BEE NEWS & VIEWS

The Mississippi Beekeepers' Association Newsletter

LaRue Stephens, Editor

July-August 2020

President's Message

By: Michael Scheel

Well, sorry to be late with the *Bee News and Views* again. One reason for the delay was for the Executive Committee to decide on the fate of our Annual Meeting. With much trepidation, the Executive Committee has decided that it would not be responsible to try to hold our meeting this year. Despite the fact that we would not want to place any of our membership in harm's way, the Executive Orders limiting the number of people in a public gathering simply made the costs too great of a loss. Dr. Jennifer Berry was our scheduled keynote speaker and she has agreed to place us on her calendar for November 4-5, 2022. Dr. Jamie Ellis is scheduled to be our keynote for our November 5-6, 2021 Annual Meeting. Your Executive Committee is scheduled to meet again the first part of October to make a decision on our Annual Business Meeting. Whatever the decision from that meeting, you should receive a special newsletter brief on the outcome of that meeting.

On to beekeeping! By now I think everyone has made their harvest and from all indications I'm hearing, it has been a good year. But the summer heat and dearth are here. For the New-bees, limit the time you spend in your hives. This is prime time for Small Hive Beetles (SHB) and robbing. Neither of these events do you want to see in your bee yard. Small Hive Beetles are in rather large numbers this time of the year in most colonies; strong hives can keep them under control unless they have to spend time repairing damage caused by the manipulation of combs. You would not be the first to lose a colony due to hive inspection of a strong hive to SHB. The same damage or opening of burr comb during inspections can lead to a robbing event. If you have not seen a robbing event, it is not a pretty site and the bees will sting just about anything. These are reasons for brief inspections or installation of mite treatments during this time of year. Many of the large swarms that are caught this time of year, and from postings on social media, there have been many, are due to these events.

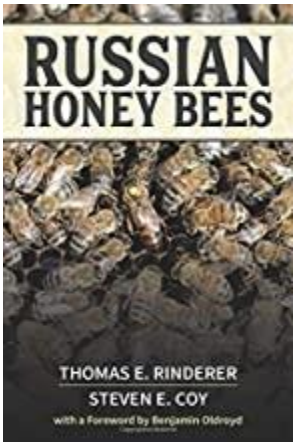
Since I mentioned it, mite treatments are essential this time of year. Novice and more advanced beekeepers will just want to monitor their mite loads and treat when the colonies reach 3% or greater. That is only nine mites in one half cup or three hundred bees. The reason for this is to make sure that your mite loads are minimized going into the fall for the production of winter bees. Mites vector numerous viruses, and as we know in 2020, viruses are bad for any number of reasons. As we know from our bee biology, spring and summer bees only live approximately six weeks; if some get sick and die early, due to the abundance of resources and bees, it will have limited effect on the overall colony health. However, winter bees need to live for several months until the food sources start to bloom in early spring and the colony starts to rebuild. If a significant portion of the colony's population becomes sick due to viruses, it will ultimately lead to the demise of the colony. Many new beekeepers will open a colony in early spring only to find perfectly preserved pollen frames and capped honey with NO bees. It is heartbreaking for most new beekeepers to find and often they refuse to believe that the colony died due to mites in the fall because they do not see any dead bees. Due to the hygienic behavior of our bees, diseased and dying bees most often leave the hive to go die, thus no dead bees. Any that do not make that flight will be eliminated from the colony by mortuary bees. This is nature's way of limiting the exposure of

pathogens to the remaining bees in the colony. If you do choose to be chemical free, you need to find some method within your tolerance to mitigate the mite numbers or you will have a higher than average colony loss.

So in closing, I apologize for the late issue. I do want our membership to realize that we, as your Executive Committee, are dedicated to giving value to our membership via this platform and through our web presence. We are in the process of creating a new web presence, so please check it frequently, https://mshoneybee.org/. We would love for you to submit any photography that we can use on the new website. Please submit it to mbahoneybee@gmail.com along with a disclaimer stating that we can use your personal photos in any of the media we publish on behalf of the Mississippi Beekeepers' Association. We encourage our Affiliate and local clubs to do the same. We hope to have the new changes up and running sometime within the next month.

