



# PROPOLIS

OFFICIAL NEWSLETTER OF THE  
MONROE COUNTY  
BEEKEEPERS ASSOCIATION  
[www.monroecountybeekeepers.com](http://www.monroecountybeekeepers.com)

## President's Message

I can't believe the weather we are having. It's mid-April as I write this and the warm weather has brought on the cherry, apple, pear and peach blossoms along with a flush of dandelions, all dotting the landscape with shades of white, pink, and yellow. The bees are bringing in loads of pollen and it looks hopeful for a good year for our little charges.

By the time you read this, most of our members have already performed hive rotations, installed packages, made splits, and have added the first of hopefully many honey supers.

This is also the natural time for honeybee colonies to reproduce and they do this through the act we call swarming. The art and skill of the beekeeper is called upon to keep the hive at maximum population yet prevent them from swarming and thus losing the honey crop. Of course, if you are on our swarm list, here is the opportunity to pick up some free bees.

Inside this issue you will find primers on swarm prevention and control, making splits and divisions, the use of queen excluders and snelgrove boards, and the importance and use of nucs,

As always we encourage you to submit articles for this newsletter. The cut-off date for submissions is the 15<sup>th</sup> of each month. Enjoy! And don't forget to mentor a new beekeeper! *Fr. Mike*

**DUES FOR 2010 NOW PAST DUE  
\$10 PER PERSON**

Submit them to Laurel or Richard!

**MONTHLY MEETING:  
MAY 12, 7 PM**

May, 2010

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For Honey Recipes go to the  
National Honey Board website:  
[www.honey.com](http://www.honey.com)



## "The Honeybee"

God made all the flowers  
For the Honey Bee to test.  
She chooses the finest nectar  
that makes the honey best,

She flies back to her home,  
all that sweetness in her tummy  
And makes the golden treasure  
that tastes, oh my, so yummy.

# HIVE HELPERS *Hints and Tips For Our Members*

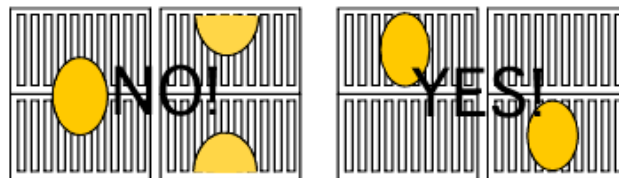
## May Tasks For The Beekeeper

Sources of pollen and nectar this month include dandelion and other early flowers, some late fruit bloom, Black Locust, Tulip Poplar, and maybe even some early clover. The goal of management this month is to make sure that all is well in the brood chamber so that you do not have to go into it during the main nectar flow – if all is well there and you use enough honey supers and provide additional entrances to prevent overcrowding in the brood chamber, then the bees will take care of the rest. Every time you smoke the bees and open the hive it takes between 24 to 48 hours for the bees to get everything back in order – that’s 24 to 48 hours that they can’t process nectar into liquid gold for you, thus reducing your harvest.

### DO’s

- DO record your observations of the daily temps, weather, the bees, and important events such as tree and flower blooms. A simple calendar to record daily info is a great help. A photo journal is very nice too!
- DO check your bees at least twice this month.
- DO clean your bottom board and equipment to make beekeeping easier the rest of the season.
- DO check your mite load with a sugar shake to see if Spring treatment is needed
- DO mark your queens so you know if she is superceded later.
- DO get your honey supers on early to inhibit swarming.
- DO reverse hive bodies again if necessary and set up a nuc or two. This can be part of your swarm prevention measures.

### When Can I Reverse Hive Bodies?



### DO NOT’s

- DO NOT hunt for the queen but rather examine the brood pattern to check her out.
- DO NOT apply any treatments or sugar syrup when honey supers are on.

