



A Beginner's Guide to Keeping  
Bees Thriving in the Boston Area

# Beekeepers School

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**BABA Beekeeper's School 2026**



# **BABA Beekeeping School**

**Week Six Setup**



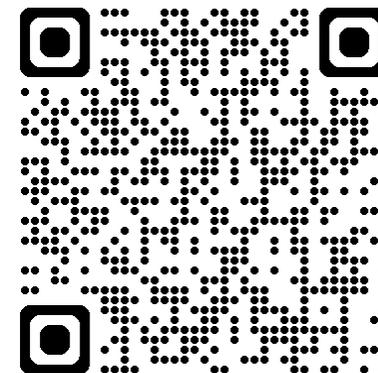


# Welcome to Week 6

- **Week Six Opening**
  - Week Five Recap
    - Using a Hive Tool
    - Varroa Mites
    - Mite Monitoring
    - Mite Treatment Options
  - We opened with how to use a hive tool to get a gap for inspections. Then we turned to varroa mites, learning how to monitor for them, as well as the ins and outs of treatments.



# Presentation Materials



- **Presentation Materials Available**
  - Presentations can be accessed at this link  
<https://managedmentoring.com/baba-bee-school>
- **Presentation Access Going Forward**
  - Each week the presentations will be added to that page
  - As we start each week, the weeks lessons will be available



# This weeks Agenda

- **On Tap for Week Six**
  - Watching for **queen performance during summer.**
  - We emphasize important elements of the **calendar of summer**
  - **More equipment** to round out your beekeeping kit.
  - The night ends with **things you'll see in a hive.**



- **Questions**

**Q&A**





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## **Watching for Queen Performance**

Lesson | Summer Queen Problems



# What is Covered in this Lesson

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Acknowledging Possible Problems Can Occur

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Queen Problem Origins – Root Causes

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Queen Problem Indicators

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Knowing What is Normal

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Responding to Events

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# Summer Queen Problems

- **Queen Problems sometimes surface in mid-year**
  - It is customary for some queen issues for first year beekeepers
    - The nature in which a beekeeper obtains bees sets up the situation
      - Package bees with foreign mated queens can cause problems
      - Aged queens in purchase Nuc Colonies
  - Primarily Queens lose performance
    - Sometimes it is a mating problem
    - Sometimes they are not accepted by the colony bees
    - Sometimes a queen simply reaches the end of her fertility window



# Queens in Summer

- **Remember to consider 'what is normal'**
  - Knowing prevents the wrong assessment
    - When the nectar flow slows down, queens do not produce as much
    - Instead of full frames of brood, covered edge to edge on both faces, the queen may lay a small patch in the center of the brood area
  - The takeaway here is that brood production often contracts
    - Sometimes brood production can contract all the way to no brood present in the colony.
      - This is not common, but it does happen, and it is not an indicator of a bad queen.



# Spring and Summer Frames





# Summer/Fall Slowdown





# Package Problems

## □ Package Queen Mating

- As covered in earlier lessons, some queens are not well mated
  - They might do well enough in the season, but if they were poorly mated by the producer, summer is often when problems show up
    - Poor early weather for mating, lack of drones to mate with – several problems can lead to ineffective queens down the road.
    - Queen that get mated in a substandard way may make it through the initial push of the season only to falter mid-way through the year
  - There are a small percentage of queens where this occurs every year



# Two Hives Help

- **Poor Performers are Evident**
  - If you have two hives, it will be clear that one is not performing
    - It is fairly easy to contrast one against the other see it is underwhelming
  - ' Colonies are like Children '
    - No two are alike...
    - That being said, if one did not build out to two boxes well – if it is languishing – and showing development problems, triage it and get a plan in motion



# Nuc Colony Queens

- **Queen are said to be 2-to-5-year proposition**
  - Truthfully, it is not customary for a queen last five years – it just doesn't happen
    - By experience we coach our beekeepers to expect 2 to 3 years. So often we see a queen's effectiveness wane or falter by 2.5 years
  - Nucs with second year queens
    - Sometimes nucs ***are sold with second year queens***
      - If you do the math, this means at the halfway point of your season the queen will be 2.5 years old and complications might arise.



# Problem Signs

- **Poor Brood Patterns – Low Populations**
  - It should be noted up front that there are some legitimate reasons for poor brood patterns that are not queen problems
    - **Example:** Early in the season a queen starts to build a workforce, and then cold weather comes in and the colony contracts to stay warm, resulting in abandonment of outer brood. This outcome yields an unusual presentation of brood patterns for later inspections
      - This is just to demonstrate that sometimes circumstances come into play
  - If for some reason your brood looks shoddy, you should trace your steps back to see if there is a reason to explain it



# Drone Laying Queen

Queen laying unfertilized eggs in worker cells; results in bullet shaped cappings