From the Editor
LaRue Stephens

As we move into the "New Year" focus of beekeeping, considered by many beekeepers to be August because of the essential preparations for overwintering healthy colonies, why not include a good read on beekeeping to enlighten and enhance your knowledge of the amazing honey bee? One good read you may consider was published earlier this year by Steven Coy and Thomas Rinderer, *Russian Honey Bees.* Steven is vice president of our Mississippi Beekeepers Association, serves on the Executive Board of the American Honey Producers Association, serves on the board of directors for the Russian Honey Bee Breeders Association, and raises Russian Honey bees commercially. In his book you will find chapters addressing: *Basic Varroa Biology*, *Early History of the Russian Honey Bee Stock, Stock Formation, Resistance to Varroa*, *Stock Certification, Management of Russian Honey Bees*, *The Russian Honey Bee Breeders Association*, and *A Beekeeper's Perspective*. Whether you are looking for a comprehensive overview of scientific aspects of Russian honey bees or guidelines for the practical management of Russian honey bees, you will find it in *Russian Honey Bees.*



Need to Purchase a Queen or Bees?

If you need a new queen bee or want to purchase bees, here is the list of MDAC certified producers. http://www.mdac.ms.gov/wp-content/uploads/bpi_honey_packed_bees.pdf

Chronic Bee Paralysis Virus as an Emerging Disease

Scientific Publication Review *by Dr. Jeff Harris*

Publication: Budge, Giles E., et al. "Chronic bee paralysis as a serious emerging threat to honey bees." *Nature Communications* 11.1 (2020): 1-9.

Chronic Bee Paralysis Virus (CBPV) is a well-known disease pathogen of honey bees that until recent years was considered a disease of fairly limited consequence. It was known to have a global distribution, and although colonies that developed disease symptoms often dwindled and died, the actual incidence of disease outbreak was fairly rare or limited. In May 2020, Giles Budge (a scientist from the National Bee Unit in England) and co-authors reported that CBPV has become a major problem for honey bees over the last decade or so in England and Wales. Similar trends have been noted elsewhere, including the U.S. For example, only 0.7% of all colonies in the U.S. that were sampled

in 2010 had CBPV, but by 2014, about 16% of all colonies sampled had CBPV. This research paper characterizes how the incidence of CBPV has changed in England/Wales during 2006-2017. The authors also describe risk factors that correlate with the changes in the disease progression.

One of the reasons that I wanted to summarize this article about CBPV is that some of the symptoms match reports from beekeepers in Mississippi this spring. Worker honey bees infected by the virus can be sub-divided into two groups. Type I symptomology consists of workers that as young bees may never have flown. They tremble (wings and abdomen), and their abdomens often become noticeably bloated. Sick bees cluster near the entrance, and flightless bees are often crawling on the ground in front of the hive. Worker bees exhibiting Type II symptoms can fly in the initial stages of the disease, and they often lose all of the hair on their abdomen/thorax. This condition is known as 'hairless black syndrome' (Fig. 1), and

Fig. 1 Worker bee infected with CBPV and exhibiting hairless black syndrome. (Photo from Newcastle University press release, May 1, 2020; Giles Budge)

these worker bees have a shiny, black or greasy appearance. After a few days, type II workers also become flightless and eventually die. A key colony-level phenomenon that differs from other viral infections is that mounds of dead bees occur in front of many colonies that eventually die from the disease. In other viral disease of bees (e.g. Deformed Wing Virus), colonies dwindle without piles of dead bees.

The molecular or genetic blueprint of CBPV is known. However, the virus remains unclassified by taxonomists because it has a structure unique among all of the viruses known to infect honey bees. Scientists can identify viruses and estimate the viral loads in worker bees by using a molecular technique known as reverse transcription quantitative polymerase chain reaction (RT qPCR) assay. Using this technique, scientists found that the virus tends to concentrate in the brains of sick bees. Sick worker bees have 235,000 times as many viral particles in their heads as asymptomatic bees from the same colony. The brains of bees infected can have up to 10^{11} CBPV particles. That is *One Hundred Billion* viruses in one head. Yikes!

The two major routes of transmission of the virus among bees are (1) direct bee-to-bee contact and (2) oral-fecal contamination. Asymptomatic bees can obtain viral particles by sharing food or just coming into direct contact with sick bees in the colony. When sick bees defecate within the hive, feces contaminate food and comb surfaces. Asymptomatic bees obtain viruses by eating contaminated food or by licking contaminated surfaces.

All types of adult bees – workers, drones, and queens - can be infected. However, the queen and a few hundred workers are often the last bees found in a dwindling colony that is dying from the disease, and these queens are often found to have low levels of CBPV in their bodies. It seems that the queen is shielded by direct contact with sick worker bees. This was demonstrated in a simple experiment (Amiri *et al.* 2014). When queens were forcibly caged with only sick bees, they got the same disease symptoms as workers within 5-6 days of exposure. However, if the queen was caged with sick bees and asymptomatic bees, she never showed disease symptoms presumably because she was only fed and tended by the healthiest worker bees.