*“Swarms are good and swarms are bad: they’re good if they come from somebody else’s apiary, they’re bad if they come from yours!”*

There is an old saw that describes the value of a honeybee swarm:  
*“A swarm of bees in May is worth a load of hay. A swarm of bees in June is worth a silver spoon. But a swarm of bees in July isn’t worth a fly.”*

### BEE ANTHROPOLOGY

IMPORTANT – REMEMBER TO POST THIS MONTH’S COLUMN ON SWARMING ON THE FRONT OF THE HIVE AS A SPECIAL NOTICE SO THAT THE BEES MAY READ IT AND KNOW WHAT IS EXPECTED OF THEM. WE ALL WANT TO BE ON THE SAME PAGE, RIGHT? OF COURSE, MOST BEES ARE FEMALE AND HAVE A MIND OF THEIR OWN SO . . .

QUESTION – WHY DO MOST DRONES WANDER FROM HIVE TO HIVE?  
ANSWER – BECAUSE THEY’RE MALE, GET LOST, AND WON’T ASK FOR DIRECTIONS!

## IT'S SWARM SEASON

*The steps you take before Apple Blossom time may determine if you have a bumper crop of honey this year.*

### **Reproductive Swarms**

When the queen in a colony of honey bees has one or more seasons of egg laying behind her and is producing less queen pheromones, and/or the colony also senses that it is getting too congested in the BROOD chamber, then about half or more of the bees will leave with the old queen and look for a new home. This process is called swarming. However, not all swarms are the same and it is important to note that there are two major types of swarming. In either case, if the swarm comes from one of your own hives, it means the loss of the honey crop from that hive since most bees that leave in the swarm are the forager age bees that would have brought in the nectar for your honey crop.

The first type of swarming, and the topic of this month's article, concerns reproduction of the honeybee colony in the Spring and early Summer by the colony splitting to form two or more colonies. This is called the *Reproductive Swarm*. It is nature's way of colony reproduction at a time most favorable for perpetuation of the species. We will refer to all actions concerning this process as the *Reproductive Mode* of the honeybee colony. All this work must proceed in orderly fashion and within a specific time frame or the bees will abort the swarm and switch to *Survival Mode* (gather as much nectar as possible to convert it to honey for winter storage and maybe raise a new supercedure queen who will have lots of queen pheromone to keep the colony happy).

Preparation for the reproductive swarm began back in January when the bees began eating more to raise the temperature at the heart of the cluster to make it favorable for brood-rearing. They also began to feed the queen more so that she could resume producing and laying eggs. As the bees consumed stored honey and

pollen those cells containing the honey and pollen are now empty and the bees clean and prepare them to receive an egg from the queen.

The brood nest expands upward and outward until two conditions are met: (1) there are enough bees to accompany the queen and make a go of it in a reproductive swarm; and (2) making sure (a) the depleted larder is restocked with enough supplies to last the home colony until new foragers can mature to take over that task of gathering supplies and (b) that there are enough nurse bees to care for the developing brood and virgin queen(s) to ensure survival of the parent colony.

As the bees restock the larder before they leave, more and more cells are filled with nectar. This forces the queen down since the top cells are filled first. But those cells lower down are already filled with brood so there's not much room to lay eggs. Since the queen is now laying less she doesn't require as much food and subsequently is fed less. In the process, she is trimming and slimming down and will soon be able to fly and accompany the swarm.

If she's an older queen (a year or more) she is naturally producing less queen pheromones. Since one of the effects of queen pheromones is to prevent the workers from raising a new queen, the lack of a sufficient amount stimulates the workers to begin building queen cups and raising queen larvae. It is a known fact that a hive with a queen in her second year swarms from two to four times as much as that having a young queen, and older queens even more so.

Another factor coming into play is that with less uncapped brood to feed there is less brood pheromone so foragers and house bees perceive less incentive to forage and work so they are lounging around resulting in even more congestion of the brood chamber. The limited queen pheromones are spread even thinner among all these lounging bees.