Notice the abundance of Drones

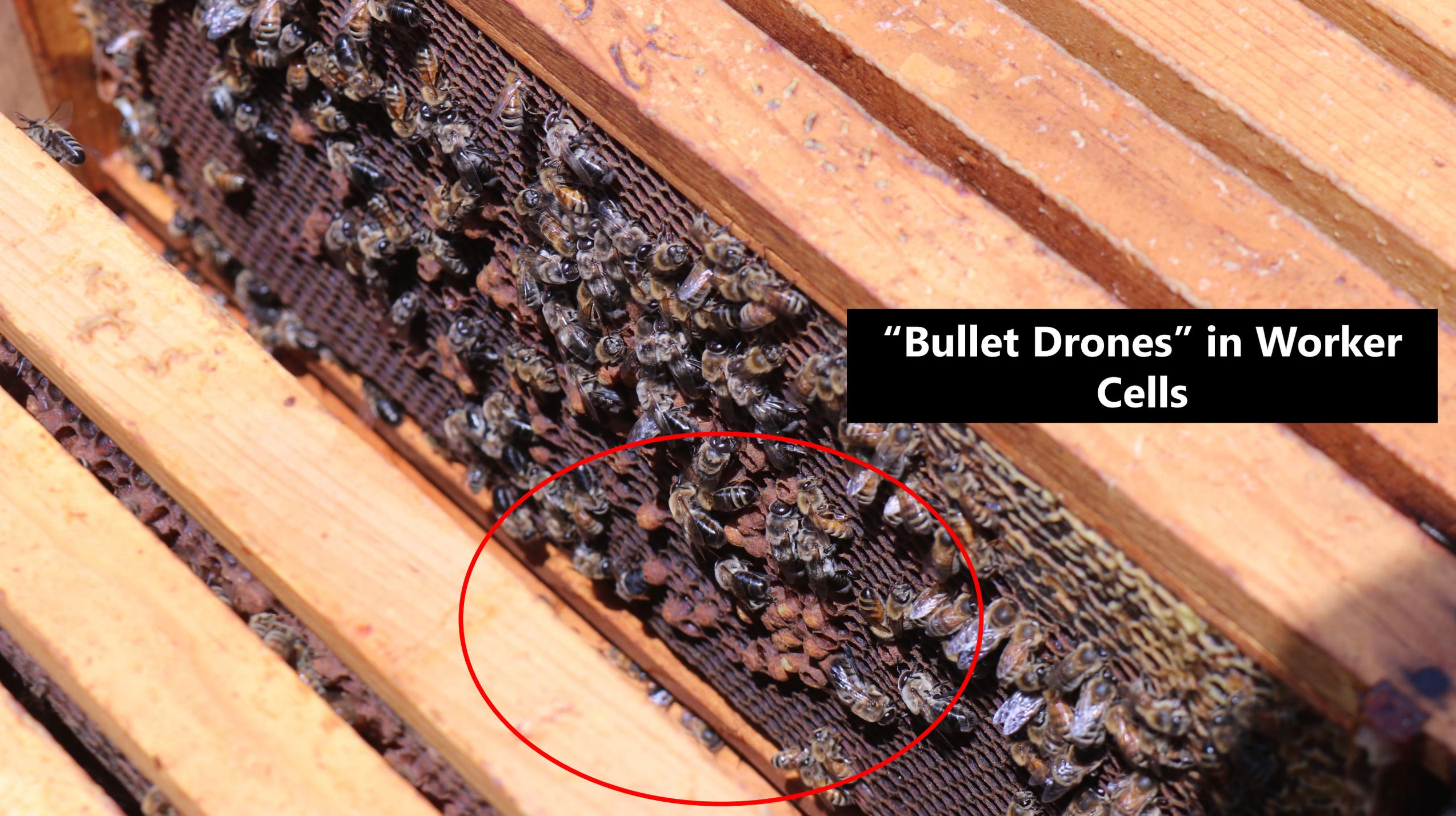


# Poor Brood Pattern Visuals

## □ Bullet Drones

- Queens laying unfertilized eggs in worker cells
  - This means the queen is out of sperm. She might not have been well mated, or her supply is depleted.
  - She lays what should be a worker, but without fertilization a drone is developed in a cramped worker cell – protruding from the top





**“Bullet Drones” in Worker Cells**



# High Drone Production in Summer

- **High numbers of drones in summer = unusual**
  - Drones are not usually produced in abundance as the summer progresses
    - If you see drones being produced in large quantities in summer, it could be a watch....
    - Drone cells normally would be in drone comb areas of the colony, and in tight concentric patterns.
      - They would not be haphazard and scattershot
      - They are not typically located in the areas where worker brood is being produced
    - It is an odd observation, but sometimes it sure appears that when a queen is failing, she produces more drones for some reason
      - Drones in the mother colony do not mate with daughters, so biologically this is odd... But it sure seems to be something that you might see and should keep an eye out for



# Look for a Balance

- **Biologically, queens slow down in summer**
  - As noted earlier
    - Honeybee queens will not keep producing brood at significant rates when nectar flows are not providing free-flowing resources
    - However, a queen will continue to produce some brood and pick up again as the fall nectar flow comes into play
  - Your job is to learn what summer brood production patterns look like
    - And pay attention to odd brood patterns, bullet drones, the presence of capped queen cells and so on.



# If they try to make a new queen...

- **The response form you is an it depends situation**
  - If the season is early, and they make a new queen, you can sometimes let it run its course, and they will recover in time to build winter bees
    - The longer the colony goes into summer, the more risk you take on
  - Consider replacement queen availability
    - Quality queens – and queen available for purchase, dwindle as the year progresses
      - If your colony runs into problems late, it is might be hard to get a queen
      - It also might be quite a setback for a queen to get up and operational
        - Recall that this is when they should be building winter queens



# Queen Failures from Treatments/Handling

- **Treatments can be harsh on a colony**
  - Depending upon what you are using and the conditions
    - Sometimes treatments damaged queens and that leads to replacement
    - Also brood mortality may play a role in queen acceptance by the colony
  - Be sure to check your queens for health post treatments
- **Queens sometimes get damaged**
  - It is important for you to be careful not to damage or kill your queen
    - Always use care to look for and care for the queen when doing inspections



# Remain Vigilant

- **Inspect periodically**
  - Keep checking your colony throughout summer
- **Find problems early and take action**
  - The earlier the recovery from a problem the better
    - Finding a problem late in the game makes it hard to recover and puts the colony at risk



- Questions

**Q&A**





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## **The Calendar of Summer**

Lesson | Critical Summer Management



# What is Covered in this Lesson

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Managing Varroa Mite Dynamics

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Winter Bees Mindset

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Mite Population Dynamics

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Clean Winter Bees

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Proactive Corrections

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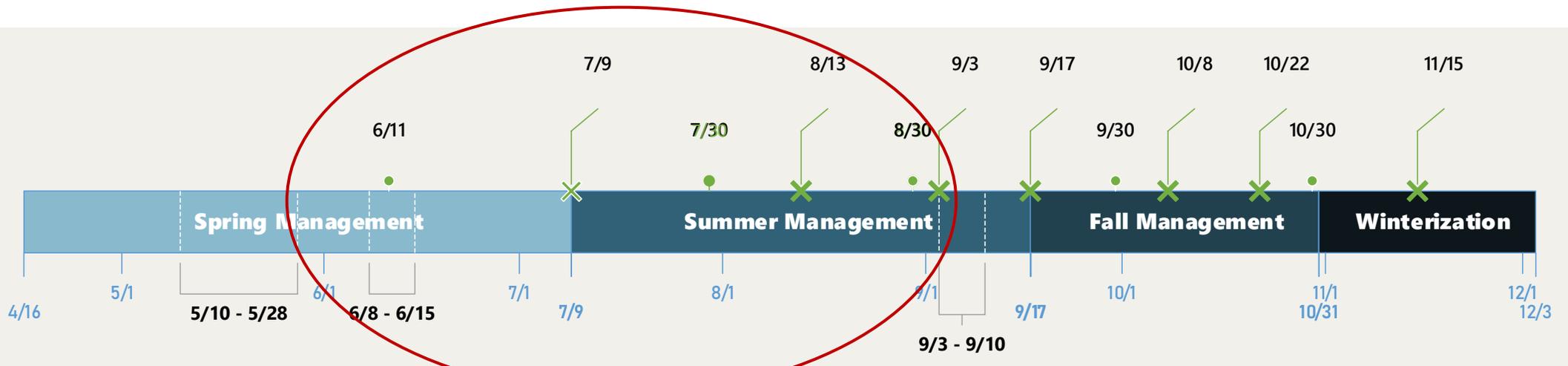
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# First Year Calendar – Spring/Summer



## □ Key Milestones and Activities Noted

- We will take each time period and review them
- Our goal is to be buttoned up and ready for winter by October 31<sup>st</sup>



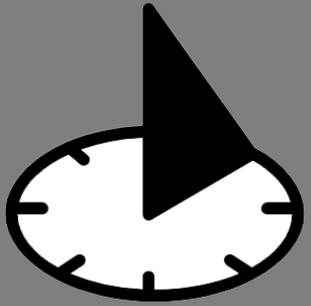
# Healthy Bee Imperative

- **Late Spring, Early Summer is make or break**
  - **What you do in this period has the most impact on hive survival**
  
- **If you want your colony to survive!**
  - You must be hyper vigilant in the June/July timeframe, and maintain vigilance all the way until November
    - Start early and you have time to correct just about any situation.
    - Start late and you risk it all.