CBPV can be found in all life stages of honey bees – egg, larva, pupa, and adult. The fact that eggs can have the virus suggest that vertical transmission from the queen to her eggs. This does not appear to be a major route of transmission, but nobody fully understands the relative importance of this route in the overall disease progression.

Additionally, CBPV has also been found in Varroa mites. It appears that the mites acquire the virus by feeding on the fat body tissues of infected bee pupae or adult bees. Unlike other viruses like Deformed Wing Virus and Acute Paralysis Virus, Varroa mites apparently ***do not*** vector CBPV into honey bees. If this is the case, then why is increased CBPV infection among colonies correlated with high levels of Varroa mites?

Scientists currently think that high infestations by the mites leads to high numbers of bees with immune systems compromised by the damage from the feeding mites. These compromised immune systems do not react to the viruses very well, and CBPV can bloom in a mite-infested colony very quickly from the normal bee-to-bee contact or the oral-fecal routes of transmission. Similarly, exposure to pesticides can also compromise the immune systems of honey bees, and CBPV infections can bloom after exposure to chemical toxins.

The Budge team conducted 79,873 apiary visits to 24,186 beekeepers in England and Wales in the period of 2006-2017. About 82% of their visits were non-call-out, while the other 18% were requested (or called out) by the beekeepers. Small-scale beekeepers were twice as likely to call out the team as commercial beekeepers over the 11-year period. There were no CBPV cases found in 2006, but the number of positive cases of CBPV increased exponentially throughout the next decade (Figure 2, A). Additionally, the incidence of CBPV cases increased twice as fast among commercial beekeepers as it did among the small-scale beekeepers (Figure 2, B). There was also a trend of a greater incidence of positive CBPV cases associated with call out visits versus non-call-out visits (Figure 2, B).

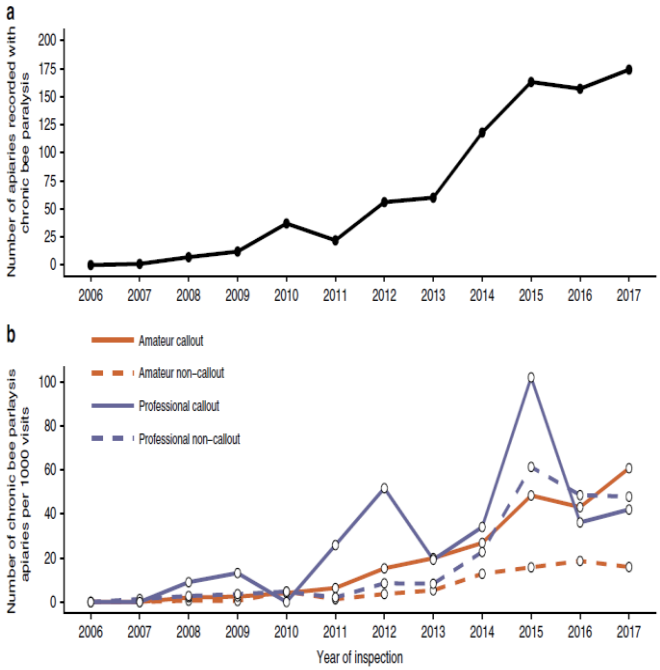


Fig. 2 Chronic bee paralysis cases in England and Wales. **A** - Number of visited apiaries recorded with chronic bee paralysis between 2006 and 2017. **B** - The number of apiaries (per 1000 visits) where chronic bee paralysis was recorded for amateur and professional beekeepers. Data are separated into visits that occurred because of a call-out by the beekeeper or not (non-call-out). (Figure from Budge *et al.* 2020)

The overall risk potential of CBPV disease is not fully understood, but the research team realized some major trends. First, CBPV infections tend to be a disease of spring-summer months, and infections tend to be clustered. An apiary may see rampant movement of the viral disease between colonies in the same apiary and between apiaries that are only a few miles apart. The team feels that the CBPV progression in any particular region tends to burn itself out in a season, and those particular apiaries or regions do not necessarily see re-emergence of the disease in a subsequent year. In effect, there were new and different hot spots from year to year in all of England/Wales.

Two other trends stood out. Commercial beekeepers had an overall risk of CBPV outbreak that was 1.5 times higher than small-scale beekeepers. However, that risk was amplified by another 1.8 times if beekeepers had imported either package bees or nucleus colonies from other beekeeper suppliers. The authors believe that the increased risks associated with commercial beekeepers is related to colony density. Commercial beekeepers tend to have more colonies in a single apiary, which makes it easier for sick bees to move among many colonies during an outbreak of CBPV infection.