Those nurse bees making all that brood food with few mouths to feed are engorged with the result that the developing queen larvae are fed profusely. The drones are also well fed and prepared for their task – mating with virgin queens from other colonies also undergoing reproductive swarming!

When all these events come together in a progressive and timely manner, scouts start looking for a new home and come back to report on their prospects. When the decision is made, the bees gorge themselves on honey, come swarming out of the hive, fly a short distance, cluster while preparing for the final trip to their new home, then finally leave for their new home.

When they arrive, they will immediately begin to construct comb so the queen can begin to lay eggs and that nectar/honey and pollen can be stored. Usually the old queen will be superceded after the colony is on its way to prosperity. But the consensus is that only about one out of every five swarms actually survive its first winter.

According to Walt Wright, the cut-off date for colony reproductive *swarm decision* (not the actual swarm itself) is apple-blossom time. The most intense preparation period is the six weeks preceding that. This is the period when *swarm prevention* techniques are used. These are techniques that extend the preparation period beyond the swarm decision cut-off date. After this date, the honeybee colony will switch over to *survival mode* and store as much honey as possible for winter stores (and the beekeepers harvest). If the bees decide to swarm, then your only hope is to use *swarm control* techniques.

## **Swarm Prevention Techniques**

### **1) A Young Queen**

The first and foremost *Swarm Prevention* technique is to have a young vigorous queen with lots of queen pheromones. A queen only produce a certain amount of queen pheromones in her lifetime and the older she gets the less queen pheromones she produces. This means a young queen, less than a year old, is much better at keeping the troops happy than an older, used up

queen. That is why requeening with a young queen from known good stock later in the summer is so important. Consider these points:

- The late Master Beekeeper George Imirie taught in his Pink Pages that a young queen installed in September will have only laid a small amount of eggs before the winter break and is essentially a young queen when egg-laying begins in earnest in January and February.
- In an article in the April '08 issue of Bee Culture, Mel Disselkoen stated that replacing your queen with a young queen mated after June 21 via queen cell will also simplify your varroa mite management due to two reasons: (1) a break in the brood cycle disrupts the varroa mite breeding pattern and (2) the new queen will simply outbreed the mites.
- G.M. Doolittle taught that a queen properly managed for production be replaced when two years old because she is used up faster than the queen of a colony not pushed for honey production. She should be replaced even younger if her production is not satisfactory. He believed that replacing a queen when the clover honey is removed is a better time to requeen and more in tune with nature than requeening in the spring.
- Ross Conrad and others establish and overwinter small nucleus colonies with new young queens mated in the summer to provide, for all intents and purposes, young but proven queens for production use the following summer.
- There is evidence that queens raised and mated in the honey flow days of summer are actually better queens due to better nutrition of both the queens and drones and more favorable weather for better mating conditions.

It is also a proven fact that young queens will lay more eggs per day than an older queen. A young production queen who lays up to 2000 eggs a day can produce a colony of 60,000 workers in the six weeks preceding a honey flow to gather and process that nectar into honey. A one year old queen's production down to about 1000 eggs a day would result in a work force of about 30,000

workers. You can guess which colony will have a greater harvest - it is a known fact that one colony of 60,000 will significantly out-produce two colonies of 30,000 each.

So making sure you have a young queen in the late summer has two effects: (1) more queen pheromone to distribute to the colony; and (2) more workers to gather and process nectar into honey as well as produce the wax needed to make all that comb. Practically speaking, this means a larger cluster of bees going into the winter, earlier stronger brood-rearing in the Spring, and less probability of reproductive swarming in early summer.

## 2) Reversing the Brood Chamber

For some reason it seems that queens prefer to move up and not down in early spring. Recognizing this, the second standard Swarm *Prevention* technique is to reverse the brood chambers so that the empty bottom chamber is moved to the top. This means that more cells are now available for the queen to move up and lay into and there are empty cells available *above the brood rearing* that need to be filled with nectar and pollen. The bees sense there is not a safety cap of honey/nectar to satisfy the colony survival demands so this buys time so that the swarm impulse does not reach critical mass before the swarm decision cut-off date, usually around apple-blossom time.