# Without Mite Management

- **Healthy colonies are compromised**
  - When the ratio of mites and bees goes out of balance, the colony struggles to cope
    - Colonies that are thriving often hit the wall in early summer if they are carrying a mite load.
    - More than anything, these colonies especially need to be monitored
  - When monitoring indicates – they must be treated **early** to prevent an overwhelming impact from Varroa Mites
    - This is the most important dynamic to understand today if you want any chance of succeeding as a beekeeper in these times



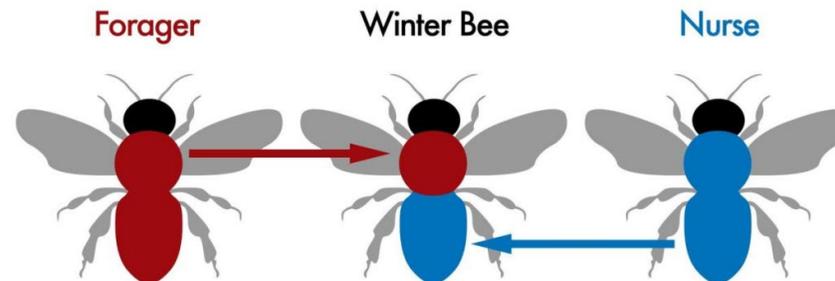
summer solstice  
June 20<sup>th</sup> or 21<sup>st</sup>

# Winter Bees

- **Winter bees start in summer**
  - What you do in spring and summer impacts survivability for winter
  - Winter bees are thought to start on the journey to switch over after the summer solstice
  
- **Months, not weeks**
  - Fair weather bees live for weeks
  - Winter bees must persist for months
    - And they are doing hard work in generating heat for the colony during the duration – which means they must be healthy



# Winter bees are different



## □ They are a different phenotype

- You will find that the winter bee can be thought of as a mix of a nurse and forager
  - Winter bees resemble nurse bees in **fat body tissues**
  - Winter bees resemble forager bees in **flight muscle tissues**.

The hypothesis is that winter bees are using tissue-specific genetic toolkits

- It is a bit of a mix-and-match molecular and physiological traits strategy for adapting to winter conditions in temperate environments

