

The

DANGEROUS OF BEEKEEPING

Side

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While in grad school, and still a very inexperienced beekeeper, our lab was investigating the effects of certain IPM strategies (hygienic queens, bottom screens and isolated apiaries) on *Varroa* mite levels. The colonies used in the study were located in the Georgia Mountains, about two hours north of the bee lab. It was July and time to test the colonies for hygienic behavior. Once the truck was packed with all the essential items, I began the trek northward. Usually, several lab folks were available to help in the data collection but, that particular day, I was flying solo.

The colonies scheduled for testing were situated on the side of a mountain, smack-dab in the middle of a cow field. I was truly heading into the backwoods of North Georgia and what a chore it was to get there. After turning off the major highway, I traveled onto one dirt road after another, traversing around a mountain, over a creek, across a cattle guard, through a field, and finally, up a hill. Plus this was in the day when cell phones were still a rarity and not the norm. I know crazy!

After several hours of negotiating the back-roads, I finally arrived at the locale. However, my sense of relief quickly faded when I saw the condition of the access road leading to the colonies. The two inches of rain which fell the night before, made the road practically impassable. Plus, the intervening yard was home to some 30 or so cows, which were all standing behind the gate looking at me. No way was this truck going up that mountain. This is a fine time to realize that I should've packed lighter!

While reorganizing for the long haul up the mountain, I kept hearing the strangest noises. One sounded like something scratching on metal while another was

a weird swooshing sound. As I scanned the area around me, I could not detect the source of the sound. The cows were still to my left, staring at me (kinda creepy), and, on the other side of the road there was a field with a herd of goats. These were not your average, run of the mill, plain white goats either, but an array of all sorts. There were big ones, small ones, and even smaller ones. Some had straight horns, while others had curly horns. There were solid colored, multi-colored, short haired and long haired goats. They seemed just as curious of my presence as the cows since they too were lined along their fence just staring at me (kinda creepy). Other than the cows and goats, there was an old barn, some trees scattered about, the deserted dirt road, and the UGA state truck; I saw nothing moving. "Hello," I called out several times, but there was no response, only those noises.

Getting nervous, I hastily lit the ⇒



smoker, finished stuffing my backpack, grabbed the canister of liquid nitrogen (part of the experiment) and headed for the gate. As I came around the truck, a sudden eruption of sound and movement shook me! Hundreds of turkey vultures (Ok. "Hundreds" might be a slight exaggeration.) took flight from their perch atop the old barn and tree. The bedlam made me stop dead in my tracks. A horde of turkey vultures is not what you want to see while standing on an isolated dirt road, in the middle of nowhere, all by yourself, without a cell phone. Plus these birds are huge with bright red heads and six-foot wingspans. To see that many, all together, flying by my head and looking at me was more than just creepy, it was frightening. The noises that I had heard earlier were their sharp claws scraping the tin roof of the old barn and their wings flapping to maintain balance.

I slowly turned my back on the scene of pending doom and headed for the gate. Carefully I pushed aside the cows and entered the field. The cows immediately encircled me, nudged me with their noses, and gazed relentlessly. I tried shooing them away and even yelled, "What do you want? I am not a bale of hay. Go away!!!!" But they stayed with me like white on rice.

Farther along my way to the colonies, I didn't notice the huge mud pit until I began to sink. Both feet quickly became stuck. Putting down all of my equipment and bending to wrench myself loose was not an option given my apprehension with all the annoying livestock surrounding me. Finally, I was able to pull free, but lost a shoe in the process.

By the time I had lugged my semi-shoeless self and my equipment to the apiary, I began to feel the heat and humidity of that July day. Fortunately, the colonies were behind an electric fence so at least I could escape wet bovine noses, but, unfortunately, they were in the full sun. Once behind the skinny metal wires, data needed to be collected on 24 colonies and the day was wasting away, so to beekeeping I went. The bees were not particularly happy since the nectar flow had ceased leaving the older field bees with nothing to do, except defend their hard-earned stores from intruders like myself. As the day wore on, the heat was becoming unbearable. I became more frustrated working with just one shoe. Plus, I had only brought one bottle of water, which had been quickly consumed before 10 AM. I was unwilling to entertain the idea of trekking back to the truck, through the cows, the mud, and vultures to drive the 20 miles back into town for a drink since it would cause an additional trip the next day.

Despite my best intentions, I soon noticed that I was having difficulty seeing eggs, and my eyes weren't focusing. Shortly thereafter, I could feel my heart beat starting to race and pounding in my temples. My hands were also noticeably shaking. Thinking it had to do with being hungry, I kept going. Then, it hit me. Little stars started from the periphery of my vision and moved slowly towards the center of my line of site. The next thing I knew I was on the ground and the sun was blazing down on me. Moments later when I collected my thoughts, I realized that shade had to be found. Looking around, I saw that the only shade available was a small patch at the top corner of the field. The cows, which also needed shade, had already inhabited the entire space. I didn't care. I crawled under the electric fence and across the field to join the cud-chewers lounging in a shade-covered mud pit. Luckily, they didn't care either.

Here I was, in the throes of heat exhaustion, all alone, with a bunch of cows and ominous turkey vultures, without water, cell phone or a complete set of shoes. How did it all come to this? I could just see the headlines now, "Mud-Covered Body of UGA Grad Student Found Splayed in North Georgia Cow Field . . . Full story found on page 11."

