current coursework, including Entomology (ZOOL 313) and Parasitology (ZOOL 361). Additionally, I am pursuing a minor in Botany so as to better understand the plants on which pollinator species depend.

I have also garnered great support within the OWU community, including my entomology & parasitology professor, Dr. Ramon Carreno, and Zoology Lab Director Lisa Tabak. My friend Nadya Sotnychuk and I have plans to develop a Field Biology Club, which shall continually promote and provide continual maintenance for the apiary. I have also sought out the help of additional clubs, such as Environment and Wildlife Club, Veggie Club, and other environmentally-oriented organizations, so as to advertise the developing project to potential participants.

Finally, my location for this project (area behind Monnett Garden) has been officially approved by Buildings and Grounds director Mr. Peter Schantz.

Proposed Budget - Meg Deeter

NOTE: The 4 hives AND the bees will both be provided (for free) by Stratford Ecological Center; Equipment prices based on catalogue for Mann Lake LTD, a beekeeping supply provider.				
Catalog numbers are included. Shipping is free for orders over \$100; Full bee suits are NOT necessary. Long-sleeved shirts and long pants work perfectly fine.				
<u>Object Name</u>	<u>Individual Price</u>	<u>Quantity</u>	<u>Total</u>	<u>Purpose of Item</u>
Heavy-Duty Vented Medium Cowhide Leather Gloves (CL-141)	\$ 22.95	5	\$ 114.75	Medium gloves to protect the hands while handling bees and beekeeping equipment
Large Economy Vented Gloves (CL-167)	\$ 17.95	5	\$ 89.75	Large gloves to protect the hands while handling bees and beekeeping equipment
Alexander Veil w/elastic (CL-115)	\$ 17.95	7	\$ 125.65	Provides head protection and can be used without a
Veil w/Cloth Hat & zipper (MV-	\$ 39.95	3	\$ 119.85	An alternative to the Alexander Veil; provides head
10" Grip Hive Tool (HD-586)	\$ 13.95	2	\$ 27.90	Hive tools are used to remove nails, scrape away debris and pry apart stubborn hive bodies and

Frame Lifter and Scraper (HD-620)	\$ 8.95	5	\$ 44.75	A special hive tool used to scrape away wax and
9.5" Hive Tool (HD-588)	\$ 6.95	5	\$ 34.75	Another hive tool, but without the grip; Ideal for
4" by 10" Smoker with Guard (HD-	\$ 38.95	2	\$ 77.90	A benign device used to calm bees during honey
Bee brush (HD-660)	\$ 4.95	10	\$ 49.50	A gentle-haired brush used to push away large clusters of bees while inspecting the hive
Bee Squad Varroa Mite Testing Kit (DC-100)	\$ 20.00	1	\$ 20.00	A user-friendly kit designed by University of Minnesota used to test for the presence of Varroa
Frame Perch (HD-650)	\$ 16.95	2	\$ 33.90	Allows you to hang your frames over the edge of the hive body conveniently, without knocking over other
Standard Frame Grip (HD-630)	\$ 8.95	5	\$ 44.75	A metal-grip designed to remove and hold frames during inspection
Stainless Steel Uncapping	\$ 34.95	2	\$ 69.90	A useful tool in hive inspection and honey removal
Fencing	\$ 200.00	1	\$ 200.00	To block pedestrian traffic
Equipment total			\$ 1,053.35	
Stipend to Stratford Ecological Center (for Dave Noble Apiculture Lectures)			\$ 600.00	Considering that Stratford's donation of the hives AND the bees have already saved us around \$1,000, a stipend compensating the facility for their time and resources spent on the lecture series is entirely justified.
5% contingency for budget			\$ 82.67	
Grand Tot			\$ 1,736.02	