As with many scientific studies, there are many new questions. Has there been a change in the virulence of CBPV? In other words, has CBPV mutated over the last decade or so to create forms of the virus that are more able to kill honey bees than in strains from many years ago? Are there differences in susceptibility of different strains or races of honey bees to CBPV? Are there management tactics that beekeepers can use to reduce transmission of CPBV? For example, perhaps using fewer colonies in an apiary and increasing the distance between apiaries can greatly slow the movement of CBPV. The team hopes to answer some of these questions over the next few years.

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Join Now!
Mississippi Beekeepers Association

We invite you to become a member of the Mississippi Beekeepers Association. Simply fill out the membership application online or you can download a copy of the membership application and mail it with your dues to:

Mississippi Beekeepers Association
17 Deerwood West
Perkinston MS 39573

The annual dues for MBA membership are valid from November 1 to October 31. Membership dues are:
Commercial (≥ 301 colonies): $50
Sideliner (51-300 colonies): $40
Hobby (1-50 colonies): $20
Associate (non-beekeeper): $15

Ask MSU Extension

By Dr. Jeff Harris

Periodically I relay questions that people ask of me either by phone, email, or Facebook to our readers with the hope that the topics will be of interest and usefulness. If you want to ask a question, please contact me by phone (225.571.3895) or by email (jwh545@msstate.edu) or visit the Mississippi Beekeepers Association Facebook page (https://www.facebook.com/groups/696233370550844), and your question may appear in a future issue of this newsletter.

Question: Is it better to use newly bee-collected pollen or bee bread that has been stored for a longer period in my cell builders? My question has to do with availability of nutrients from fermentation of pollen. Perhaps older bee bread would have more nutrients available for the nurse bees feeding the queen larvae?

Answer: The query is whether beebread needs to mature for a lengthy period of time in order to allow fermentation by beneficial microbes to release nutrients from the pollen. Honey bee workers collect a relatively dry pollen from plants, and they add nectar and glandular secretions to it when they store it on their pollen baskets. The process also transfers bacteria that ultimately ferment the pollen, which is how nutrients are released and made digestible for the bee gut. A returning pollen forager has her pollen unloaded by other bees, and these bees may add additional nectar and glandular secretions to the pollen when they store it into cells on the comb. The stored and fermented pollen is known as beebread. The question is whether pollen stored for a few days will be more palatable and have greater nutritional value than freshly collected bee pollen. If so, queen producers might prefer to use older combs of stored pollen when raising grafted bee larvae.

As a testament to the concept that pollen changes when collected by the bees, the most obvious changes can be seen by examination of the pollen grains using an electron microscope. Human and Nicholson (2006) followed morphological

changes in pollen from an important honey plant in South Africa, which is where the researchers lived. Fresh pollen grains collected from plants were dry, and the pollen grain had a very tight and narrow furrow on the surface (Fig. 1A). New bee-collected pollen was wetter from the addition of nectar and the glandular secretions, and the moisture caused the pollen grain to swell (Fig. 1B). The moisture in the new bee-collected pollen persists when the pollen is stored in the comb for a few days (Fig. 1C). The scientists suggested that as the pollen grains swell from the moisture, the furrow on the pollen grain broadens and allows digestive enzymes from the bacterium to penetrate the pollen and release important nutrients from the pollen grains.

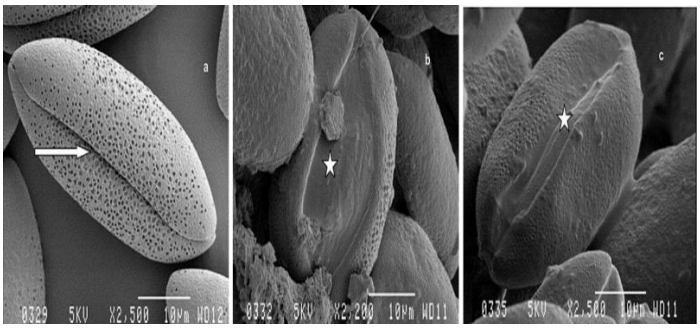

Fig. 1 – Different types of pollen associated with honey bee colonies. **A** – Dry pollen grains collected from plants before honey bees access and process the grains for transport and digestion. The furrow along the pollen grain is narrow, as indicated by the arrow. **B** – Freshly bee-collected pollen showing swelling of the pollen grains after addition of nectar and glandular secretions by the bees. The furrow extends into a much broader surface (marked by the star) that allows for easier enzymatic breakdown of the pollen grain to release nutrients during digestion. **C** – Pollen stored as beebread in the combs for a few days are still somewhat swollen and the furrow remains relatively broad. Figure from Human and Nicholson, 2006.