After resting for some time, I knew water was next on the list of "had to haves." So, down the hill I went, through the mud, out the gate, by the vultures, past the goats, across the field, down this dirt road, then another,



around the mountain, then another, until I found a convenience store.

Footware-challenged, covered in mud and smelling like cows, I proudly limped into the store and bought a dozen or so bottles of ice-cold water and Gatorade. Standing before the store clerk with disheveled clothes and "Don King" hair, she wouldn't even look me in the eye; she was probably afraid that I was about to freak out at any moment. After drinking several bottles, I began to rejoin the living. The lesson of the day was the next time I was to go into the field I would be better prepared, and so should you.

What may be best for the bees may not be best for us. There has been limited research on the effects of apiary location on *Varroa* mites and small hive beetles. In 2004, Dr. Rinderer compared colonies with commercial Russian stock to those colonies with Italian stock, as well as the effects of direct sun exposure and shade, on the growth of *Varroa destructor* populations, worker bee populations and honey production. He concluded that colonies in the sun had significantly fewer mites than colonies in the shade. Research conducted on Small Hive Beetles (SHBs) has shown that soil moisture plays a significant role in the success rate of beetle pupation; beetle populations are unable to reach damaging levels in more arid (i.e., sunny) locations.

However, if you have worked colonies in the full sun, during the summer months, then you understand how brutal it can be. In the perfect world, we would all have apiaries with morning sun and late afternoon shade, cool breezes, and a refreshing minty mist from the nearby crystal-clear waterfall, which keeps temperatures in the mid-seventies. Actually, several of my spots are perfect, minus the waterfall and minty-fresh breeze. The sun hits the entrances at first light, which gets the bees warmed up and raring for action. As they say, “the early bird gets the worm,” or, in our case, “The early bees get the nectar.” But, I have a few apiaries that are the reverse: morning shade and afternoon sun.

Working bees is hard enough, plus your health is in potential danger. Not only are you exerting yourself (i.e., back issues, muscle strain), but you are exposing yourself to two very serious conditions when working outside: heat exhaustion and heat stroke. Both occur when your body experiences hyperthermia, where the body heat rises dramatically.

Heat exhaustion is the lesser form of the two heat-related illnesses. It occurs when the temperature of the body gets too high and can't cool down properly. It can range in severity from mild to severe, can show up days after exposure or lead to the more serious, life-threatening, heat-related syndrome: heat stroke. There are numerous warning signs that heat exhaustion has a grip on you. They don't come in any particular order and may appear in different ways. You may experience heavy sweating, muscle cramps, weakness, headache, muscle spasms, nausea, and vomiting. If these symptoms are left untreated because you continue working and ignore what your body is trying to communicate, it may progress to heat stroke which is a medical emergency and is often fatal if not treated promptly and properly. So always pay attention to what your body is telling you, especially while working in high heat and humidity.

Heat stroke, also referred to as sun-stroke, occurs when the body experiences extreme hyperthermia which occurs when your temperature rises to 106°F or higher. Symptoms include those of heat exhaustion plus feeling faint, clammy, tired, dizzy, lethargic, and confused. Having a seizure may also occur.

Our bodies create heat and will dissipate it through the skin. As we sweat, air circulates over our body and, as the moisture on our skin begins to evaporate, it actually cools us down through a process called evaporative cooling. Bees even take advantage of this principle as

well. During hot weather, bees regurgitate droplets of water, hold them in their mouths, position themselves throughout the hive, and fan their wings. The air passing over the water cools the interior of the hive.

Another cause of either heat stroke or exhaustion is being dehydrated. When the body runs out of water, and sweating doesn't occur, the effective dissipation of heat fails and, hence, internal temperatures rise.

There are steps that can be taken to minimize becoming ill, embarrassing yourself or worse! First, always wear loose fitting, lightweight, light colored clothes. Not only does dark clothing absorb heat, but it may also cause your bees to sting. If you wear a beesuit, then have minimal, lightweight clothing on underneath (shorts, t-shirt or bikini works well). Make sure that both the suit and your clothes are not too tight and preferably made out of a breathable fabric (i.e., cotton). Sweating is actually a good thing, but, if your clothes are too tight, evaporative cooling can't occur. Drink lots and lots of water. Think in terms of gallons. It is recommended to drink a cup of water every 15 minutes while working in the heat. I'm lucky if I drink a cup every hour, which is something I need to improve. It seems as though I am always on a tight schedule, and taking a minute to drink some water or rest just doesn't occur to me.

Working in the morning hours when temperatures are cooler helps as well. If you begin to feel the slightest problem, stop what you are doing, seek out a shady spot, sit down, and drink water. Over the years I've learned to bring a cooler with plenty of ice water. When I start feeling lightheaded, I take a bandana, soak it in ice cold water and lay the cloth on the back of my neck or forehead. I feel better almost instantly.

Beekeeping is a wonderful hobby or job, but there are risks involved. As researchers and beekeepers, we focus so much energy on taking care of the bees. We put the bees in the best locations possible. We check on the bees. We feed the bees. We treat the bees for infections, infestations and disorders when necessary. But, while working the bees, we need to be concerned with taking care of ourselves as well. It's easy to get caught up in the work and forget how important that is. So, be careful out there. Dress appropriately. Drink plenty of fluids. Take breaks, take your time, and stay healthy.

See Ya! **BC**

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