

# Wolfpack's Waggle

## NC State Apiculture Program Newsletter

Dedicated to the dissemination of information and understanding of honey bee biology and management

Issue 3 | Jul 2022

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### What have we been up to?

As usual, it has been a very busy summer. Jennifer and Sharon have been spending a lot of time in the field on our big field project, spearheaded by Brad in collaboration with our colleagues at UNCG, on the effects of antibiotics on reproductive quality of queens and drones. Megan has also been testing these same colonies for mites and viruses, which will be valuable data for the overall analysis. Ali has continued with her work as well, in between trips and awards, and Rodrigo has been getting his cell cultures up and running. Cammie has done a great job in running pathogen screens on our longitudinal study on viruses, and both she and Megan are presenting posters on their results. We are in the final stages of rehiring our Genetics Technician position recently vacated by Dina because of a family health emergency, so we look forward to having them on board soon.



### Check out our 'Intermediate' BEES Academy

We're reviving our extremely popular 'Intermediate' BEES Academy this fall. Designed for beekeepers at all levels who need a "booster shot" to their introductory bee school, this 2-day intensive training is a perfect opportunity to take your beekeeping to the next level.





**HONEY BEE QUEEN AND DISEASE CLINIC** | BETTER DATA  
BETTER BEES

### Quality Assurance

**Morphometric Analyses:** multiple measures of queen or drone, body and reproductive tract (rearing quality)

**Semen Quality:** total sperm count, and sperm viability in queens (mating success), or drones (mating potential)

**Quality Report:** a "grade" report of a queen or drone's reproductive quality for your quick interpretation



### Strong Research Foundations

Established as a natural extension service leveraging basic and field honey bee research at NC State, the clinic has worked to improve colony health for over 10 years.

### Troubleshooting

**Mitotyping for Africanization:** genetic analyses of maternal ancestry as African or European using population genetic techniques and markers

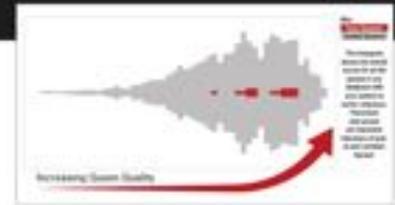
**Pathogen Screening:** identification of presence and relative levels of ABPV, BQCV, DWV(A&B), IAPV, LSV, Trypanosomes, and both Nosema species. Additional and custom pathogen targets available upon request.

**Genotyping Analyses:** full assessment of paternity for up to 48 workers and an estimate of queen mating frequency

### Custom Collaboration

This highly-tailored collaboration involves custom experimental design, analyses, and interpretation. This unique partnership between science and industry has been utilized to:

- Test the impact of various agrochemicals
- Assess the effects of banking on queen quality measures
- Evaluate novel management practices' improvements in queen mating quality
- Observe the effects of shipping on queen health and sperm quality



### Queen and Disease Clinic Pricing

Five Sample Minimum • Bulk Pricing Available

ANALYSIS	PRICING (per sample)	SAMPLES TESTED		
		QUEENS	DRONES	COLONIES
Reproductive Quality	\$24.00	✓	✓	
Standard Pathogen Screen	\$55.00	✓	✓	✓
Apiary Pathogen Screen	*\$220.00	NEW TO IN-COUNTRY PRODUCE		
Mitotyping (Africanization)	\$35.00	✓	✓	✓
Genotyping (Mating Number)	\$120.00			✓

### Custom Disease Screening

Additional and custom pathogen targets available upon request.

### Your Bees • Your Data

Any results or interpretations from our work is held in the strictest confidentiality and anonymity

## Lab Spotlight: 2022 BeeMORE students

We were lucky enough to resume our annual BeeMORE project, which is a USDA-funded experience for undergraduate research. This year we have **Megan Phung** (Methodist University), **Cammie Murray** (Penn State), and **Cynthia Reagan** (Durham Tech). All joined our lab for 9 weeks this summer working on various projects involving bees and microbes (the intent of the BeeMORE grant). They were part of a cohort of 12 this year, with the others working in various other labs in the Department of Applied Ecology and other programs. Each will end their summer with poster presentations at the NC State Undergraduate Research Symposium, and we have really enjoyed having them in our lab even though it was all too short.



## 2022 'Intermediate' BEES Academy

It is with great delight that we are continuing our 'Intermediate' BEES Academy in 2022 set for September 16-17 in Pittsboro, NC. Please forward to anyone who you think may be interested in this beekeeper training opportunity.