### *Definition*

#### **Phenotype**

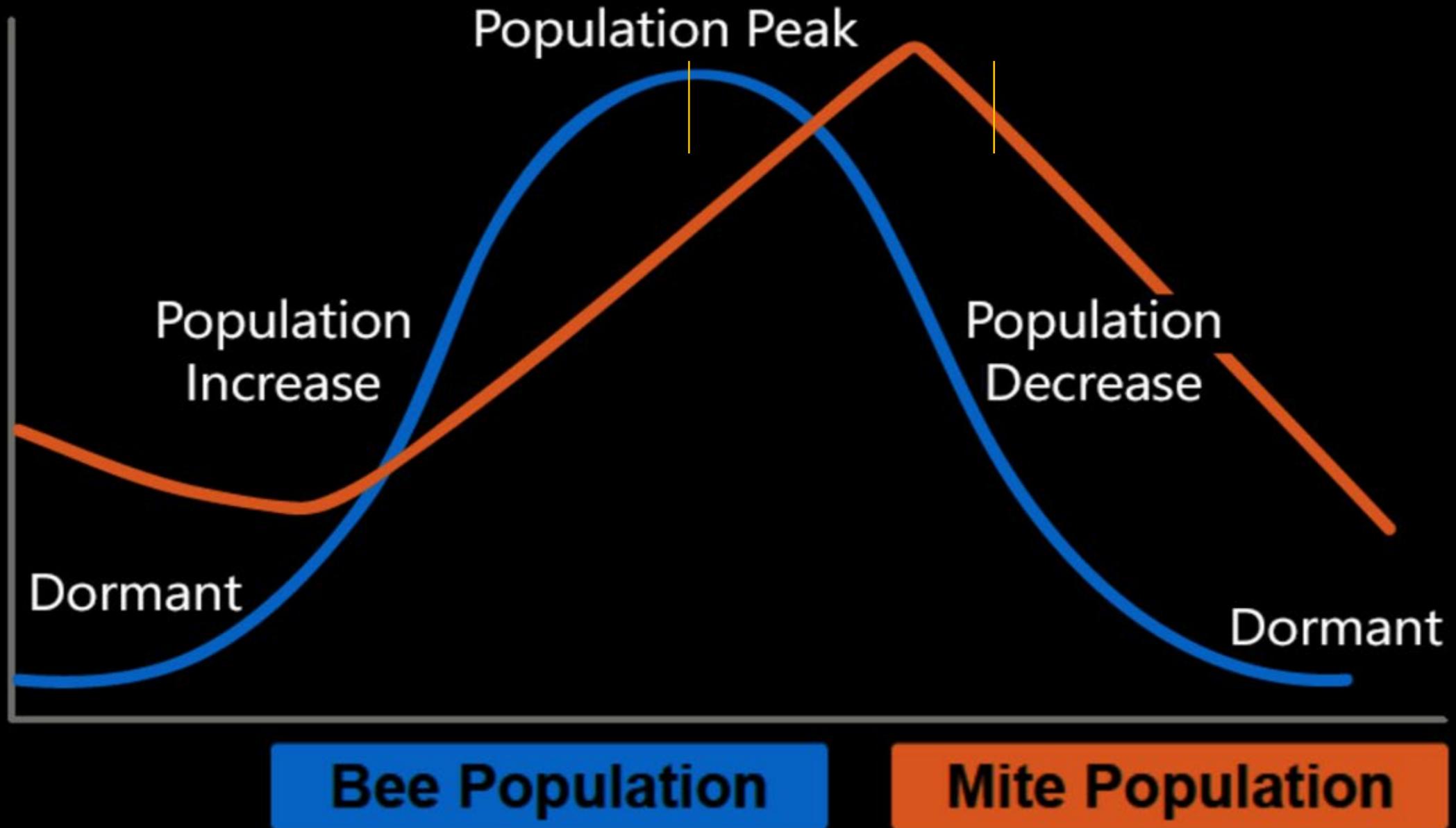
observable traits or characteristics

Can be

appearance or physical traits  
– driven by genes and environmental factors

# Varroa Mite Interaction

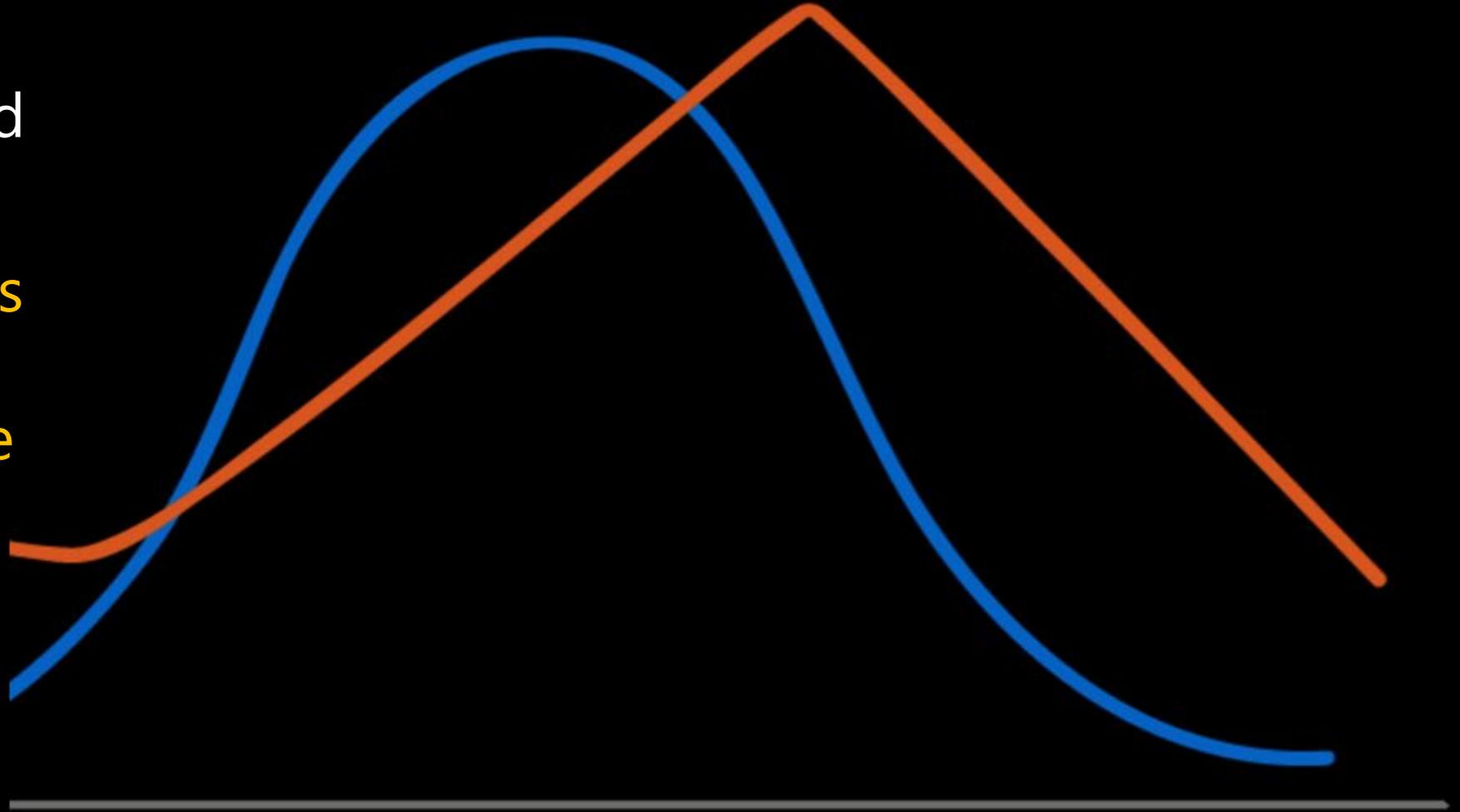
■ Make note of the lag



- Make note of the lag

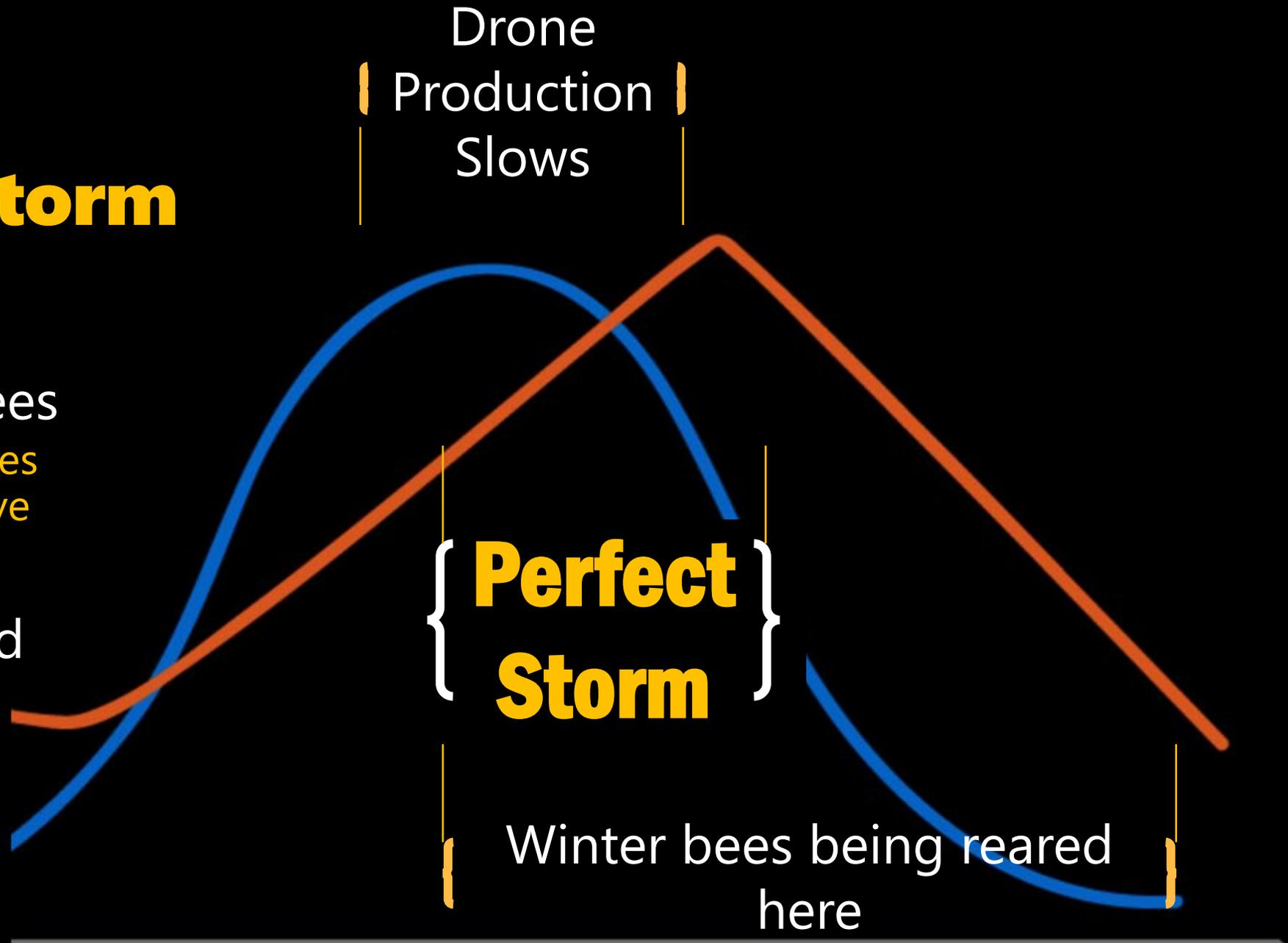
## Winter Bee Window

- Winter Bees reared in this timeframe
- If mite populations are not addressed winter bees will be compromised



