

Forty-five years ago, when Paul Cappas got his first hive, all the farmers had bees.

Honeybees could live freely at the edge of the land, mostly undisturbed until farmers opened up the hive to harvest their honey or to check up on their progress. It was a good tradeoff: the bees pollinated the farmers' crops, and the farmers gave the bees a home rich in pollen and nutrients they could use to make food and survive the winters. Any extra honey at the end of the year was just a sweet, golden bonus.

"Back when I started there were no clubs," Cappas recalled. "There was no internet. There was no way to transfer information, so I actually just read a book about beekeeping... Back then everybody had bees. There were bees everywhere. People had hives. When I first started, somebody gave me a hive and I don't even remember who it was, and I didn't have any equipment or anything."

Cappas put his first hive on a friend's farm and played around with it a little bit, until the property sold and he and his bees moved to Morgantown. He loaded them up in the back of his station wagon, and off they went to their new home.

He left the bees behind some time later when he moved to Preston County to work in the mines, only to come back to Morgantown and pick up beekeeping again around 10 years ago. Only this time around, he joined an organized beekeeping club.

There are around 25 organized beekeeping clubs in West Virginia and a larger West Virginia Beekeepers Association, which is comprised of four officers and an executive board made up of heavy hitters in the State's environmental network. Each smaller club sends one member to the executive board meetings, where decisions are made relating to allocating money, educational programming and everything in between that pertains to beekeeping issues among West Virginia's nearly 1,000 registered beekeepers.

Cappas was amazed at how much information was out there about bees when he went to his first meeting of the Monongalia County Beekeepers. The members were well-taught and well prepared, and he learned more than he realized he could learn about beekeeping.

Now, he is the president of the West Virginia Beekeepers Association and the vice president of the Monongalia County Beekeepers, referred to fondly by its members as Bee Club.

Honeybees have had a hard go of it lately. The farmers in the Midwest that once kept them on their land are now planting crops right up to the edge of their properties, creating monoculture that is eliminating the bees' food sources. Farm after farm after farm of corn or soybeans might be able to feed many people, but they can't feed even one bee. And it's not just the honeybees that are suffering; it's all pollinators, from carpenter bees to hummingbirds to butterflies.

Even in West Virginia, a state rich in wildflowers and trees, the bees aren't completely safe.

"We're lucky in West Virginia because we have enough natural variety in our foliage that there is always something coming up for the bees," Cappas explained as he looked out onto his hives, neatly placed in straight rows along his fence line, surrounded by lush plants and shady trees that give his bees life. "There are always wildflowers and things that are growing. The problem we run into is when we start trying to control all of the highways and byways by spraying and killing all the weeds. They might be weeds, but that's the actual forage for the bees."

People are killing the plants with chemicals because they are undesirable, thus killing the bees that forage in them before they wilt away. But West Virginia, like the rest of the country, needs the bees to maintain its agriculture, just as the bees need the agriculture to maintain their food source.

The apple orchards in the Eastern Panhandle depend on the honeybee to pollinate the trees. The almond in California depends on the bees the same way, as do the cranberry glades, the watermelon patches and the citrus trees. If there are no bees, then there are no crops.

And so, in come the beekeepers, who speak for the bees.

The network of beekeepers in West Virginia is a lot like a beehive. The bees all work together for the greater good of the hive, and they communicate with the queen and with each other to get what they need.

In the colony, the forager bee goes out, finds flowers, comes back to the hive and, through an intricate little dance, tells the other bees where the nectar and pollen are.

The nurse bees clean the hive and tend to larvae, and they communicate amongst themselves and with the queen through pheromones to let her know what the hive needs and what the supplies look like.

Just like their bees, the beekeepers are always communicating and watching the environment to make sure they let each other know what the bees need. When heavy rains wash away pollen or a late frost kills plants, the state association puts out an alert among the beekeeping community to provide hives with alternate nutrition. Last year, it didn't get cold until after Christmas, and bees were still raising larvae into December - something that is unheard of among beekeepers. So the state association sent out an emergency alert to put a food source in the hives to accommodate the bees as they continued to grow their families. They were able to get ahold of 4,000 pounds of fondant cake icing to put in hives to keep the bees warm and also provide them with much-needed nutrition.

Master Gardeners and other environmentally minded groups also collaborate with beekeepers to learn how they can work together to help bees thrive and get the nutrition they need. In return, beekeepers place hives in community gardens to help pollinate the crops.

Beekeepers are also working with local farmers to incorporate less dangerous methods of pest management. The State is planting pollinator-friendly flowers and plants along the highways instead of killing weeds to beautify the roads and help the bees.

"I think there is a growing consciousness of our population in general and even more so in West Virginia, where we love our state," Cappas said. "We love our trees and our grasses and our wildflowers and our animals and our bugs and our insects and we learn to live with them, to coexist with them."

Cappas has 8-10 hives on his property that each house around 20,000-30,000 bees - that's about half a million bees, all living in harmony with Cappas, his family and his dogs.

He is more concerned with raising bees than he is with producing honey, as it's important to have bees in West Virginia that are genetically predisposed to survive through the state's cold winters.

It's all about genetics when it comes to making hearty bees, and the genetics come from the queen.

The queen bee is the matriarch of the hive. She is raised a queen - nurse bees feed her large amounts of royal jelly, a substance produced by glands in their head, jaws and neck, while she grows and develops as a larva. She is taken care of the most and hatches the quickest of all bees, and when she matures and breeds, she can lay her weight in eggs every day and raise up to a million babies each year.