Are you a beekeeper with a number of years of experience who wants to increase your understanding of bees and improve your practices? Do you feel like you might need a “booster shot” to update what you learned in your beginner bee school? Wish there was an opportunity to reinforce your experience to maximize your beekeeping success?

If you answered yes to any of these questions, set aside two full days and immerse yourself in theoretical and practical aspects of beekeeping at our latest BEES Academy. During live and pre-taped videos from the Beekeeper Education & Engagement System (BEES), Dr. David Tarpy, other members of the NC State Apiculture Program, and CES instructors will help you build upon your current knowledge of beekeeping by exploring topics including:

- Honey bee anatomy
- Division of labor & bee behavior
- Queens, drones, and mating
- Diseases, parasites, and disorders
- Varroa Integrated Pest Management
- Advanced management techniques
- Africanized honey bees
- Bee plants

Each presentation is roughly 30-60 minutes and

will be followed by a short Q&A discussion period. On the second day, you will have the opportunity to practice and observe important areas associated with bee management, such as: Stinging Insects, Tools of the Trade, Diseases under the microscope, Monitoring for varroa mites, Nutrition and supplemental feeding.

Our next BEES Academy will be held Friday September 16th through Saturday September 17th at the Chatham County Agriculture Center in Pittsboro, NC. Space is limited, so be sure to register early!

Further information and links to online registration through the NC State REPORTER system can be found at:

<https://www.ncsuapiculture.net/bees-academy-home>



2019 BEES Academy  
Chatham County Extension Center  
September, 2019



## BEES Academy (Continued)



## Current Lab Members

**David Tarpy** - Professor and Extension Apiculturist  
 919-515-1660  
[david\\_tarpy@ncsu.edu](mailto:david_tarpy@ncsu.edu)

**Jennifer Keller** - Apiculture Technician  
[jjkeller@ncsu.edu](mailto:jjkeller@ncsu.edu)

**(Open position)** - Genetics Technician  
 919-513-3967

**Sharon Munger** - Project Manager  
 919-513-3967  
[swmunger@ncsu.edu](mailto:swmunger@ncsu.edu)

**Brad Metz** – NC State Research Associate  
**Alison McAfee** – L’Oreal Postdoctoral Fellow (UBC)  
**Rodrigo Santos** – Visiting Research Scientist

**Undergraduate Researchers**  
 Glenn Cameron (Meredith)  
 Matthew Shaw (UNC)  
 Megan Phung (BeeMORE intern)  
 Cameron Murray (BeeMORE intern)  
 Cynthia Reagan (BeeMORE intern)

## Support the NC State Apiculture Program!

*The Apiculture Science fund-raising efforts operate under the auspices of the North Carolina Agricultural Foundation, Inc. a 501(c)3 organization. You will receive an official receipt for your donation.*

### A Gift Toward Emerging Needs

Consider supporting the program with a gift that would go toward the current area of greatest importance. Flexible funding enables the Apiculture Program to address critical needs as they emerge, often enhancing the program beyond what would be possible through restricted grant funding. Funding of any amount, from \$10 to \$10,000, will be extremely helpful.

### Gift-In-Kind

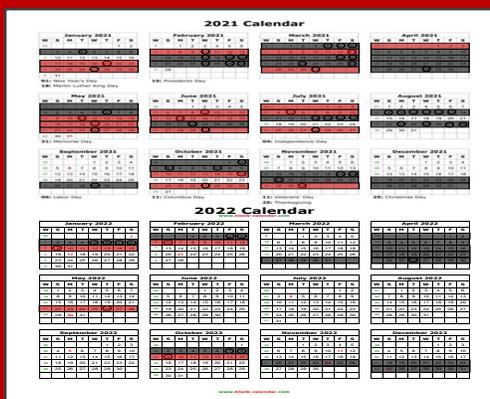
The Apiculture program is always seeking creative solutions to its material needs. If you have surplus equipment or other non-monetary assets to give (e.g., gently used honey extractors, microscopes, even vehicles), please consider donating them to the program. You will receive credit for the monetary value of the gift and the gratitude of our faculty and students.

