

# Beekeeper



Sally Mills

*Bees, unlike humans, have a sound sense of their life mission.*

—William Longgood

by Sally Mills

**D**uring a move to a small farm in the late '90s, I found myself staring down an impressive line-up of beehives already in play. Their keeper, I soon discovered, had been carefully tending them for many years on this field in King & Queen County. At the time I had young children and, as he was a natural-born teacher, he graciously offered to show us his bees anytime we wanted to explore with him. So began my journey into the magical world of the European honey bee (*Apis mellifera*).

Those early explorations with the late Joe May soon led to introductions with other beekeepers who, just like good hunting buddies, keep each other straight and always seem to find time to lend each other a hand. When Joe died suddenly one late De-



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*Beekeeper Tom O'Neil of Powhatan plants a variety of bee-friendly sunflowers in his expansive gardens.*

cember day, I was thrust into a more active caretaker role with the bees and soon leaned on one of my new-found friends, Tom O'Neil, who agreed to serve as my mentor.

## Status Check

Anyone paying close attention to the health of the planet is well aware that honey bees are in trouble and battling

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a number of foes today: the Varroa and the tracheal mites, the introduced African honey bee, the continued erosion of prime habitat and dwindling nectar sources, and more recently, the mysterious Colony Collapse Disorder (CCD). The plight of the honey bee has been elevated to more public discussion in recent years, thanks to documentaries on

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*Liquid gold collects in a top-bar frame, from a hive system used by Dr. Mangum which allows easy access for study purposes.*

public television and features on network news, but much more attention and research are needed.

Public interest is genuine, and I am often asked by neighbors and friends, “So, how are the bees doing?” Not an easy question to answer.

What I discovered early on will be confirmed by any beekeeper ‘worth his salt’. Studying bees is a life-long journey and one in which you end up with far more questions than answers. When it comes to honey bees, beekeepers will tell you the only constant is their innate ability to keep you guessing.

“Bees don’t think. You never know what the bees are going to do.” This was spoken in classic delivery, with just a hint of a smile, by Joe May—the lanky duck hunter and outdoorsman who had the softest of spots for the charming honey bee.



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*Dr. Mangum checks the condition of honey bees in one of the observation frames in his research lab.*



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*Harvesting day entails lots of activities and the methodical transfer of frames of honeycomb to an extractor.*



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*Before frames can be removed, the bees have to be persuaded to leave temporarily.*

Add to this shared wisdom the variables of weather brought on by changing precipitation patterns and the introductions of new pests and pesticides to fight them—now amplified by the global movement of goods, especially foods and plants—and it's easy to see that researchers and beekeepers have a mountain of possibilities to consider on any given day.

But beekeepers don't discourage easily, knowing what is at stake. Consider that one-third of our global food supply is made possible by pollinators! Of that potent force, the honey bee surely does the heavy lifting—an estimated 80% of all pollination performed by insects. Ensuring their health and viability is no trivial matter.

And while most of us are aware of their importance to agricultural

crops, honey bees also play a crucial role in the success of forests, wetlands, and wildlife. According to state apiarist Keith Tignor, honey bees are classified as 'generalist' pollinators and aid in the reproduction and vitality of plants over a 12-square-mile radius of their nest! Tulip poplars, sourwood trees, and hollies are just some of the forest flora that benefit directly from their services. Such pollinating activities, Tignor reminds me, translate to diversified plant life in meadows and wetlands which ultimately benefit all wildlife.

## Current Research

We are fortunate in Virginia to have dedicated researchers close at hand. Dr. Wyatt A. Mangum has been studying honey bees for 40-some years and is recognized internationally for his research. He and his wife, Dr. Suzanne Sumner, teach applied mathematics at the University of Mary Washington in Fredericksburg. Mangum got hooked early, at the young age of 10. He is a long-time member of the Richmond Beekeepers Association and has written the monthly biology column in the *American Bee Journal* for many years. Dr. Mangum studies honey bees at his apiaries in Virginia and North Carolina.

Among his research interests is a dark brown parasite the size of a pin head, the Varroa mite, which has been confirmed in the U.S. since 1987. While unclear how it got here, the mite's simultaneous appearance in Florida and Wisconsin suggests transport within the country most likely by truck.

Inside the hive, the mite bites the female honey bee to draw hemolymph (blood), and in so doing, transmits to her a nasty virus. The mites also feed on developing bees growing in "brood" cells—the grow-out chambers for the eggs laid by the queen. The outcomes are several, but as described by Dr. Mangum, one can be a deformed wing on the newly



*Varroa mite, S. Bauer, ARS/USDA*



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Using a hot blade, Jim Frazier of Roanoke Rapids, NC, removes the top layer of wax from a frame to allow removal of the honey inside.



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A centrifuge efficiently spins the honey out of many frames at one time. Cheese cloth is used to filter out loose wax before the honey is collected in a 5-gallon pail.



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hatched bee. This 'classic' symptom is the one most easily recognized, as bees with deformed wings cannot fly. "Instead, they leave the hive and literally crawl to their deaths," he explained.