## 3) Early Supering

With the brood chamber filling rapidly with all those newly emerging bees, it is important to give the colony at least one empty super for the growing worker force to move into. This is to relieve congestion in the brood chamber – and congestion in the brood chamber is a precursor to swarming. Whether congestion in the brood chamber is a cause of reproductive swarming or just an indicator of swarm preparation, if it is relieved then you can most likely prevent a reproductive swarm. You will also be providing a place for bees to establish that honey/nectar safety cap above the brood chamber without plugging cells in the brood chamber with

honey/nectar that should instead be used for brood rearing.

Also consider that honeybees need extra room to process nectar into honey – the more space they have to spread out that nectar to decrease its moisture content before storing the finished product as honey the better it is for both the honeybee and the beekeeper. Additionally, drawn comb has its own pheromone and stimulates the honeybees' hoarding instinct so they work even harder to fill all those empty cells.

## 4) Breaching the Honey Cap

Queens do not like to move across cells filled with honey to lay eggs above the honey layer. This is called a *honey cap* and many beekeepers use this concept and this cap as a natural queen excluder to keep the queen from laying eggs in the honey supers above the brood chamber. It doesn't matter whether these supers are extracting supers or comb honey supers. However, this concept can also work against the beekeeper if the honey cap is established in the brood chamber, especially the lower brood chamber of a double brood chamber hive. To keep the queen from being confined by this cap in the lower brood chamber, the beekeeper must manipulate the combs so that this cap is breached.

Those practicing Nectar Management as proposed by Walt Wright believe this honey cap early in the reproductive swarm season also discourages workers from moving up into the honey supers since a large enough cap provides enough honey/nectar for them to complete their *reproductive mode*. These beekeepers make sure that the honey cap in the top brood chamber is breached. They do this by removing alternate frames of honey and replacing those with frames of empty drawn comb. A honey super is now placed on top of the upper brood chamber with the removed frames of honey/nectar filled comb alternated with more frames of empty drawn comb in such a way that the empty upper frames alternate with the filled frames immediately below them and vice versa.

This is called *checkerboarding*. It permits (a) the queen to move up into the upper brood

chamber and (b) workers to move up to the honey super for nectar storage. This prevents the bees from completing their swarm preparations in time, the swarm urge is cancelled and the *survival mode* (processing and storing of nectar/honey for winter and spring use) kicks in.

### 5) Distribution of Brood

Frames of brood from a prosperous colony can be switched with an empty comb from a weaker colony so that all colonies in the apiary will be at equal strength. Having all colonies in an apiary at equal strength makes scheduling and managing tasks easier.

### 6) Establish Nucs

Nucs, short for nucleus colonies, may perhaps be the least understood or used yet very effective technique for *Swarm Prevention*. To establish a nuc from a prosperous colony you simply remove two or three frames of mostly capped brood with attached bees (and NO QUEEN) from the parent colony and place them into a nuc with a new young marked queen, and a frame or two of honey and pollen. In the parent hive, replace these frames with frames of drawn comb or even foundation.

This manipulation frees up congestion in the brood chamber of the parent hive and provides you with a young laying queen to use later in the season to requeen the parent hive. Properly managed, this nuc can provide you with frames of brood to boost a weaker colony, check a colony for queenlessness, have a new queen instantly available if needed, and get some new drawn comb out of the deal to boot.

## Swarm Control Techniques

If upon inspection you find queen cells with larva and queen jelly, or a capped queen cell, then swarming is imminent and only a drastic step might prevent the loss of the workers and your honey crop. At the least you must remove several frames of brood from the center of the brood chamber and replace them with frames of foundation, although this may be a temporary fix at best.

Since a hive that is deprived of most of its

brood OR of its worker force will not swarm you must immediately split the colony in an attempt to complete the swarm urge. If you do not want an extra colony, you can always reunite them later. Many methods are described in the bee literature. Here is one method.