### Estate Gift

If you are interested in planning an estate gift to benefit Apiculture, please let us know! We can provide you with the tools you and your attorney will need to ensure that your wishes are fulfilled. Please go to our website for more information: [www.ncsuapiculture.net](http://www.ncsuapiculture.net)

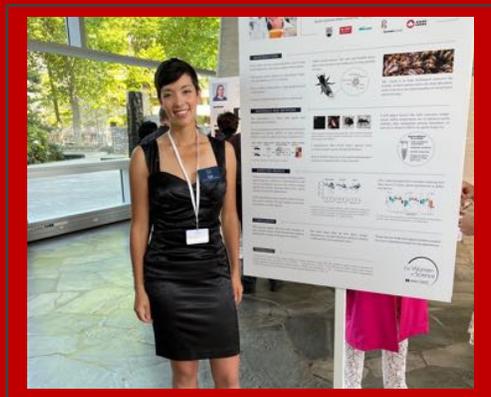
[go.ncsu.edu/apiculture](http://go.ncsu.edu/apiculture)





## Speaking requests

While our lab group is smaller than it has been in years past, with students graduating and fewer postdocs at the present time, we still have opened up our online speakers request form for the 2023 calendar year. With well over 20 presentations given in 2022, be sure to book us early!



## Congratulations Ali!

**Alison McAfee**, a L’Oreal Postdoctoral Fellow in our lab but located in Vancouver Canada, was recently invited to Paris France as one of only 15 recipients of the International Rising Talents Fellowship for women scientists. This is a true honor and extremely well deserved for her ground-breaking work in honey bee reproductive biology.

<https://www.fondationloreal.com/our-programs-women-science/international-rising-talents>

## Random Notes

### New Publications

Levenson, H. L. and D. R. Tarpy. (2022). Effects of planted pollinator habitat on pathogen prevalence and interspecific detection between bee species. *Scientific Reports*, **12**:7806.

### Presentations

David Tarpy has given recent webinars to the Haywood County Beekeepers, Montgomery County Beekeepers Association (PA), and the Southern Adirondack Beekeeping Association (NY). We are also particularly grateful to the Chatham County Beekeepers for allowing all of the BeeMORE students to give in-person lightening talks on their respective research projects. This was invaluable practice for them to communicate their science to a public audience, and the beekeepers were very accommodating to the 12 students who attended their first-ever extension meeting.

### Welcome aboard!

In addition to the BeeMORE students (see above), we have been joined in the lab by Dr. Rodrigo Santos as a visiting scientist. The spouse of former-postdoc Daiana De Souza, they moved back into the area after she got a job with BASF in Research Triangle Park. Rodrigo is a true virologist, studying systems such as Ebola and other human diseases. He wanted to work on viral systems in honey bees, so we secured some funding from NAPPC to conduct some novel cell-culture research to better understand Deformed Wing Virus and other bee pathogens. We’re just getting started on the project but look forward to making some important insights!

### ...and sadly missed

Regrettably, **Dina Espinoza-Rivera** had to unexpectedly leave the program after only 6 months because of a family medical emergency. We appreciate her time in the lab and wish her family well going forward. We are also sad to see a couple of undergraduate in our program leave for new positions. **Morgan Risko** and **Kaitlyn Sage** were both with us for multiple semesters. Morgan was our media intern and did a fantastic job covering our FaceBook page (including doing a weekly “Tuesday trivia” post) and upgrading our email listserv to MailChimp. Because of her work with us, she was able to get an internship in social media marketing. Kaitlyn got her first choice of vet schools (Cornell) and has moved back to upstate NY to pursue her advanced degree. She was a tremendous help at the lab bench and did really great work on our projects investigating pathogen webs within colonies.



## Teacher's Corner: Courses at NC State

Because of our move to the Department of Applied Ecology (see below), we are gearing up to offer AEC 203 "An Introduction to the Honey Bee and Beekeeping" for the very first time. This rebranding of our previous 200-level course will become part of the new Applied Ecology undergraduate major. In doing so, we will be making some significant updates to the delivery mechanics and logistics but otherwise the philosophy and learning objectives will remain the same. The course filled up quickly with a long waiting list, so we are glad to replicate our past success and interest!



<https://www.ncsuapiculture.net/instruction>

## Tarpy's Back Page

We have been making steady progress concerning the construction of the new field research and extension facility. Earlier this spring the Facilities Division at NC State made a short list of three architectural teams from the nine that were submitted for live interviews. From those interviews, the top choice was selected. Thus we are happy to be working with biloba architecture out of Charlotte. The design phase should last about 1 year based on the size and scope of the project.



Apiculture Program