The palatability of freshly bee-collected pollen versus older stored pollen was compared in a study by Carroll *et al.* (2017). In addition to palatability, the authors examined physiological measures on newly emerged adult bees that were fed pollen that had been stored for varying lengths of time within combs. Generally, nurse bees preferred to eat pollen that was stored for only 2-4 days over pollen that was stored for periods more than 7 days. For example, bees were three times more likely to consume 1-day old pollen over 10-day old beebread. Similarly, they were twice as likely to consume 1-day old pollen over 5-day old pollen.

The authors compared body mass, overall pollen consumption, pollen feces accumulation in the hindgut and protein content of the hypopharyngeal or brood food glands of worker bees raised through 7 days on three types of pollen. The pollen was from the same plant sources, and the only difference was the duration of pollen storage prior to being fed to the bees. Newly emerged worker bees were forced to only ingest one of three types of pollen: 1-day old, 5-day old and 10-day old pollen. There were no significant differences in any of the physiological measures. The overall conclusion was that although honey bees prefer to eat freshly bee-collected pollen, it is not necessary for beebread to mature for a certain period in order to maximize release of nutrients to bees during digestion. Therefore, queens raised on freshly collected pollen should be similar to those raised on older stored pollen (at least for storage periods through 10 days).

Question: If my bees seem to be dying from a viral infection, do I need to worry about viral particles contaminating my combs? What can I do to clean or sterilize my combs and equipment?
Answer: Currently, there are no chemicals or drugs that are specifically used to sterilize combs or hive equipment that has been exposed to viruses (see above article on CBPV). The best practices to reduce spread of viral diseases are (1) avoid stressors that weaken the immune systems of bees (pesticide exposure, poor nutrition)**,** (2) keep varroa mite populations low to keep the mites from vectoring some viruses (Deformed Wing Virus, Acute Paralysis Virus) or from acting as additional stressors that compromise the immune systems of bees, (3) avoid transferring either sick bees or hive equipment from infected colonies to healthy colonies, and (4) keep fewer colonies in an apiary and arrange them to reduce the spread of sick bees. Although there are no disinfectants specific for bee viruses, it is still a good idea to disinfect hive equipment and other beekeeping equipment to reduce the levels of pathogens in hives. Some of these procedures are also very likely to kill viruses. For example, we know that household bleach can be used to kill covid-19 on surfaces, and there is no

reason to think that bleach will not also kill bee viruses.

Whenever I have practiced general disinfecting procedures on a regular basis, my colonies thrive and look their best when kept in the cleaned hive equipment. The following link (http://www.nationalbeeunit.com/index.cfm?pageid=167 - Fact Sheet – Hive Cleaning and Sterilization) is from the National Bee Unit in England/Wales. I was exploring their web site after reading the article by Dr. Giles Budge on chronic bee paralysis virus as an emerging disease threat that is reviewed elsewhere in this issue.
I have summarized the major disinfectants discussed in the Fact Sheet in the table below. Please read the fact sheet for details of how to use specific disinfectants safely. By all means, wear googles, gloves, aprons and respirators when dealing with disinfecting solutions – especially the very concentrated acetic acid used for stored combs.

In general, any hive cleaning procedure starts with taking the hive components apart and freezing everything for 2-3 days to kill all stages of wax moths (Greater and Lesser) and small hive beetles (SHB). All woodenware to be sterilized are scraped free of burr comb and any materials that might keep pathogens from being exposed to disinfecting solutions. Some people will sterilize the inside of hive bodies by torching with a flame or heat, but many people prefer to soak the woodenware and other equipment is a solution of sodium carbonate. This procedure kills fungi like chalkbrood and *Nosema*, spores of the bacterium that causes American Foulbrood (AFB), and bacteria that cause European foulbrood (EFB). It probably also kills viruses, but this has not been determined experimentally as of yet. Common household bleach solution can also be diluted and used to disinfect woodenware. The bleach will oxidize metals, so it can tend to cause rusting when used on hive tools and other metal beekeeping tools. A 0.5% sodium hypochlorite solution will kill spores of AFB and other bacteria, as well as the fungi. Bleach is also known to kill viruses, but as with the sodium carbonate solution, no details of killing viruses has been published in scientific reviews.