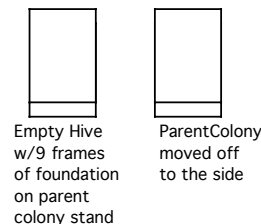
The method about to be described uses the concepts of padgening (forager bees will return to the original hive location), shook swarming (artificially creating the swarm by shaking the bees off the combs in front of the parent hive location) and the fact that nurse bees will move up through a queen excluder to take care of the needs of frames of developing brood placed above the excluder. It has been developed from concepts presented by Dr. C.C. Miller, C.M. Doolittle, Richard Taylor, George Imirie, Mel Disselkoen, and a host of others.

You will be removing all frames of developing brood except one as well as all frames of nectar/honey and pollen. You will also have a choice of using these frames to either strengthen weaker colonies, make increase colonies or nucs, or establishing an extra colony behind or above the parent colony – to be united to the parent colony later in the season.

You will need:

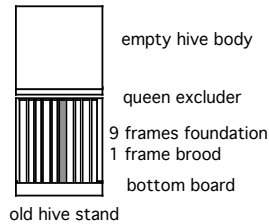
- An extra hive body and bottom board
- 10 frames of foundation
- An extra empty hive body
- A queen excluder
- Additional spare hives or nucs if you desire increase colonies or nucs.

(1) Move the parent colony off to the side and place the spare bottom board and extra hive body along with nine frames of foundation on the stand of the parent colony.



(2) Open the parent hive and remove one frame containing both sealed and unsealed brood and no

queen cells. Place this frame directly into the center of the 9 frames of foundation in the empty hive then place the queen excluder on top. On top of the excluder place the other empty hive body with the final frame of foundation.



(3) One at a time, remove all frames from the old hive, shaking its bees in front of the empty hive and placing the now bee-free comb in the empty hive body on top of the queen excluder. If you are not creating any new colonies or nucs be sure to cut out any queen cells.

(4) If you have more than one brood box, when the first brood box is empty of its combs place it on top of the one you just filled.

(5) Continue to shake bees from this second brood chamber of the parent hive in front of the entrance as before, placing the bee-les combs in the top box as in step 3 above.

(6) When all the brood frames from the parent colony have all been shaken, your choices are:

- If not making any new colonies, remove the brood bodies from over the queen excluder and place them on weak colonies over a queen excluder. These will become honey supers when the brood is hatched out and will provide extra frames of honey for winter or early spring use.
- If making nucs or increase colonies, allow the brood-frame filled box(es) to remain on the hive above the queen excluder for at least 30 minutes to allow nurse bees to move up onto the brood frames. Then remove the hive body(ies) and place on new stands/bottom boards or distribute frames into nucs. Be sure to include a frame with a swarm cell in each new colony or nuc (or provide a caged new young mated queen, virgin queen or queen

cell if necessary).

- If making a temporary colony, allow the brood-frame filled box to remain on the hive above the queen excluder for at least 30 minutes to allow nurse bees to move up onto the brood frames. Be sure you have at least one queen cell in the new colony to insure its survival. Then remove the hive body and place on a stand and bottom board directly behind the parent hive, reducing the entrance of the new hive to discourage robbing. An alternative at this time would be to remove this upper body and replace the queen excluder with a snelgrove board then place this new colony on top of the snelgrove board. The entrance to this new hive, whether on a stand behind the parent hive or on top of the snelgrove board, should face in the opposite direction to that of the parent hive. Later, when you reunite these two hives, the foragers from the extra hive will eventually find the entrance of the parent hive and you won't lose these bees.