# The Perfect Storm

- Mites on Drones switch to nurse bees
  - There are less drones present so they have no choice
- Winter Bees reared in this timeframe are compromised



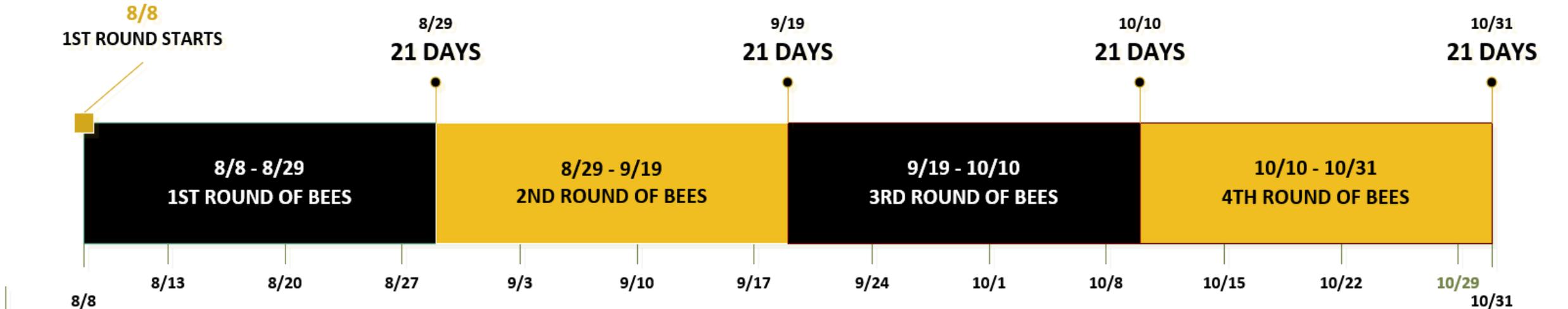


# Winter Bees

- **August through October**
  - If a bee takes 21 days to emerge, then how many of those 21 day windows do you have from August to November – and winterization?
    - There are about 4 to 5 generations of bees before winter bees are established
    - In this time period bees change over from short term lifespans to ones that will live overwinter – they physically change in several ways
    - Think of the bees that are raising those bees....
      - **If they are sick, they will share that through brood food to the young.**
      - **Couple that with the onslaught of the varroa mites in the cells feeding on the developing bees.**

# Protecting Winter Bees (Timing)

- **August through October**
  - If a bee takes 21 days to emerge.... Then there are about 4 to 5 generations of bees before winter bees are established
    - In this time period bees change over **from short term lifespans to ones that will live overwinter** – they physically change in several ways



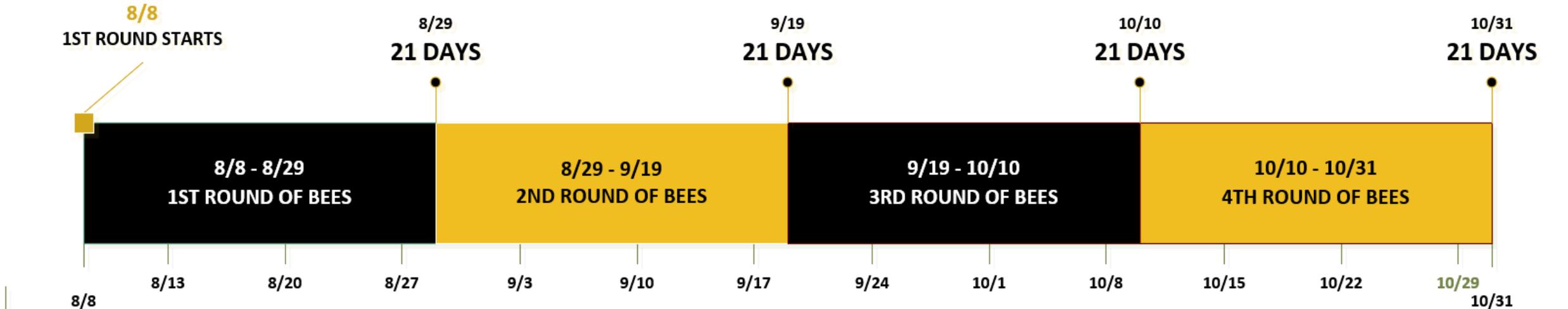


# Winter Bees

*We would benefit from generations of CLEAN Bees to overwinter*

## □ 4-Cycles (of 21 days)

- In the mid-Atlantic the first frost can come as early as Nov 1.
  - Some years it turns cold by Nov end or mid December
  - Since we cannot tell, we plan for Halloween (Oct 31)
  - By Halloween, we want our bees fat and happy
    - And we want all honey ripened and pollen stores flush throughout the comb.





# Mite Risk

When does a colony have to be watched?

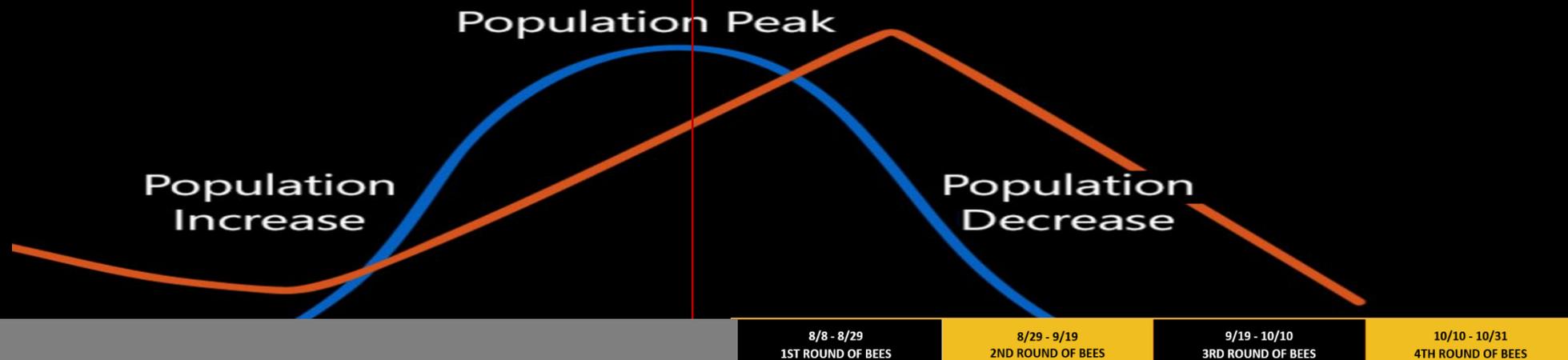
- **When is a colony at risk from Varroa Mites**
  - There are generally two halves to the year