Finally, 80% acetic acid can be used as a fumigant to disinfect combs stored in stacked hive bodies and supers. The strong acid will corrode concrete and metals, so only glass bowls or trays should be used to hold the acid and concrete floors showed be covered or protected from exposure to the acid or its fumes. The acid fumes are heavier than air, so the general procedure is to pour the concentrated acetic acid into a glass pie plate or similar container that is placed on the top of a stack of combs. The stack must be sealed at the top and bottom and any holes in the hive equipment must be sealed before fumigation begins. When the lid is placed on the stack, the acid is allowed to fumigate and disappear over the next two weeks. This procedure kills chalkbrood and *Nosema* spores, but it may not kill the spores of the American Foulbrood bacterium. It will also kill all life stages of wax moths and SHB in the combs.

Question: I recently transferred a captured swarm from a swarm trap into a new hive body. The bees left their new hive within 2-3 days of the transfer. Why did they leave, and have you ever heard of this happening?
Answer: I will answer the second part of the question first. Yes, I have not only heard of newly hived swarms leaving, I have experienced this phenomenon myself. There is no single answer as to why the bees might leave, but there are some factors known to influence the likelihood of their departure.

One of the most common causes of a swarm leaving a new hive, is that the hive stands exposed to full sunlight all day long. Newly established colonies may be less likely to tolerate the heat if they have not drawn combs and if there is no brood to feed and raise. So, if hive temperatures dramatically increase within a few hours of the swarm being placed into a hive, the bees may very well opt to leave and find another and less hot cavity in which to live. So, it is always a good idea to place a newly hived swarm in a relatively shady area to minimize any excessive heating. Once established with active brood rearing, a colony is more likely to stay and adjust to more sunlight exposure when a colony is moved to a standard apiary location. Many beekeepers like to place their bees in full sunlight as a deterrent to infestations by small hive beetles (SHB).

Another strategy for holding newly hived swarms is to add a frame or two of honey and at least one frame of uncapped bee brood (*i.e.* larvae)

from a donor colony. The honey provides stored food and eases the pressure of finding immediate sources of nectar, while the frame of bee larvae triggers brood caring behavior by young nurse bees within the swarm. Both of these factors will tend to anchor a swarm to the new hive body much better than a dry hive that has no honey or brood combs.

Another issue that might trigger absconding of the new hive is crowding the volume within the hive. This is especially important if the swarm is being placed onto frames of plastic foundation or undrawn combs. If a 3-4 lb. swarm is thrown into a single deep chamber that is filled with 7-8 frames of foundation and a frame feeder (i.e. Boardman feeder), the bees are in essence placed into a crowded situation. It would be better to use about half the combs or to add an empty brood box on top of the box containing the combs and feeder for a few days. The extra empty space allows the swarm to expand and feel less crowded. Once young larvae are being raised, the hive can be returned to a normal conformation and complement of combs to avoid any burr comb production. The beekeeper just wants the swarm to feel less crowded when first hived to avoid the sense of crowding that led to issuance of the swarm from its original hive.

Finally, there are causes of swarms leaving that are inherent to the swarm itself. Some swarms are odd little beasts, and the behavior of the unit can be unpredictable. One of the most common forms of abnormal swarms is one that contains multiple queens in which most of them are either virgin queens or newly mated. I am not sure what causes these kinds of swarms, but they are much less cohesive groups of bees than can be found in the typical reproductive swarm that contains an older and well-established queen. I have seen swarms with multiple queens leave and return to a hive to which they were placed, only to eventually leave again. It is always strange and difficult to handle these kinds of swarms, but you may not know that this is your problem unless you see the many queens.

Other odd swarms include those that absconded their original hive because of either a disease or exposure to a pesticide. Both of these stressors will cause bees to abscond their home. You may hive one of these absconding swarms thinking that it is a true reproductive swarm, and the bees eventually leave your new hive because the factor (disease or toxic reactions to chemicals) that caused them to swarm is still acting on the bees. They are trying to get away from something that they may be carrying with them. This is a truly hopeless situation.

Question: How can I use sunlight and open-air conditions to deter destruction of combs by the Greater Wax Moth?
Answer: Open-air conditions that allows air flow and sunlight to reach combs in stored boxes can be used to deter infestations of wax moths and SHB without the use of cancer-causing repellents like para-dichlorobenzene. However, the method is not foolproof. The concept is to use sunlight and fresh air flow – two factors that discourage both types of comb pests – to minimize establishment and spreading of pest infestations by storing bee boxes in open-air structures that protect from rain (Fig. 2).

Fig. 2 – Example of open-air storage facility that protects from rain but allows sunlight and air flow among stacked hive bodies containing combs. Photo from Armour Metals, http://www.armourmetals.com/estimate.html.

