"The trouble with experiments is that they have a knack for demolishing good ideas. Aristotle was full of good ideas. In fact, his ideas about the natural world were so reasonable that they held unquestioned authority for over a millennium until the so-called enlightenment of the 17th and 18th centuries engendered investigative methods that mitigate against bias and presupposition. From this point on, arm-chair science was doomed, and many a brilliant idea has since been ship-wrecked by the unforgiving objectivity of the scientific method."

– Jennifer Berry

I think many of us wish we could play with bees all day and get paid for it. My friend Jennifer Keller gets to do that! She runs the dayto-day beekeeping operations at NC State University's apiculture research lab. So not only does she get paid for doing what she loves, she has a state pension plan! I asked her to give us a glimpse of what that that life is like. Surely it can't be as cool as it sounds... or can it?

How did you become interested in beekeeping?

JK: I have always found bees interesting but never really thought about being a beekeeper until I was in the Peace Corps in 1993-96. I was in Paraguay which has Africanized bees, but I was new to beekeeping so I didn't know the difference. It was there I learned beekeeping. My assignment was forestry but beekeeping was much more interesting to both me and the people in the community where I lived. Honey was a very valuable commodity and it was not uncommon for people to steal honey at night out of the neighbors' trees. I learned while teaching others that they could keep bees in boxes, harvest the honey and still keep the bees so they could have them for the next season. It was a great experience.

How did you come to work for the bee lab?

JK: After returning to the US and asking around about getting started with bees, I was introduced to Dr. John Ambrose at NC State and things fell into place from there. I entered grad



Jennifer Keller inspects a brood frame in a NCSU bee yard. This photo was taken on February 20th. Wouldn't you like for <u>your</u> colonies to be this large and healthy in mid February? Photo courtesy of Jennifer Keller.

school where I completed a MS in Entomology. I was a recent graduate when Dr. David Tarpy was hired. He was going to need a technician and I just happened to be in the right place at the right time and was hired in 2003.

What experiences and training prepared you for your current job?

JK: Many years as a hobbyist beekeeper allowed me to be comfortable working with bees. I experienced many of the ups and downs that every beekeeper encounters. As we all know, nothing goes as planned, and those experiences gave me a better understanding of how to manage bees in order to have hives ready for research purposes. Graduate school was extremely valuable in helping me to understand the importance of setting up projects in such a manner as to remove as many questions and doubts as possible. Working with bees means there are always going to be variable factors at any given time, so it is important to control and keep constant as many things as possible.

What goes on at the bee lab?

JK: The bee lab is where most of the research involving live bees happens. (The genetics lab on campus is where the bees go when they are no longer living.) If graduate students or post-doctoral researchers have research projects that involve living bees, then I am usually responsible for making sure they have the bees they need in order to get their project completed. This means getting as many hives as possible through the winter, building them up quickly in the spring so they are healthy and have populous colonies ready for whatever experiment we have lined up.

Every summer we do queen rearing so I am constantly juggling colonies around between setting up cell builders, making splits to house the new queens and recombining any queenless units. Research takes its toll on the bees and at the end of the summer I am left with many weak, underfed colonies that I then have to try to get through the winter to start the whole process over again. At the height of the summer we have 150 to 200 hives spread out in different yards around Raleigh.

What are some research projects that you've found particularly interesting?

JK: Some of the more interesting studies to me have involved queen mating. We have 100 mating nucs in a row around the back yard. We raise gueen cells and place one cell in each nuc. We can put gueen excluders on the entrances so that we can control when the queens leave and then we can make our observations. One summer we walked around the back yard, going from nuc to nuc, waiting for queens to make mating flights. We would release her then start the clock. We would then continue to walk around the nucs looking for others trying to take off and waiting for the first ones to return. Once the gueen returned we could determine if she had mated and how long she had been gone. The same thing happened the next day. Sometimes the same queen would go out several days in a row, others only once. What I learned from this is that the textbooks should not be taken at their word.

What does a typical workday look like?

JK: There is no such thing as a typical day. No two days are alike which is good because it never gets boring.