Most beekeepers buy queens from the South or from California or Hawaii and have them shipped to their home state, which is a problem because bees raised in warmer climates aren't bred to survive in colder states like West Virginia, New York or Michigan. The demand for bees is high among beekeepers, so those who buy queens from the same sources are just relocating the same bad genetics and any diseases or mites that come with them.

Mary Gainer ordered her first package of bees from the South.

Her Southern queen didn't work out for her, so she got a local queen that did really well and was able to build up her first hive last year and even produce some honey.

"You don't ever harvest that first year because you want them to have that honey for the winter," she explained, reciting one of many facts she has learned from going to Bee Club.

Gainer got into beekeeping out of necessity when her honey provider passed away and her family was left to find another source. Around that same time, she had her second baby and developed severe psoriasis. She began taking medication for it, but she did some research and learned that bee stings can sometimes generate some defense from autoimmune conditions like hers.

"When I was researching autoimmune diseases - there is no good, clear evidence of it - but there is some thought that bee stings and local bee pollen, but mostly bee stings, can sometimes generate a defense against autoimmune disease. Sort of saturating your body's own immune system so it's not overreactive. There's not a lot of studies about this, but some people think that maybe it would help."

With her interest in bees and her need for local honey growing, Gainer's husband got her a beehive for Christmas. It wasn't a traditional hive, though. It was a flow hive, a product out of Australia that allows a beekeeper to harvest honey without taking the hive apart. It's much quicker and easier than traditional methods of extracting honey.

"You have to lift the hive and you crack it open and then it just comes pouring out into these jars," she explained.

Once she got her hive, she decided to go to Bee Club to learn a little more about how to fill it with bees and with honey. She met an array of different beekeepers who helped her get started and several meetings later, she was ready to order her bees.

Gainer recommends new beekeepers go to their local beekeeping club before they even think about ordering bees so they can network, learn about the resources available and what to expect once they start filling their hives. It costs up to \$500 to get one hive, a package of around 10,000 bees and protective equipment, so it's important to know what you're doing before you do it. Attending your local beekeeping club's meetings is a great way to learn if beekeeping is right for you, she said. The West Virginia Beekeepers Association also offers beginners' classes throughout the state each year to help prospective beekeepers to get hands-on experience with bees before they get their first hive.

But many new beekeepers are enthusiastic when they first start out, but their hives often die in their first year and they become frustrated and give up.

The Varroa mite is a big reason why hives die off. These external parasites live on bees and feed from them using a stinger inserted in the bees' backs. They get into the brood cells in the hive and lay eggs in the new larvae, which hatches sick bees right off the bat. The mites then continue to live off the bees as they grow and become a functioning part of the hive.

While the mites themselves don't kill the bees, the viruses they transmit through their stingers can be deadly.

The mites are resistant to chemicals developed to control them, as well, making them difficult to keep at bay. The beekeeping community is in a constant struggle with the mites for this reason, and losing control of the mites can kill off a hive quickly.

“It amazes me that we’ve been fighting this problem with Varroa mites for 25 years now, and we’re really no closer to solving it than we were 25 years ago,” said Cappas.

Gainer, like most new beekeepers, experienced the mite problem early on when she got her first hive, but her greatest struggle was something more relatable to non-beekeepers: the fear of being stung by her bees. To this day, though, she has yet to be stung.

“My bees are chill,” she said. “You have to be prepared when you open the hive. You have to have all your tools there and you have to smoke them. If you try to do it quick - mayhem.”

Beekeepers waft smoke over a beehive using a special tool to help calm the bees and block their fear pheromone from spreading to one another. This makes working with the bees easier and lessens the chance of them trying to sting their handler.

Gainer’s flow hive also lessens the time she must have the hive open, which helps keep her bees calm. Most importantly, though, it provides her a simple way to extract her honey.

The first time she harvested her honey, she got two gallons.

“When I got the honey, it was pretty exciting,” Gainer said with a smile.

Gainer, like most new beekeepers, also relied on more experienced mentors, like Mark Becilla, to help her along the way during that first year. Becilla is president of the Monongalia County bee club, and he visits her hives to check up on things and answers her questions along the way.

Soon, he will help her extract honey the more traditional way: by scraping the beeswax off the honey cells in the hive, placing the frame containing those cells in a centrifuge and spinning it to extract the honey. Then, the frame is placed back in the hive for the bees to fill up again.

Becilla harvests honey from his own hives and sells it at the Morgantown Farmers Market. Right now, he has about 30 hives that produce honey for sale. He also sells his queens that have grown up locally and can provide hearty genetics, but he is more concerned with selling his honey and growing that as a small business.

Each year, Becilla harvests between 2,000 and 5,000 pounds of honey from his hives and produces different varieties of honey based on what plants are in bloom at each time of the year. He knows which plants produce which types of honey, and he can tell the difference based on a honey’s taste and smell.

“Most people who want honey, they think you can just have any kind of honey any time of year,” he said. “I sell it as it comes off.”

A large part of beekeeping is staying in tune with nature and what’s happening in the environment, Becilla said. To produce honey, he must keep track of the humidity, the flora around him and the condition of his bees.

Beekeeping is a labor of love, and it is more about the bees and the environment than it is about the honey.

“It is about taking care of your bees and seeing what’s going on in your back yard. Are they flying? What else is flying around here?” Becilla said as he peeked out from under the shade of one of his trees. “And you find out about what’s blooming and what time of year, and so you’re into all the trees and plants that are blooming at that particular time. So you get connected to nature. That’s what it’s really about.”