Tenacious like a tick, the Varroa mite remains attached to the adult bees until some sort of intervention—such as a chemical treatment—is introduced into the hive. Until then, the

mite population will flourish and, as borne out by many research hives, devastate the workers and eventually kill the colony. Mangum suspects that other viruses also may be transmitted by this mite to the colony over time. He postulates that outside stresses, such as loss of favorable habitat and nectar-producing plants, compound the effects of the mite on an already weakened population.

## Bee-Loved Plants

A honey bee must visit 5 million flowers to produce just a single pint of honey!

- Here is a short list of nectar producers that honey bees will thank you for: thistle, mustardseed, clover(s); dogwood, tulip poplar, honey locust, sourwood, blackberry, cherry, other fruit trees.
- Even a planter box full of African basil, clovers, sweet pea, buckwheat, or dwarf sunflowers on a balcony or patio would be a welcome stop-over for a foraging honey bee.

"A big problem for honey bees is this loss of habitat. Our suburbs are creating a big green desert for nectaries," Mangum explained.

And as you travel into more rural areas, land clearing and timber harvesting at aggressive rates and at larger scales are magnifying the problem. Swaths of barren land force honey bees to fly even longer distances to find food sources. According to Dr. Mangum, "They are working harder for less." That's saying a lot for a tiny insect that was already accustomed to traveling up to five miles to forage a meal.

The best development Dr. Mangum has witnessed in a long time? He is beginning to see evidence of bees surviving with the mite. In fact, he has devoted tremendous resources to this part of his research. On his farm, Mangum has engaged in methodical transfer of his research hives deeper and deeper into the woods behind his home in what he hopes will make the bees more resilient naturally, as well as maintain their wild 'bee sense'. In fact, his Virginia colonies have successfully carried on without any chemical treatment for the Varroa mite for four years.

Mangum believes that pesticides—used in the surrounding environment and introduced into hives by beekeepers—are having both lethal and non-lethal effects on honey

bees. Specifically, he is concerned about possible impacts on reproduction. He implores new hobbyists, as well as professional beekeepers, not to experiment with chemicals but always seek out the advice and treatments approved by the state apiarist. Mangum also cautions against the unnecessary movement of hives by beekeepers, which is very, very stressful on the bees.

When not counting mites and monitoring hive behavior, Mangum makes time to study honey bee genetics—partly to understand what has caused wild bee and colony extinctions of recent years. It's obvious he is most comfortable doing this on his Virginia farm, but he also travels to the far reaches of the globe to consult with other beekeepers. A lifelong researcher, he's curious to know what's next in store for this powerhouse pollinator.

## Getting Involved

How much effort and expense are required to keep bees at the hobbyist level? It is wise to start small and go through a full year of seasons before judging your long-term commitment. Beekeeping at the 2-hive level can be accomplished for a modest dollar investment (\$200 per hive, or

less if you find used equipment). The time required varies by season, but throughout much of the year you'll need to set aside less than an hour a week. During spring and fall, the hives need attention in the form of expansion by supers, feeding, and pest control. And during the summer harvest, plan to commit a full weekend to honey extraction, bottling, and clean-up. The rest of those 55°-plus days, you'll want to set aside plenty of loafing, or hive monitoring, time.

Before you invest money in equipment, I suggest finding a beekeeper you might 'shadow', or attend a workshop—and learn what it takes to get up close and personal with a honey bee. If that goes well, invest in a good resource book and read it. You will soon be well on your way to knowing how and where to site your hives and begin with good habits—and therefore avoid self-induced problems with your hives. Also, check local ordinances where you live and adhere to any rules regarding hive placement and activity. Finally, scout your neighborhood—up to several miles in all directions—to be sure your bees will have plenty of access to nectar sources.

As with many hobbies, it's important to take the long view. Keeping two hives (vs. one) provides a bit of

insurance that you won't lose everything if you make a costly mistake. If you do have a problem with a hive, you can easily lose the entire season and all honey production for the year, but as my hard-helmeted friends assure me, that's how you learn best.

Virginia has a strong support network for up-and-coming beekeepers. By joining a local group, you will have access to current research as well as be aware of any trends, problems, and solutions offered by other beekeepers. But be forewarned: Tending to honey bees is addictive and, well, mighty sweet. □

Editor Sally Mills has been tending bees for five years, thanks to the generous assistance of a few veteran beekeepers.

## Additional Resources

- *Beekeeping for Dummies*, by Howland Blackiston; 2001, Wiley Publishing, Inc., IN.
- *The Queen Must Die*, by William Longgood; 1985, W.W. Norton & Company, Inc., NY.
- To find a local beekeeping group, [www.virginiabeekeepers.org](http://www.virginiabeekeepers.org).
- Virginia Department of Agriculture and Consumer Services, [www.vdacs.virginia.gov](http://www.vdacs.virginia.gov).



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*Honey bees and other insects account for the successful pollination of one-third of our fruits and vegetables, including apple trees (R), as well as a host of beautiful flowers.*