Spring is my favorite time of year although it is also my busiest. It seems to be non-stop from early morning to late evening. Feeding bees, raising queens, making splits to deter swarming and increase our colony numbers, assisting students with their projects, building new equipment and cleaning up old equipment are all part of my routine.

In the fall I combine hives, treat for mites and feed to try to get as many colonies as possible through the winter so we can have a good start next spring.

The majority of what I do is general beekeeping but there are usually many projects going on at once so it is a matter of figuring out what gets priority that day. Some things need to be done on a certain day such as putting ripe queen cells into mating nucs or grafting the next round of queens so they will be ready by a certain date.

What special challenges do you face working at the lab?

JK: My challenges are often the unknown factors such as weather, queen/bee survival and overwintering success. It is often hard to plan exact numbers when setting up experiments because inevitably something will go wrong. It may be cold for a week after grafting a round of queens so I can only cross my fingers and hope the queens will emerge. It is hard to plan when projects will actually get started in the spring because some years there are drones in February and the hives are ready to pop in March because they are so full. Other years in April I am still waiting for the warm weather. But once things get started it seems that everything happens at once and then it is a juggling act.

Making sure that students have all the resources they need is another challenge. It seems no matter how well I plan, something will go wrong and then we quickly move to plan B. Queens die, bad weather hits and queen cells don't emerge, hives swarm or other problems arise and then we have to figure out how to replace that piece of the experiment.

Do you have any "oh my goodness!" stories you can share?

JK: Probably my best known story is when I had to rescue a sheriff's deputy who was stuck in his bee-covered car. A truck broke down overnight on US 264 with a load of bees on the back. A deputy stopped to help out. Eventually the truck was fixed and took off but it wasn't until after daybreak so the bees had started to fly. When the bees returned to where the truck had been, all that was left was the police car so they all landed on that. I had never seen anything like that before. [Note: This story went viral and was picked up by CNN, the BBC and other media outlets around the world. The WRAL video, which includes a brief interview with Jennifer, is <<u>here</u>>.]

What can a regular hobby beekeeper learn from your experiences?

JK: I always suggest that beekeepers assist other beekeepers with their hives. The more hives and bees you see, the more opportunity there is to see something you haven't seen before. I also like to recommend having more than just a couple of hives if it is possible. The more hives one has, the less important each individual hive is and the more one can experiment without worrying about losing everything.

You've done international outreach with respect to beekeeping... please tell us about that.

JK: I've been able to travel to Bolivia twice with Don Hopkins through a program called Farmer to Farmer. Don had been involved with this organization for 10 years and made at least one trip each year so he had developed a good relationship with the beekeeping community there. I enjoyed this experience because it was so different than anything here in the US. We definitely take for granted all the wonderful resources we have here and how easy everything is for us.

In Bolivia it was not uncommon to have to walk over a mile through fields to find the hives. Luckily for us it was early spring before the honey flow and the equipment was still light. At harvest time, this is the same way full supers would be carried out for extracting. Beekeepers worked hard to produce a good product and they were extremely proud of their efforts.

You visit lots of clubs and beekeepers... what could we do better?

JK: Many counties of NC have their own beekeeping club and these are a great resource for beekeepers. But many beekeepers belong to their local club and get all the information they ever use from that one club and never go outside their own county. There are so many good county programs that really should be shared with a wider audience. I would encourage people to attend meetings of other county groups to get ideas and discuss other techniques. Sharing ideas and methods can make all of us better beekeepers.

I also encourage people to attend the two annual <u>NCSBA meetings</u> for this reason. You will hear about more than just what happens in your county and perhaps find a new way of doing things.

What do you like best about your life with respect to beekeeping?

JK: What I like best is that it is never boring and you never learn it all. The bees always seem to find a way to do something unexpected. As hard as I try to be proactive and stay one step ahead of them, I often find myself reacting instead.

What do I like the least? I never finish! There is always more to do.

Randall Austin is a NC Master Beekeeper who keeps a few honey bee hives in northern Orange County, NC. He can be reached at <u>s.randall.austin@gmail.com</u>.

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