

BEE YET

The Next Generation

Dr. Tracy Farone



Strong positive mentorship is of critical importance in so many fields and beekeeping is no exception. For those of you who have served as mentors for others, this one is for you. This month, I am stepping aside to allow my research team to describe their experience in beekeeping science, and research. Four of my students are seniors, so it is appropriate that this article prints in May, the month they graduate. They are all moving on to careers



Kat Bailey and Deidra Ressler chilling in the bee shed.

in health care, public health and conservation and will be leaders in our future. Over the last two years, these four ladies have helped me start a program from the dirt and even became mentors for new students along the way.

The following is by Maura Ashley, Alliefair Scalise, Deidra Ressler, Katerina Bailey, Sydney Hanson, and Abigail Treusch – Young Women in Beekeeping Science

The Oliver Apiary was founded at Grove City College in the Fall of 2019. Like many apiaries, we have hives surrounded by several gardens brimming with pollinator friendly plants. Unlike some other apiaries, however, our apiary is managed by our professor (Dr. Tracy Farone, DVM) and biology research students, all who happen to be women. In a profession where women are not as prevalent, stepping into this field has been exciting and empowering to our work as biologists, and has provided us with many new opportunities to grow as young women beekeepers.

We have learned the ins and outs of beekeeping through detailed training and study of bee biology, bee ecology, bee pathology, and beekeeping techniques. Of course, this was not just an academic endeavor. Before we acquired bees of our own, we were welcomed into other apiaries to observe and participate in honey harvests and hive inspections, learning from experienced members of the trade. We accumulated many hours of field experience, getting our hands in hives and developing our apiary sensibilities. From catching swarms, to harvesting the Fall nectar flow, to administering medical treatments against *Varroa*, we have enjoyed many experiences within our own thriving apiary.

Project Start:

Our building project began late in the Summer of 2019 behind one of the parking lots on our campus, non-affectionately called “Siberia”. At first glance, this area had little to offer. Surrounded by uncut grass, weeds, and the occasional plastic bag, we certainly had our work cut out for us. However, upon further investigation, we realized that the grassy patch would later make a great clearing for our hives. Fortuitously, the wildflowers surrounding the 30-

acre site were goldenrod with many other great pollinator friendly plants and trees. We cleared out invasive weeds, transferred gravel to create a sound foundation for the hives, and planted flowers, bushes, and trees throughout the area. After putting in long hours, in the Spring of 2020 our apiary was finally ready to welcome our new hives. These hives produced a Fall flow that was collected, bottled, and distributed on campus. The goal of this project is to raise awareness to the important role pollinators play in our everyday lives and to familiarize people with the biology of honey bees. By heading up this project on campus, we hope to encourage more young people, especially young women, to explore new fields in science that may traditionally be male dominated (1). While we very much appreciate the wisdom of older experienced beekeepers, promoting interest in our generation will help sustain the profession for years to come.

Community Outreach Projects from Alliefair Scalise

One of the most important aspects of our project has been raising community awareness on honey bee health, beekeeping techniques, and common misconceptions regarding honey bees. Through creating educational resources for these topics, I have been able to deepen my understanding for beekeepers and extend this knowledge to the college community. The most important aspect of beekeeping is that of medical care. As bees face increasing adversity, medical attention becomes even more critical. I have developed resources to educate about a variety of diseases, such as American Foulbrood, and *Varroa* mites. These brochures include brief overviews of the main aspects of various pathogens as well as prevention tips and techniques. I also created the informational sign at the entrance to our apiary; this sign provides visitors with knowledge concerning the purpose of our project, what an apiary is, and the importance of bee medicine and pollinators. Another major aspect of our project has been creating a website to facilitate online learning and spread our findings even farther. Our website can be found at gccbeepoint.com and contains resources pertaining to taking online

beekeeping courses, finding local bee veterinarians, and providing more education on common diseases and preventative measures that can be taken. We also periodically write blog posts on our experiences or beekeeping topics that interest us, such as informational articles on propolis, swarms, and biosecurity.