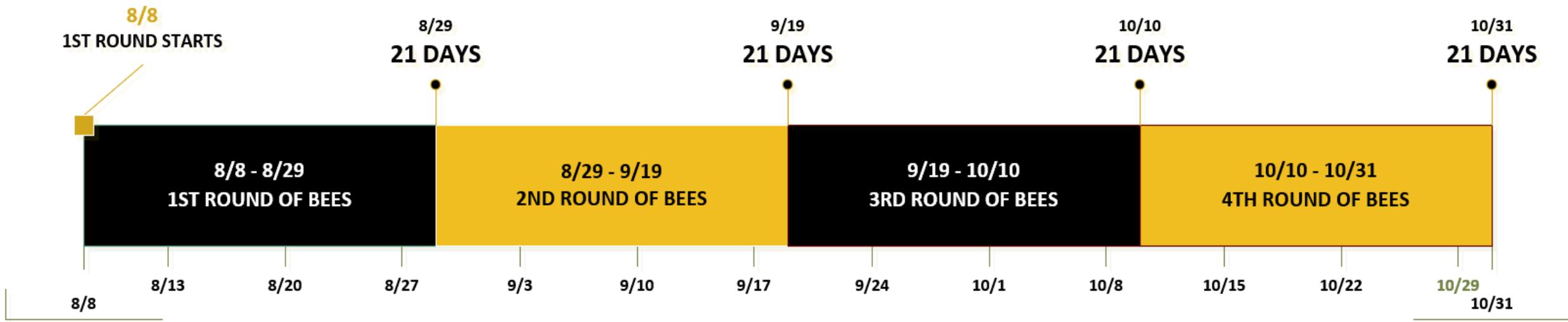
## Low Risk

- **Colony Growth** – *Risk is low*
  - Low mite counts with high population of recycled 'fresh' bees

## Higher Risk

- **Colony Decline** through Overwinter
  - Possibility for **high mite impacts** and compromise to the ability for a colony to overwinter





{ This is the **high risk** window. The period to **monitor the apiary for disease and mite impacts** }

## □ Beekeeper Vigilance

- If in this window the bees are compromised in some way – **intervene**
  - Compromised bees will struggle to get through the winter
  - At minimum, if you have bees that are not optimal here, you know the colony is a watch

Poorly developed  
honeycomb places  
a colony at a  
disadvantage



**This is no way to overwinter your bees**



# Feed for Summer

- See the summer/fall feeding lesson
- Top Feeder & Maintain Water
  - One Top feeder for each hive recommended
    - Feed during summer (water and/or sugar solutions)
      - 1:1 water to sugar for summer, 2:1 sugar to water when temps cool as fall approaches
    - Sealed deliver does not heighten robbing during dearths
    - Bridges colonies to fall flow, if your area has one, or keeps them flush in anticipation of winter stores build out





# Monitor & Watch for Health

- **Monitor Monthly (Jun/July to Oct/Nov)**
  - Maintain vigilance for colony mite loads
    - Proactive monitoring helps you to get ahead of any problems.
    - Make sure that you monitor after treatments – don't assume it worked
  - Review developing brood and emerging bees for problems
    - Developing brood should be in a pool of jelly, look pearly white and well fed
    - Bees emerging should not have deformed wings
    - Brood patterns should look contiguous, not spotty, and with signs of



## 2 Full Boxes +

- **By summer, colonies should be to full size**
  - Two full deeps of bees and comb (3+ mediums if all-mediums)
  - Ideally some additional boxes built out (mediums for honey supers)
  - Quite possibly one or more honey supers to extract
    - Especially if you started with Nucs in the early season
      - As a point of interest – It has to be noted that some beekeepers get Nucs in April, others only take possession of them as late as early June



# Correct Problem Situations

- **Problem Situations = Not Normal :-)**
  - If they are too small, then why?
    - New queen, bolster by feeding, or combine
  - If they are not healthy.
    - Monitor, Treat, Give clean comb if applicable
  - If they have a queen problem (dud, drone layer, poor patterns) > Requeen
    - Do this now while good quality queens are still out there. The later in the year this goes, the hard it is to find the time to recover and get viable queens
  - Poor comb: Now, Today!, Give them new comb to start or feed them 1:1 and ensure they have new bees that will build wax. Be proactive.



Questions

**Q&A**





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**Even More Beekeeping Equipment...**

Lesson | Other Equipment



# What is Covered in this Lesson

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Equipment for managing the pests of honeybees

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Additional Management Equipment for the Operation

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Honey Harvesting Equipment

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Additional Kit Considerations

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# Welcome to Week 6

## □ Week Five

### ■ Week Five Recap

- Using a Hive Tool
  - Varroa Mites
  - Mite Monitoring
  - Mite Treatment Options
- We opened with how to use a hive tool to get a gap for inspections. Then we turned to varroa mites, learning how to monitor for them, as well as the ins and outs of treatments.



# Lesson Progression

- **In the first week we covered...**
  - Langstroth Equipment
  - Other Beekeeping Equipment
  - And Protective Equipment
- **In this lesson**
  - We will cover a few more items that you need to buy:
    - Now, Soon, Someday, Maybe, and if you are so inclined
    - These include, but are not limited to:
      - Additional beekeeping hive equipment
      - The basics of harvesting honey, and products of the hive
      - Equipment for Management



# Mite Monitoring Kit

## □ A Kit Includes...

- A tub for collecting bees for sampling
- A measuring cup (1/2 Cup Size)
- Varroa Easy Check Device
- Rubbing Alcohol or some other suitable liquid
  - Blue Windshield washer fluid is another alternative...





# Varroa Mite Treatments



## □ Treatment Options are Personal Preference

- They are also highly dependent upon factors and conditions
- We will cover details about treatments in an upcoming lesson. Make a purchase by June.





# Oxalic Acid Wand or Vaporizer

## □ Oxalic Acid Delivery

- Wands and/or Vaporizers
- Oxalic Acid Dribble Method (syringe)
- ApiBioxal Oxalic Acid
  - The only product approved for use with beekeeping operations

Requires the requisite protective envelope for protecting the person administering





# Hive Beetle Traps

- **Hive Beetle Traps come in many form factors**
  - These work by filling with oil
    - The hive beetles try to escape into the device from the bees and get stuck in the oil
  - We will cover hive beetles in an upcoming lesson
    - Depending on where you are they may be a problem or they may not. If they are you must take action





# Paint Markers / Queen Clip & Marking

- Queen Clip**
  - Queen catchers come in a number of variations
- Paint**
  - Paint Markers are common
    - Other use simple model paint or other alternatives
- Queen Marking Tube**





# Hive Lashing Straps

- **Every hive should be strapped down**
  - We like these types of straps
    - They are **simple to open**
    - They hold very well and last for seasons
    - They provide reasonable utility for lashing hives for transportation





# Ratcheting Tie Down Straps

- **Heavy Duty Ratchet Straps**
  - Bear Territory
    - If you are in bear territory, you might be better suited with ratchet straps
  - Difficult to open sometimes
    - Not a fan of these, but many beekeepers use them.
    - They are cumbersome to use
    - They provide superior utility and protection for transportation and bear defense
      - We have seen instances where they have proven strong enough to hold hives together well enough to keep bears out of beehives.