The success of this storage method can be enhanced by some key features. First, if at all possible, only store combs that were used strictly for honey storage. Both hive pests prefer to lay their eggs on darker combs that have experienced many cycles of brood rearing. These darker combs will have silk cocoons from bee larvae and other debris associated with brood rearing that are fed upon by the larvae of these pests. Newly drawn

combs and combs that have never experienced brood rearing are least desired by these pests. If you have both types of combs, take the effort to sort the two types and store them in separate stacks. Stacks with brood combs will need more frequent inspection over time to ensure that pest populations are not developing in your boxes. Therefore, it is easier to completely separate brood combs from honey combs when using this method and concentrate your policing on the brood combs. If at all possible, it would be best to freeze boxes of brood combs and use the open-air storage only for the honey combs.

Second, combs need to be dry and processed before storage. Drying means that the sticky honey-covered surfaces of newly extracted combs are licked clean by either placement of the emptied combs onto hives for a couple of days or by allowing combs to be licked clean by robbing bees (done far enough from apiaries to keep the robbing frenzy out of the apiaries). Once the sticky honey has been removed by bees, boxes of combs need to be placed into freezers for a minimum of 3-5 days to make sure that all life stages of wax moth and SHB have been killed. Only after freezing should combs be moved to open-air storage.

Perhaps the single most important factor is how the boxes of combs are stacked. NEVER stack the boxes in tight vertical stacks as if they were on top of active hives. These tight stacks create the perfect environment for fostering infestations of wax moths and SHB. The stacks create a dark environment, and if a lid is placed on the stack of boxes, air flow is greatly reduced. Both pests will love these conditions.

There are two alternative ways of stacking hive bodies to maximize light and air flow. One is to simply stagger boxes in a vertical stack by alternating boxes at 90-degree angles.

The first box is positioned on cinder blocks to raise it from the floor. It is oriented as if being placed on a typical bottom board. The next box added to the stack is rotated 90 degrees so that is does not form a sealed path between itself and the first box. Each successive box is placed at a 90-degree rotation to the one below it (Fig. 3). The goal is to never have a sealed corridor between any two boxes.

A second method for staking boxes is to place them on one end rather than in an orientation similar to

Fig. 3 – Boxes stacked with alternating 90-degree pattern to allow light and air to reach combs.

placement on a hive. Rather than the hive bodies resting on the thin edges of the box, each box rests on a short end of the box (*e.g.* where the hand holds are carved out). The next box is placed exactly the same way with its short end resting on previous box (Fig. 4). The result is a stack of boxes

Fig. 4 – Sunlight exposure can be maximized by stacking boxes on their ends. The combs are never stacked over the top of other combs. This is least efficient use of space, but it offers the best light and air exposure.

in which the combs have maximal exposure to sunlight, but none of the combs are stored above other combs. In essence, it is a single layer of combs with maximal exposure to sunlight and air. However, this method is not an efficient use of space. It works well for small-scale beekeepers that

are not trying to protect hundreds to thousands of boxes of comb.

Another problem that needs consideration is the possibility of comb destruction by animals like skunks. The open-air structure may need to be walled off by chicken mesh to keep out rodents and skunks that will chew and destroy the combs. Some beekeepers also like to keep bees out by screening with one-eighth inch hardware cloth. However, be careful that the screen used does not reduce the light intensity that reaches the combs.

Finally, the use of open-air storage methods is probably best used by the small-scale beekeeper. Commercial or sideliners may find it necessary to have absolute protection by utilizing either chemical repellents or freezer storage of combs. All of that said, many small-scale beekeepers use open air storage of combs with great success.

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Gracious words are like a honeycomb, sweetness to the soul and health to the body. ***Proverbs 16:24***

CENTRAL MISSISSIPPI
BEEKEEPERS
ASSOCIATION
Established 1970

LOCAL CLUB NEWS

As the Corona virus continues to wreak havoc upon our American way of life, we all seem to be coping with a different perspective on what a "new normal" will be. Central Mississippi Beekeepers Association (CMBA) is not exempt from this pandemic. The organization has tried to remain relevant despite being a non-essential entity. The board and senior/experienced members of the organization continue to provide a valuable service to newer beekeepers wanting to learn the trade.

Despite the club's inability to hold monthly meetings since February 2020, members of the organization continue to provide advice and assistance to new beekeeper as well as the general public. During spring and early summer, the most valuable service the club provides is help with swarm removal or honeybee infestation advice and assistance. Additionally, anyone can ask questions and view the club's Facebook page at Central Mississippi Beekeepers group. Several of our members will be glad to promptly answer questions and encourage you to join the group. Bonita Massey, CMBA's Secretary, and her husband Gary, are very active mentoring new beekeepers and are happy to respond to inquiries about beekeeping. She said, "I would like to see more women and young people get involved with beekeeping. I would even go as far to say that I would like to have a woman's group of beekeepers established."