Garden Development and Artistry with Maura Ashley

When I joined the bee research team in the Fall of 2019, I had precious little experience with beekeeping. However, I had worked for many years as a gardener and had always been fascinated by the relationship between plants and pollinators. I was excited to bring my knowledge of plants to the project as we developed the grounds of the apiary. Through collaboration with a botany professor, we performed a site characterization of dominant species of plants in the back 10 acres surrounding the apiary. Using this information about the existing flora and creating a holistic plan for additional plantings directly surrounding the bee yard, I secured our status as a “Pollinator Friendly Garden” through the Master Gardener program at Penn State. Of course, horticulture is a dynamic and continual endeavor, and so I continue work as a garden manager to expand our gardens and organize year-round nutrition for both our bees and native pollinator species.

Yet, on a project like ours, we each wear many hats. It is important as a beekeeper to be both a scientist and an artist. As a scientist, I have delved into the ecology of bees and written several articles for our blog about the relationships between bees



New pollinator friendly plantings.

and plants. From advice on starting your own pollinator garden, to where propolis comes from, I have enjoyed sharing my love of the bee-to-plant ecology. On the more artistic side, I have done everything from designing a label for our honey jars (Figure 1) to deciding what flowers will look best in our gardens. Throughout all my activity in and outside of the beeyard, beekeeping has proved to be an exhilarating new challenge and adventure every day.

Apiary Management and Collaborative Research from Katerina Bailey

Joining this research team, I had a basic understanding of beekeeping. I had helped my father with beehives in our backyard, but I soon realized all the things that I still needed to learn about being a proper beekeeper. Most of my contribution has been through the general management

of the beeyard. I have been writing inspection logs since we installed our hives last Summer, and I have found keeping track of what we have been doing extremely helpful. I was amazed this Summer how fast you can forget what happened during your inspection two weeks earlier, especially the more hives you get.

I have also overseen managing our involvement in two mega-studies through the Penn State Center for Pollinator Research: Beescape and Landscape4Bees. Beescape looks to gain information on how landscape affects bee health, while Landscape4Bees uses an innovative technology called Broodminder to track colony health through weight and temperature. We were able to install the Broodminder scales in June of 2020, seeing how our hives’ weight fluctuates throughout the seasons has helped us visualize how dynamic a bee colony really is.

Figure 1. Label for our honey.



Grove City College houses a research and teaching apiary. This honey is produced by our hives.

Our goals are to promote pollinator health through stewardship, research, and community education.



Kat and Deidra at the entrance of the new apiary.

This research team has helped me grow in so many ways and given me opportunities I would have never guessed I would have. For example, these past couple of months I have been able to help Dr. Farone write for Elsevier on registered medications in beekeeping. I was able to help research medications and then organize them into tables that will hopefully help veterinarians better understand beekeeping. Being on this research team and helping with our teaching apiary has given me a lifelong passion for beekeeping that I do not think I will be able to shake anytime soon.

Project Imaging and Education by Deidra Ressler:

When I began to participate on the research team in the fall of 2019, I had never worked with bees before, so my beginning experiences on the team involved large amounts of education regarding beekeeping, anatomy, ecology, and other topics. My initial excitement about the project largely tied in with my interest in public



New apiary entrance.

health, and it was interesting to make connections between honey bees and health. Since there are so many diseases that affect bees, I was fascinated that there were options for treatment and management of disease in these insects. Additionally, they are considered sentinels for environmental quality, and this information inspired me to write blogs on the project’s website about beekeeping in Latin America and how Spotted Lanternflies may affect honey.

I began taking pictures for our outreach endeavors and as an individual project for the team. Along the way, I have used my camera and various microscopes, ranging from a light microscope to a scanning electron microscope, to capture some of the anatomical features, pests, and plants that bees are involved with. I was able to build upon my academic foundation visually, and I had the opportunity to physically experience some of what a beekeeper does to care for their hives. Of course, that involved getting stung and witnessing the occasional swarm, but I have gained an immense appreciation for honey bees throughout my time on the team. Since the Summer, I have used my images in blogs and a research poster, and I will be publishing a short book with some of my compiled images as an educational resource for the community. Some of my images have also been published elsewhere, and I am excited to know that I can help others learn about honey bees through my photos.