(7) When starting a new hive or nuc(s), remember to reduce the entrance to discourage robbing and make sure there are enough frames of nectar/honey and pollen or provide sugar syrup and pollen patties. Do not disturb for at least 10-14 days. At that time you can inspect the colony for eggs or larvae to see if the new queen is mated and laying. If you cannot find any eggs, larvae, or queen cells, give them a frame of eggs/young larva from another hive. If after three days you find an emergency queen cell that means they were queenless. If not, that hive has a queen somewhere but she is not laying yet. If you see new emergency queen cells, you should give the colony a new queen. It's probably best to order a new marked queen from a breeder and have her shipped overnight. Use standard new queen installation methods to introduce her into the hive. Keep the 1:1 sugar syrup going (there's few foragers to go out and get food). Add a second body of 10 frames of UNDRAWN foundation in about 3-4 weeks.

(8) To unite the two colonies later in the year place a layer of newspaper (with a few small slits) on top

of the old colony, place the new colony on top of the paper, then close up. The bees will chew through the paper and accept the younger queen. Most times the older queen will be deposed. Or, you can kill the older queen before uniting the colonies.

(9) Be sure to provide enough honey supers for the shook-swarmed hive so that it does not become overcrowded and produce the second type of swarm – the overcrowding swarm!

### The Unique Benefit of a Swarm

If there is one unique benefit of a swarm it's that they are relentless, efficient comb builders. Even if you do not want to increase the number of hives in your apiary, make room for a hive or two or even just a few nucs to house any swarms you may find either from our own hives or from a foreign hive. When you have them,

provide continuous feeding of 1:1 sugar syrup and keep ahead of them with the undrawn foundation. You will end up with some excellent drawn comb that you can then store and use next year for a multitude of purposes. You can then unite that colony with a weak colony (remember to eliminate both older queens and requeen with a new young marked queen) and have a good strong hive ready to go into the winter.

In fact, you may even have some combs filled with honey from your swarm hive that you can give to a colony low on stores or even store that frame in the freezer and give it to a needy hive in the early spring. You may even be lucky enough to harvest a super or two for your own use or to sell. The secret is to plan ahead and find a use for all the gifts that nature provides. And if a swarm is not from your own apiary, accept it as a special gift.

#### MCBA APPAREL AVAILABLE!

Thanks to our Vice-President Glenn Bachman we have MCBA hats, t-shirts, aprons, mugs, and other items with our official club logo available for purchase. A percentage of the proceeds are donated back to our Association.

[www.cafepress.com/mcbeekkeepers](http://www.cafepress.com/mcbeekkeepers)

Glenn is also working on the same deal with another site: <http://thehive.imprintsite.com>

#### New Beekeeping Woodenware For Sale

Local beekeeper Larry Tuttle of Wayne County Beekeepers has very good quality woodenware. Call him at 570-253-4124.

#### Association Fund Raisers

Our Treasurer Rich Sudnik has a supply of the book "Beekeeping For Dummies" available for purchase at five dollars below cost with all proceeds donated back to our Association. Beekeeping CD disks prepared by Michael Weller are also available for \$10.

#### MCBA LIBRARY

Books/DVD's/Video's available for free loan to our members:

- Backyard Beekeeping by Kim Flottum
- The Honey Handbook by Kim Flottum
- Contemporary Queen Rearing by Harry Laidlaw
- Anthology of Beekeeping (CD)
- National Honey Board Culinary Library (CD)
- Introduction to Beekeeping by Ed Weis (DVD)
- The Bee Movie (DVD)
- Silence Of The Bees (DVD)
- Life Of The Honeybee (DVD)
- Making Splits and Divides (DVD)
- Producing Comb Honey (DVD)

#### Association Members Needed as Speakers

We have been receiving many requests for giving presentations on honeybees and beekeeping. Most of these involve presentations to youth groups. If you can help, see Fr. Michael. We also have our teaching hive and laminated posters that you can borrow to use in your presentations.

## May 12<sup>th</sup> Meeting Agenda

7:00 PM Business Meeting

7:20 PM Guest Speaker Noel Soto from the USDA (Harrisburg)

7:35 PM Video: Swarms (and how to capture/remove them)!

