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Sandusky River Valley BeeKEEPERS Association

APRIL 2025

NEWSLETTER

Club Officers

President: Kathleen Conn **Vice President:** Brennen Miller

Secretary: Sue Kosakowski **Treasurer:** Kim Root

Directors: Rosemary Clifford, Beth Muffler Doug Ricci

MISSION:

- To promote and support Beekeeping through education.
- To educate the public about the value of honey bees and the impact of honey bees on the world through classes, public meetings and educational appearances.
- To promote the products of the hive to the general public.
- To promote the common interest and general welfare of the Ohio Beekeeping and the Beekeeping industry.
- To help and mentor new Beekeeper with knowledge and education.

April Monthly Meeting Info

Presenter: Gary Wylie, SRVBA member

When: Monday, April 7, 2025; **7:00pm**

Where: First United Methodist Church, 510 W Maple Street, Clyde, Ohio 43410

Topic: Hive checks and splits

Mark Your Calendars!! You don't want to miss this:

(topics, dates, and times subject to change)

April Workshop — Saturday, April 12 @ 10am

New Beekeepers—Package installation, Cherry City Honey Farms, Bellevue, OH

Club Activity — April 26—EARTH Day

Erie County Metroparks 11am-3pm; Osborn Park, Sandusky, OH

May Monthly Meeting — Monday May 5th ; 7 PM, FUM Church, Clyde, OH

Topic: Planning for 2025 Bees, Making Splits/Nucs

MEMBERSHIP DUES ARE DUE

Last Call for Dues

$20.00/single or family

Droppings from the President April 2025

I seriously wished that "groundhog" thing were true, I can handle 6 weeks of cold but enough is enough. With a break in the last two months polar vortex, finally, this past Saturday, I hope you have been able to get into your hive(s) to hopefully find the queen, find some brood or eggs and get them moved down to the bottom box with resources and empty comb above. This helps to prevent swarming by allowing the queen plenty of room to lay eggs and build up the brood nest. Pay attention to the queen's laying pattern and the number of frames that contain eggs, larva and brood. Cleaning the bottom board of debris is a good idea while doing a spring inspection also. Note taking is very helpful if you have more than a couple of hives. I observed a hive that had numerous bees doing orientation flights, tells me that queen must have gotten the memo that warm weather is coming! I bee-lieve we all are certainly ready for that.

With the spring season just starting the Sandusky River Valley Beekeepers Club has already been getting numerous requests for community involvement. We have a fairly large membership but an even larger membership area that needs covered. Bee-ing active in our communities helps greatly to educate the public while helping each one of us to learn, share and grow. It is an opportunity, a "Get TO." We GET TO learn, and have fun, as well as build the club as a team just like the worker bees of our hives. The best way to learn something is to teach someone else. It also helps to bee passionate about bees ;)

Plotting, planning and prayers,

Kathleen Conn
SRVBA President 2025

HIVE 5 SHOUT-OUTS

Actively participating in the community Saturday March 29, 2025

Michael Gergely and Lori Wilson at the Erie County Master Gardner Spring Seminar

Huron, Ohio

HIVE 5 SHOUT-OUTS Deb and Dave Johnson

Sandusky County Fairgrounds Hop Waddle Crow

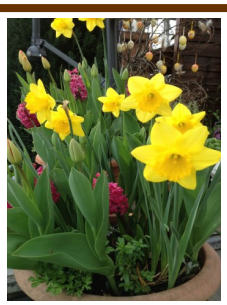
Easter Event

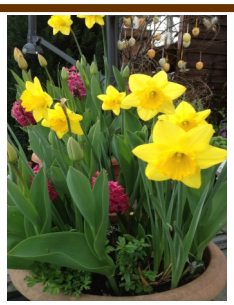
From the honeycomb . . .

Ever wonder if you could make a living as a beekeeper? From Zip Recruiter's website:

A beekeeping job involves managing and caring for beehives to produce honey, beeswax, and other hive products while ensuring the health of the bee colonies. Beekeepers inspect hives, monitor for diseases, provide food when necessary, and maintain hive structures. They may also harvest honey, breed bees, and help with pollination services for agriculture. Some beekeepers work independently, while others are employed by farms or commercial honey producers. It requires knowledge of bee behavior, hive management, and environmental factors that affect bee health.