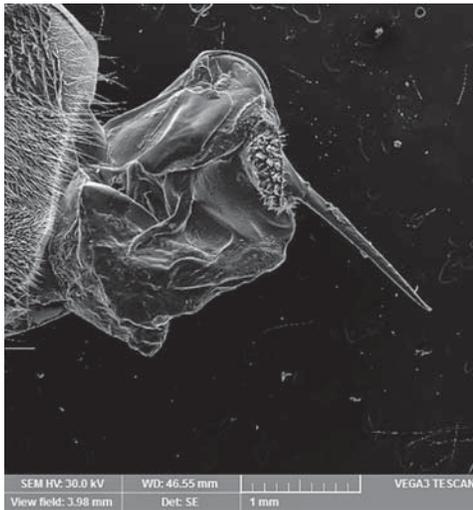
Thoughts From the “New bees” by Abigail Treusch

As a sophomore, pre-med biology major and the newest addition to the team, it may appear a bit odd to the outsider why I would choose

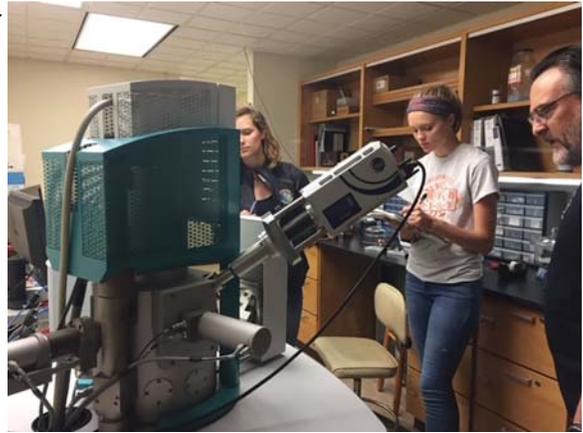
to get involved with apicultural studies rather than research directly involving the human body. To me, the reasoning for this decision is obvious. As we all know, honey bees play a vital role in maintaining the ecosystem and in the production of crops, and in turn, the importance of maintaining the health of the honey bee population cannot be stressed enough. The “Bee Project” here at Grove City College not only investigates health concerns of the bees but has an added focus on teaching the community about pollinator health. My decision to apply for this research position was largely driven by the all-encompassing nature of apicultural studies. In the short months, that I have been involved with this project thus far, I have learned about bee anatomy and physiology, the role of bees in the environment, bee health, and the basic practices of keeping bees, to name a few. With the warming of the weather, the coming weeks will see hands-on time spent out in the apiary to visualize and put into practice all that I have learned during the cold Winter months. Additionally, I will be spending my Summer months here on Grove City’s campus, tending the hives and conducting some research of my own, adding to the ever-growing list of projects within this overarching “Bee Project.” I am enjoying the quietness of the time now, spent inside learning about how to best care for our little research subjects, but with the nearing of springtime, so grows my excitement about seeing those busy bees in action!

Ideas from a Budding Member by Sydney Hanson

While I have not been on this project for long, bees have held some fascination to me for quite a while. I am a sophomore biology major, and for as long as I can remember my love of the sciences has heavily involved animals and bugs. Many years ago, my mom had a few small honey beehives. From that point on, I have had a quiet appreciation for the bees, and have wanted to learn more about them. Eventually I hope to be able to pursue veterinary medicine, perhaps using the valuable information I will learn in the next few years to bring more veterinarians closer to beekeepers. Alongside Abby, I have been learning about bees and



In the SEM lab.



Smashed bee stinger.

their interactions both with each other and with the world around them. Quite frankly it is astounding the way these small creatures work together and even their individualistic behaviors and biology. I cannot wait till the weather warms up and I get to spend more hands-on time with the bees and learn more “real life” application of what we are learning in the classroom right now!

Generational Involvement

One of the most eye-opening experiences during our time of studying to be beekeepers was visiting a local chapter of a beekeeping club. As college students, we were the youngest in attendance by over a decade. Even so, as we have gotten more involved with national and local communities of apiary-enthusiasts, we have observed how beekeeping as an industry, a hobby, and a science connects people of all ages and backgrounds in a community. As public attention increasingly turns towards bees and beekeeping, the younger generation of beekeepers will hopefully continue to benefit from the traditions and knowledge of the older generations of beekeepers that have experienced the rhythms of bees’ lives for many decades.

Moving forward, we will continue to utilize our apiary as an opportunity to reach and create communities that appreciate and support the ecology of bees. We are excited to bring in future generations of beekeepers and to pass on our love of bees. **BC**

Kat and Deidra among the hives.



Four seniors in the beeyard – Alliefair, Maura, Deidra and Kat.

Touring Ernst Seed Company.



Reference

1. Colopy, Michele. *Women In Beekeeping*. Bee Culture -. 20 Nov. 2015. Web. 04 Mar. 2021.