# Hive Metal Benches

**GORILLA LADDERS**  
EXCLUSIVELY AT 



**PROJECT ESSENTIALS**  
*The Aluminum Slim Fold Work Platform is a necessity on any project. The 47 inch platform provides an extra long work space. With a slim fold design measured at 3.25 inch deep, the Aluminum Slim Fold Work Platform stores razor thin, and will become the go-to for all of your projects.*



**INTEGRATED HANDLE**  
*One handed handle helps make transportation quick and easy.*



**EXTENDED WORKSPACE**  
*Extra long 47" x 12" workspace with slip resistant tread for comfort*



**EASE OF USE**  
*Automatic locks engage when legs unfold and keep legs in place*



**SAFETY**  
*Non-slip tread and oversized non-marring feet improve stability*



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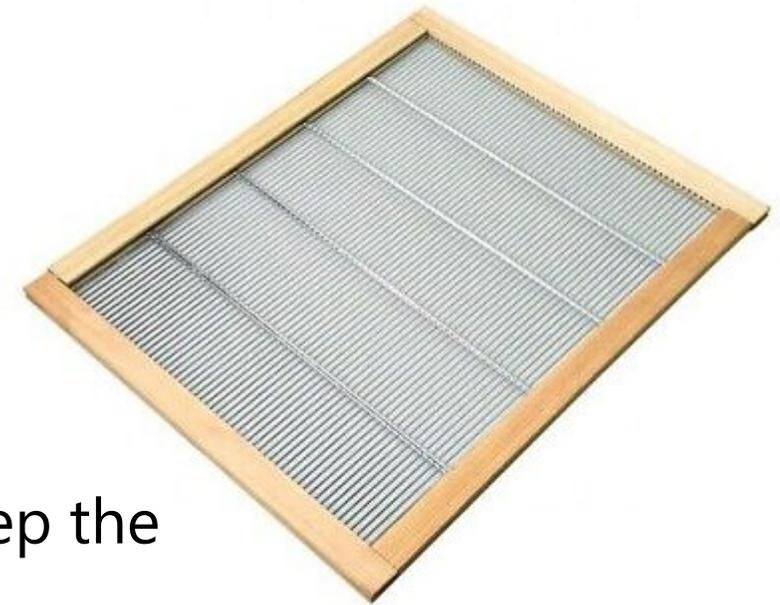
## ☐ Metal Hive Benches

- These provide quite a bit of utility for setting hive boxes on during inspections
  - They hold up well in the weather
  - They can support the weight
  - In a pinch they can be deployed as hive stands
  - There are many uses for these in a bee operation



# Queen Excluder

- **Used to sequester queens to a specific space**
  - The primary use of this device is to keep the queen out of the honey supers
    - It is placed above the brood boxes, and under honey supers. It prevents the queen from placing brood in honey boxes.
  - Beekeeping techniques use this for many utility purposes
    - One example: If you have a very crowded boxes and want to restrict the queen to one so she is easier to find, you can place a queen excluder between the two. Whichever has eggs in a few days has the queen...

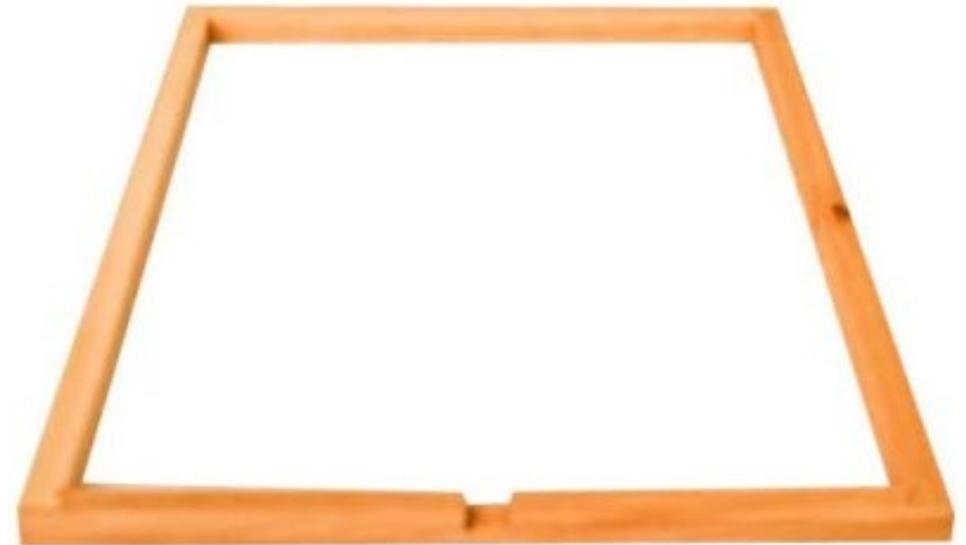




# Simple Shim (sometimes called an Imirie Shim)

## □ Multiple Uses

- One of the more common uses of a shim is to provide space for treatments over the top bars of honeycomb frames
- Another use is to provide temporary entrances in a stack of hive boxes for the bees to enter partway up the stack





# Bee Brush

- **Bee Brush**
  - Commonly used tool to 'flick' bees off
    - Sold in bee supply catalogs, they come in many sizes
    - Some premium ones indicate they have soft bristles
      - Buy what suits you. In our experience, even the cheapest is suitable for the job.



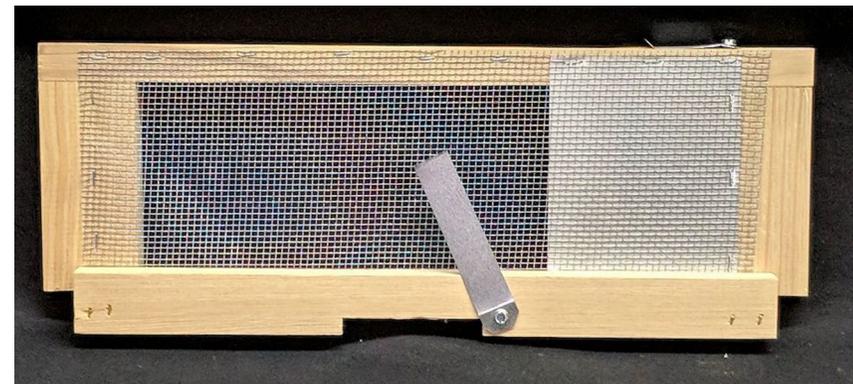
*Tip!* Flick, don't brush or sweep.