There are currently 39 beekeeping job postings, with an average salary of $38,000. Anyone looking for a job?





Included in the month's newsletter is a very nice article written by Lauren Petronella.

Laura is 17 years old and along with keeping bees she writes a blog titled: ***Speak for the Bees****, which can bee located here:* ***https://speakforthebees1.wordpress.com/***

Her bio can bee found here: https://speakforthebees1.wordpress.com/about-speak-for-the-bees/

Where did varroa mites come from? – The history of the varroa mites spread across the world

March 1, 2025

Classified as an invasive species originally endemic to Asia, the varroa mite is one of the biggest threats to the global beekeeping industry. These mites account for killing potentially hundreds of thousands of colonies since their arrival. The economic impact for the treatment of varroa is estimated at 68 million dollars for the U.S. beekeeping industry alone. Unfortunately, every beekeeper is familiar with varroa mites; the secret fourth "member" of the colony and a very frustrating parasite that quite literally sucks the life out of the hive. Unfortunately, these mites are here to stay. They currently occupy every habitable continent and continue to weaken hives, spread viruses, and impair colony survival. No matter how thoroughly a beekeeper treats a hive for varroa, there will always be mites that survive and continue to reproduce. Many new beekeepers are left with the question: Where did these mites come from? The answer lies in the complex history that involves a deep look into the biology, distribution, and host-parasite relationships of the varroa mite.

The Varroa Mite's Effects on Bees

The mite will attack its host – the European honey bee (Apis mellifera) – by wedging in between exoskeletal plates and feeding on the hemolymph (blood) and fat stores of both larvae and adult bees. Both the hemolymph and the fat body are vital to the immune functions of a honey bee, so when varroa mites feed on its host they are essentially weakening the bees immune system. As if a weakened immune system wasn't enough damage, these mites are also known transmit a slew of different viruses while feeding on their host. Honey bee viruses are not new knowledge; however, the mechanisms of varroa mite vectored viruses are a recent discovery and a concerning matter. When the varroa mite began spreading rapidly in the 1980s, researchers began recognizing higher viral loads in varroa infested colonies. Multiple studies published during this period identified that varroa mites are capable of acquiring pathogens, such as Deformed Wing Virus and Acute Bee Paralysis Virus, by feeding on infected adult bees and transmitting the virus to otherwise healthy adults or pupae (Ball, 1983; B. V. Ball, 1988). To this day, there is still much needed research to fill the gaps in current knowledge about varroa vectored diseases.

In relation to viral infections transmitted from varroa, the mites will also effect colony level health if left unmanaged. Individual honey bees affected will typically have shortened lifespans due to viral infections and impaired immunity. The colony level effects of infestation are observed as reduced colony growth rates, superseded queens, and even colony collapse disorder. If varroa mite infestation is left untreated for long enough, an estimated 90 – 100% of colonies will succumb to the damage of the mites. Despite their devastating impact on the beekeeping industry, the varroa mite wasn't originally a parasite of the widely distributed European honey bee until it slowly began to jump from its original host the Asian honey bee (Apis cerana).

The Original Host: Apis Cerana

The original host, Apis cerana, does not suffer the same fate as Apis mellifera. Being the natural host of this mite, Apis cerana has coevolved with the parasite and developed mechanisms of resistance. Unlike Apis mellifera, varroa mites lack the ability to reproduce in worker brood cells and only infest drone pupae. Because drones make up less than 5% of the colony, only a small proportion of the population will harbor reproductive mites. Furthermore, Asian honey bee's resistance is also attributed to several behavioral traits. Some traits of which bear resemblance to the Varroa Sensitive Hygiene behaviors selectively bred in European honey bees. Asian honey bees have the natural capability of detecting varroa infested drone pupae and removing them from the hive. This behavior is a great asset of the Asian honey bee because it entails the removal of the most damaging phase of a varroa mites life cycle – the reproductive phase. Another interesting behavior observed exclusively in Apis cerana would be the process of entombment. This behavior involves leaving infested drone pupae to die in the capped cell, which in turn kills the infesting mites. An evaluation of mite levels in Indonesian Apis cerana colonies found that the entombment of mites can reduce the overall mite population by approximately 20% (N. Koeniger G. K., 1983). These traits are an essential component of Apis cerana's resistance to the varroa mite, which allow the bees to mechanically remove and separate mites from the colony.