8:30 PM Social Time/ Q&A

9:00 PM Building Closes

## *A Primer On Nucs*

What is a nuc? The word “nuc” stands for “nucleus colony” and is used to refer to a honeybee colony occupying less than the standard 8 or 10 frames of a full size colony. The term is also used to define a colony used for other than honey production or pollination services. The smaller sized 5 frame nuc boxes are handy to create starter colonies to sell to other beekeepers or to carry along to hive a swarm.

Nuc's can consist of: a single frame of bees and brood with attached swarm cell to start a new colony; a three frame mini-mating nuc for the virgin queen to emerge from her cell, mate, and start laying eggs; a five frame mini-hive to keep a valued breeder queen or a spare mated young queen for emergencies; two 5-frame colonies housed in a ten frame hive with a divider to keep them separated; or even a two or three frame split housed in eight or ten frame equipment with or without dividers – which in time, if allowed to grow, will become a full sized colony.

Nucleus colonies can be an invaluable aid to the beekeeper and provide the following uses:

- A 3 pound package with new queen along with an extra new queen will allow you to start two colonies in five frame equipment, thus saving some of the expense of replacing winter losses or expanding your apiary – if you can give them a frame of brood and bees from an existing thriving hive so much the better;
- Make splits as part of your management tools for swarm prevention or control;
- Maintain a valuable breeder queen to used for grafting purposes;
- Mate virgin queens in mid-summer but keep them at low production until you use the whole nuc to requeen your hive later in the summer;
- Overwinter two five-frame nucs in divided 10 frame equipment to make up for winter losses;
- Make splits (divides) so that a ten frame colony can start up to four nucs, each one being given two frames of bees and brood and a new queen, and then selling these started nucs in a month or so to other beekeepers;
- Hive a swarm on foundation in a nuc and use them as comb-building fanatics to get new comb for replacement of older comb in production colonies and for mating nuc use (remember to feed continuously and remove frames regularly);
- Provide frames of bees/brood (no queen please) to help build up weaker colonies;
- Split a five frame nuc during the honey flow and let the bees raise a second queen in the queenless split;
- Observe the laying pattern of any queen and the actions of her daughters in a nuc to see if she is a worthy candidate to requeen a production hive later in the year.

Remember that you have to monitor the feed of these colonies so they don't starve, guard against robbing, and regularly remove brood/bees as part of swarm prevention.

## *The Hierarchy Of Tasks of Worker Bees*

One of the amazing things about a honeybee colony is the vast assortment of tasks that must be performed for the colony to survive:

- Construction and Maintenance
- Heating, Ventilation and Air Conditioning
- Food Preparation and Service
- Warehouse and Inventory Control
- Janitorial and Housekeeping
- Waste Management and Disposal (including dead bees)
- Foraging and Supply Services
- Police and Defense Departments
- Emergency Management and Evacuation Teams
- Political and Geographic Stability Commissions
- Communications and Recruitment Specialists
- Urban Development and Population Control Specialists

Now that we have totally anthropomorphized the honeybee colony, we can talk simply about a sequence of jobs that honeybee workers progress through related to their age and glandular development. These tasks also indicate where in the hive we can generally find bees of a specific age (important when doing sugar shakes, applying treatments, where to put pollen patties and supplemental feed, etc.). However, these are not hard and fast rules and honeybees have the ability to adapt to the needs of the colony to fulfill specific tasks if bees of the normal age for a particular task are unable or unavailable to perform that task. These tasks include in a roughly chronological order:

1. Cleaning cells;
2. Brood rearing
3. Queen tending;
4. Receiving and packing nectar/pollen;
5. Comb-building;
6. Ventilation;
7. Guarding;
8. Foraging.