Uncertainty about the future and restrictions placed upon us by our state and local leaders will certainly continue for a while. Questions about future CMBA meeting and MBA's State Conference are both at the forefront of hard decisions leadership will have to make. The same applies to the Honey Booth at the State Fair this year. Even if the Fair Commission approves having the fair, will the general public attend? Likewise for the workers at the booth, most of the volunteers are senior in age and probably not enthused about working the event. Everyone wants to participate, but safety should be the top priority.

It is difficult to say exactly how the pandemic has affected the beekeeping business or hobbyist routine, but one thing for sure, honey sales have been good. One of our local honey producers, Jim Pennington, with Pennington Farms Honey, said that, "Our sales have been really brisk, especially during the first part of the outbreak. I think people wanted to shop at the open-air type of farmers market as opposed to going into a store." Reports from the field this year suggests that the honey crop has been slightly above average, which has helped keep up with demand.

Despite the pandemic, CMBA continues to provide a valuable service to new beekeepers and the community at large. Looking at things from a different perspective gives us all new insight and ways to improve conditions around us. Hopefully, by doing things smarter, having a better shared sense of cooperation, we will all be better off.

SOUTHWEST MISSISSIPPI BEEKEEPERS ASSOCIATION

Mike Guice, SWMBA President

Southwest MS Beekeepers highlight two of our members, Donn Geddie and Chris Duncan. This pair of robbers struck a Summit residence in broad daylight the other day, entering the garage and hauling out handfuls of gold.

Don and Chris had their hands full in getting a hive out of a garage. Don, one with the mask and white hair, and Chris Duncan are shown using

Don's "go getter" bee vac that he has perfected over time. They were invited by the homeowner to remove the bees. The *Enterprise-Journal* did a feature article on them and their bee removal work recently. Chris is a "new bee" who helps Don. Don has spoken at our annual Mississippi Beekeepers' State Convention on several occasions.

SWMS Beekeepers are looking forward to our next meeting on August 18th in the Extension Office in Meadville, if public meetings are permitted by then. Covid-19 has affected all of us, and our disruption in meetings has affected all our members who get useful information at each meeting. We are anxious to begin our regular meetings on the third Tuesday of each month, beginning at 7 p.m. in the Extension office in Meadville, located on Walnut Street. Stay Safe and keep those bees socially distancing.

MISSISSIPPI GULF COAST BEEKEEPERS ASSOCIATION

Like us on facebook

Due to the current COVID-19 pandemic, our monthly meetings at MGCCC in Gautier have been suspended. We are hopeful September will find us

back to a somewhat "normal" schedule again since the college is scheduled to open on or about August 25th.

Many of our members have tuned into the free online webinars offered by Penn State Extension and Auburn University Extension. Each presentation is recorded and available for viewing at your convenience once you are

registered. Personally, I have found all the sessions very interesting and well worth my time listening and learning.

In an effort to "reach out and stay connected," four of our members volunteered their time and talents to produce a beekeeping video last month. Mike and Kelly Tillis invited Will Evans and Bill Lange to their apiary to record capped frame removal along with the decapping and extraction process in their kitchen. Although many of our members are veteran beeks, we have several new beeks from our 2020 Beekeeping 101 course.

We wish each of you a safe and healthy summer. Join us in the Fall (hopefully) at MGCCC's Jackson County campus at 7:00 p.m. on the 2nd Tuesday of each month.

Proverbs 16:24,
Judy Hierstein, MGCBA President

Your Executive Committee

We are in a new administration of your Mississippi Beekeepers Association. Here is the list of current officers and Executive Committee members:

Michael Scheel—President
Steven Coy—Vice President
Dr. Martha Brackin—Secretary
Angelia Coy—Treasurer
David Buck—Central Mississippi Beekeepers
Mike Guice—Southwest Mississippi Beekeepers
Mack Busby—Southeast Mississippi Beekeepers
LaRue Stephens—Red Creek Beekeepers
Will Evans—Gulf Coast Beekeepers
Ed Hafer—Pine Belt Beekeepers
Don Geddie—Hobbyist At-large
Frank Garletts—Sideliner At-large
Austin Smith—Commercial At-large

Please feel free to contact any of the people that are serving our organization via this link:
https://mshoneybee.org/contact/