In addition to entombment and removal of infested brood, multiple other studies have reported far more intensive grooming routines in Apis cerana (I Fries, 1995; Ying-Shin Peng, 1987; Ralph Büchler, 1992). This grooming behavior entails the bees removing mites from themselves and others in a social congregation. The success rates of Apis cerana chasing away or damaging mites is greatly varied in numerous investigations. Some suggest that the overall success rate of damaged mites from grooming activity is a whopping 73% (Ying-Shin Peng, 1987), while others suggest the overall percentage of damaged mites is only 29% (I Fries, 1995). The primary reason for these varied statistics is likely due to the difficulty of determining if damaged mites are the result of grooming activity or other environmental factors. The source of the mites used in these experiments may also create an inflated success rate, due to the fact the mites used to infest the Asian honey bees were from foreign Apis mellifera colonies. Despite this variability, there is still considerable reasoning and evidence that supports Apis cerana's heightened resistance to the varroa mite.

Varroa Mite Taxonomic and Genetic Classifications

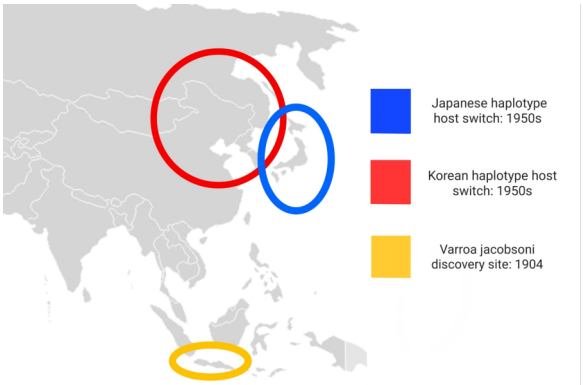
The taxonomic status of the varroa mite is another key aspect that has characterized its spread to the European honey bee. In 1904, the varroa mite (Varroa jacobsoni) was described by A. C. Oudemans and discovered to be a parasite of Apis cerana populations in Java, Indonesia (Oudemans, 1904). Since this initial discovery, various other populations of Apis cerana across Asia were also found to carry varroa mites. It wasn't until 2000 that a study published by Anderson and Trueman uncovered that Varroa jacobsoni was actually a complex of two distinct species. Anderson and Trueman identified 18 different genetic variants, known as haplotypes. These variants encompassed both Varroa jacobsoni and Varroa destructor. This study also discovered that only 2 of these haplotypes had jumped to Apis mellifera. Neither of these haplotypes belonged to the Varroa jacobsoni species. The variants that jumped to Apis mellifera include the Korean and Japanese haplotypes of Varroa destructor, the Korean haplotype being the most common and widespread attacker of Apis mellifera (D. L. Anderson, 2000).

Spread of the Varroa Mite

It has long been presumed that the first ever reports of the varroa mites host jump surfaced in the 1950's. Many use to believe the host jump to Apis mellifera occurred when colonies kept in eastern Russia came into contact with native populations of A. cerana infested with the Korean haplotype of Varroa destructor. Several years after Russian populations came into contact with varroa, another host switch event occurred in Japan. The Japanese haplotype also managed to parasitize commercial European honey bee colonies. Despite the initial presumptions of the earliest host switches occurring in eastern Russia and Japan, D. L. Anderson, However, suggests that the first incidences occurred in central Asia.

Early records of Varroa mites specimens at the Oregon State University's Acarological collection were collected from Apis mellifera bees, which would support the theory of the central Asia host switch (Anderson, 2000). It's difficult to estimate exactly how and when the varroa mites switched hosts; however, it's evident that the switch didn't occur overnight. It likely took an extended period of overlap and contact between both species (Apis cerana and Apis mellifera) to initiate the first host switch.