We will refer to worker bees performing tasks 1 through 5 as *house bees* and worker bees performing tasks 6 through 8 as *outside bees*. We can also make the general statement that *house bees* address immediate concerns revolving around the brood nest and *outside bees* address the needs of the colony as a whole. Again, though, remember that bees are very adaptable including progression and regression of glandular secretions. They also spend *lots* of time either resting or patrolling inside the colony. During this patrolling they assess colony needs and tasks and jump in where needed.

It's time now to take a look at the life of a honeybee worker, especially in the summertime:

*Workers Age 1-3 Days* - These very youngest of workers will be cleaning cells and eating huge quantities of pollen to develop their *hypopharyngeal* and *mandibular* glands. They will be found immediately at the top of the brood nest, where the pollen is stored.

*Workers Age 3-15 Days* - With their *hypopharyngeal* and *mandibular* glands producing brood food and royal jelly, these workers are tasked with tending and feeding the brood and the queen. They will, naturally, be found near the center of the broodnest.

*Workers Age 10-18 Days* - The continued large consumption of pollen by workers are essential for the development of their *wax glands*. The development of these glands overlap with the development of their two brood food glands and they are able to cap cells at an early age. The peak of wax production (and comb-building) occurs now. These bees will be found, first, in the brood nest capping the brood, and later, above the pollen in the brood nest and then in the honey supers capping the honey.

*Workers Age 16-20 Days* - With *hypopharyngeal* glands now decreasing in size (maybe because workers are now further from the pollen in the brood nest) these glands switch from production of brood food to production of the two enzymes needed to convert nectar to honey: *invertase* and *glucose oxidase*. These workers are found predominantly outside the immediate brood nest, taking nectar from incoming foragers and then transferring that nectar to and processing that nectar up in the honey supers.

*Workers Age 20 Days* – This is a transitional phase as workers switch from house tasks to outside tasks:

- Some will work at ventilation and air-conditioning, maintaining an even temperatures and creating air currents to remove surplus moisture - some of these can be seen fanning at the hive entrance;
- Some will work as guards at the hive entrance – but to be effective guards they need to produce the *alarm pheromone* (2-heptanone), which comes from the *mandibular glands* after these glands have stopped producing brood food (this pheromone is used principally to repel invaders, especially robber bees from other colonies);
- *Workers Age 20-40 Days* – The *sting pheromones* and *venom production* from their respective glands in these workers peak at this time and the *Nasonov gland* (secretes the 'here is home' pheromone) also reaches maximum production at this time. This is the final stage of a worker's life and she spends it as a forager for nectar, pollen, water, and/or propolis. When her wings wear down from air friction, she can no longer fly, drops out of the sky, and dies a lonely death away from the colony she has so dutifully served.

This concludes our discussion and we appreciate all the researchers, observers, authors, editors, and beekeepers from whom we've gleaned the information for this article. Next month: Communication in the honeybee colony!

### Schedule

Monroe County Beekeepers Association meets at the Monroe County Conservation District Education Center on Running Valley Road in Stroudsburg the second Wednesday of each month beginning at 7 PM from February through November. Guests and visitors are always welcome.

- May Meeting begins at 7 PM on Wednesday May 12<sup>th</sup> - Swarms, Splits, and Divides
- June Meeting begins at 7 PM on Wednesday June 9<sup>th</sup> - Supering, Queen Excluders, Comb Honey

### TENTATIVE FIELD DAYS

- Saturday June 12 10:00 AM – Making Splits and Nucs, Letting the Bees Raise Their Own Queen

### Contact List

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<i>Treasurer</i>	Richard Sudnik	570-223-1239	<a href="mailto:spanky@epix.net">spanky@epix.net</a>

*Coordinators and Volunteers Needed For 2010:*

*Fellowship/Refreshments, Club Apiary Maintenance, Observation Hive Maintenance*



**JOIN THE PA STATE BEEKEEPERS AND HELP ALL BEEKEEPERS IN PA!**

**PROPOLIS – A glue-like substance which honeybees use to structurally strengthen their home to keep it snug and safe. It also has certain properties that protect against some pathogens.**



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