After the varroa mites spread to Apis mellifera in Asia, further importation of hives created a wave of invasion to neighboring continents. The mite arrived in central Europe in the late 1970's, only a few decades after the initial jump. During this period, transport regulations and quarantine areas were enforced on sites containing infestation. Unfortunately, invasive species know no borders, as varroa still managed to spread at an unprecedented rate. In Germany and other European countries, researchers in collaboration with the Beekeeping Federations and federal governments began testing different chemical treatments that could potentially bring hope to affected beekeepers (N. Koeniger S. F., 1989). Of the chemical treatments assessed in the 1980s, two are still commonly used today. Amitraz and thymol-based treatments were found to be effective against varroa, as well as safe and easy to apply to infested colonies (S. Marchetti, 1984). The significant efforts taken by many in eastern continents to forestall the spread of varroa were unfortunately not enough to prevent invasion to western countries.



Likely range map of varroa mite haplotype distribution and host switch sites

By 1987, the dreadful mite had arrived in U.S. The first reports of varroa mites began spilling in from Florida. There is little information on how exactly the varroa mite made its way to the U.S, but the introduction may have occurred due to the movement of hives into Florida from importation. It also speculated that mite populations already inhabiting South America made their way north to the U.S through importation. Once again, quarantine efforts did little to thwart the mites spread to the rest of the continent. As of now, every continent containing honey bees – now including Australia since 2022 – is home to a bustling population of varroa mites.

General timeline of varroa mite spread:

- 1952 – 1957: First reports of the Korean and Japanese haplotypes parasitizing Apis mellifera
- 1970 – 1980: The predominately Korean variant of varroa spreads to Europe
- 1980 – 1990: European researchers begin testing different treatments
- 1987: Varroa is reported in Florida
- 2022: Australia colonies used for biosecurity were found to have varroa

What we can do about varroa mites

There are many evolving treatment options beekeepers and researchers are testing against varroa. From there initial arrival in Europe, many chemical treatments were discovered as an effective mode of varroa control. Many chemical control methods used by beekeepers today include oxalic acid vaporization, in which the hive is fumigated with oxalic acid, thymol-based treatments, and formic acid-based solutions. Typically, beekeepers will apply these chemicals in 2 – 6-week intervals. Interval treatments are important because it ensures that a larger portion of the mite population is wiped out. Despite the benefits of these methods, there is also a downside to long term use of chemical mite control.

Unfortunately, many of the chemicals used to treat colonies for varroa mites may only be a temporary solution in our battle against this invasive species. Acaricide resistance in varroa mites is a growing threat to beekeepers who often use synthetic chemicals. However, there are many new innovations on the horizon that are an effective alternative to chemical control. RNA interface utilizes special pieces of double stranded RNA in sugar syrup that is fed to bees. This emerging control method effectively reduces mite reproduction and survival. It also targets mites on the molecular level without any active chemical ingredients, thus mitigating resistance in mite populations (Bortolin, 2025; McGruddy, 2024). While not a commercially available treatment yet, there is considerable evidence that supports the efficacy of this treatment option. It is likely to hit the market within a matter of years if research on RNAi varroa treatment continues. Additionally, there is even promise of honey bee vaccines that can combat varroa transmitted viruses. Immunizing bees to certain pathogens would greatly decrease the spread of varroa transmitted viruses and even prevent spread to other colonies from robbing and drifting. Research on these alternative treatments are of great importance in modern apiculture as beekeepers and researchers continue to fight the incredibly adaptive varroa mite.

As of now, the best practice beekeepers can use to prevent further varroa mite damage is to stay proactive and be thorough with their usual treatment routine. If alternative treatments aren't available in the near future for some reason, chemical treatments are better than nothing. It would also be wise to promote healthy honey bee genetics. Bees that have adapted to the local climate are less likely to succumb to mite induced damages, they may also have specialized resistance to varroa. Furthermore, there are many efforts by beekeepers and breeders that are aiming to implement Varroa Sensitive Hygiene bees in large scale beekeeping operations. But the most important thing anyone can do – not just beekeepers, – is to continue raising awareness about pollinator health and support research efforts to combat growing issues such as the varroa mite.

Thank you for reading! Stay tuned for a look at beekeeping in Greece this month!

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