- Flick the bees off when using this, do not sweep across the frame like you are wiping crumbs off a table. That motion 'smooshes' bees. Flick at them and they will jump off.



# Robber Prevention/Mitigation Screens

- **Many forms**
  - From simple to complex; wood or plastic with screening
  - These employ some tactic to constrain or close off the entrance to thwart robbing
  - Some leave them on on all the time; others install them one the fly; other put them on hives when robbing is most prevalent.





# Honey Harvesting: Escape Boards and Ports

- **8-Way Escape Board**
  - Same principle, different design
- **Triangle Escape Board**
  - One way exit based on bee biology
- **Porter Style Escape**
  - Porter Bee Escape through the inner cover hole





# Honey Harvesting: Fume Board +



- **Fume Board for bee removal**
  - Load the fabric with a repellent chemical
  - The heat from the plastic cap warms the liquid and creates a vapor
    - The scent of the vaporized liquid repels the bees that are below
- **Repellent Liquid**
  - Various products are in the marketplace





# Honey Harvesting: Uncapping Tools

## □ Tools to remove cappings

- Two most popular are the uncapping fork and a simple bread knife
  - There are more than a half dozen 'devices' out in the marketplace
  - Tip: See our video about the various tools and experiment with what works for you
  - Polling beekeepers over the years, these two win...
- Other forms abound, included heated knives, rollers, and other form factors. Feel free to experiment with what suits you.





# Honey Harvesting: Buckets and Filters

- **Harvesting Buckets**
  - Plain food grade buckets with lids
  - Buckets with valves (gates)
- **Filters**
  - Stainless steel filters with varying grades of filtration screens

**Or other alternative setups**





# Honey Extractor

- **Manual or Motorized Extractor**
  - 2-Frame, 9-Frame, 20-Frame or more
    - Something that bee clubs often have to loan
  - Considerable investment
    - Often it is a good strategy to borrow one to learn
      - Determine your requirements through direct interaction and then make your sizeable investment after developing your preferences.
      - Or simply stay with borrowing the clubs extractor year on year





# Honey Harvesting: Uncapping Tub

## □ Uncapping Tub

- These utility pieces are designed to aid in uncapping frames
  - The wood bar is designed to rest a frame on while uncapping
  - The tank collects the wax cappings
  - Excess honey can be strained off from the built in gates
- They are pricy, but quite helpful





# Refractometer

## □ Measuring Moisture

- Harvested honey should be at a specific moisture point
  - Too much moisture and a honey will ferment in time.
- Refractometers measure moisture
  - They are simple to use and relatively inexpensive.
  - They are a failsafe, and many beekeepers have never used one.





# Honey Jars, Lids, & Labels

- **Jars and Lids**
  - Many beekeepers hoard glass jars of all kinds to store honey in.
    - Purists will buy dedicated jars made in traditional shapes
- **Labels**
  - It is a fun endeavor to source and design a local label





# Swarm Commander / Lures

## □ Swarm Lure

- Used to lure scout bees to a swarm trap
- Can also be used as an attractant for other management practices
- Very effective
- Available in different forms:
  - Spray, Capsule, and Gel
  - Swarm Commander is a popular brand





# Waxmoth Preventative



## □ Waxmoth Deterrent

- Para Moth is an industry product
  - Use this to prevent waxmoth from consuming/destroying honeycomb in storage
- Waxmoth will come in to comb in storage and chew through it, leaving webbing and rendering each of the frames completely useless
  - It makes a major mess and sometimes the waxmoth damage woodenware so it has to be addressed



# Certain Waxmoth Deterrent

- **Bacillus Therengensis (BT)**
  - Mixed into a spray, and sprayed upon honeycomb in storage
    - Does not impact the bees or the wax
    - If waxmoth larva develop, and begin to consume the comb, they eat the active ingredient, and it harms them to the point of death.
    - Note: BT was sold as a product with the trade name of Xentari. That product is no longer manufactured (at this time)





- Questions

**Q&A**





A Beginner's Guide to Keeping  
Bees Thriving in the Boston Area

# Beekeepers School

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**BABA Beekeeper's School 2026**



We See You!

# **BABA Beekeeping School**

**Photo Collage of Beekeeping Visuals**

Lesson | Things you will see



# What is Covered in this Lesson

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Beekeeping Visuals

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New Bees, Drones Bees, Workers, Brood

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Honey Stores and Pollen, Capped Honey

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Brood in all Stages (BIAS)

---

Bridge and Burr Comb

---

Sting Reaction

---

Things you will not see

---

The Rainbow Pattern

---

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# Welcome to Week 6

- **Week Five**
  - Week Five Recap
    - Using a Hive Tool
    - Varroa Mites
    - Mite Monitoring
    - Mite Treatment Options
  - We opened with how to use a hive tool to get a gap for inspections. Then we turned to varroa mites, learning how to monitor for them, as well as the ins and outs of treatments.



## □ Worker Bees

- Primary bee in the hive
- Shades of color
  - Colors vary by race
- Size and Shapes vary
  - Dimensions and shapes



## □ Location

- Throughout the hive.
  - Sometimes they rest in the upper area of the nest

## □ Behavior

- Busy day and night performing the duties of the hive
- Older bees leave the hive and forage for resources



## □ Drones

- Large Barrel Shape
- Large Eyes
- Blunt Abdomen Shape
- Appear in abundance in early spring to mid summer
- Kicked out of the hive in fall



## □ Location

- Throughout the hive.
  - Sometimes they rest in the upper area of the nest

## □ Behavior

- Often leave the hives in the early morning for mating
- Will come and go a few times during the day



## □ Queen

- Long Abdomen and prominent thorax
  - Thorax may or may not be painted like this image
- Abdomen protrudes
- Often moves in a distinct way given her length



## □ Location

- Throughout the hive but mostly in the brood nest
- Mostly in the area with Nurse bees
- Can be anywhere in the hive space

## □ Behavior

- Normal duty for a queen is to lay eggs in the brood nest
  - Typically found going from cell to cell laying eggs on brood comb
- Often flees to cover when hive is opened



## □ **New Bees**

- Pale appearance – downy fur
- Light cream color abdomen
- May look wet or have an albino appearance in early hours
- Hairs may have a matted appearance



## □ **Location**

- Found in the brood nest
- Will be located around the area of comb that contains capped brood

## □ **Behavior**

- Often found walking on comb – interacting with workers for food
- Common behavior is to clean the cell they emerged from as a first activity



- **Worker Comb/ Brood**
  - Smaller sized cells (in contrast to drone comb)
  - Capped comb is covered with paper bag colored wax capping
  - Color varies based on the age of the colony
    - New colonies are often have straw-colored wax



- **Location**
  - Found in the brood nest
  - Will be in the center of the nest
  - Mostly in the middle of the bottom boxes, sometimes off to the sides
  - Covered with Nurse Bees

- **Worker Comb**
  - More abundant in the spring and during the nectar flow
  - Will be present in some form at almost all times
  - Should be uniform in appearance and proximity; no spotty distribution



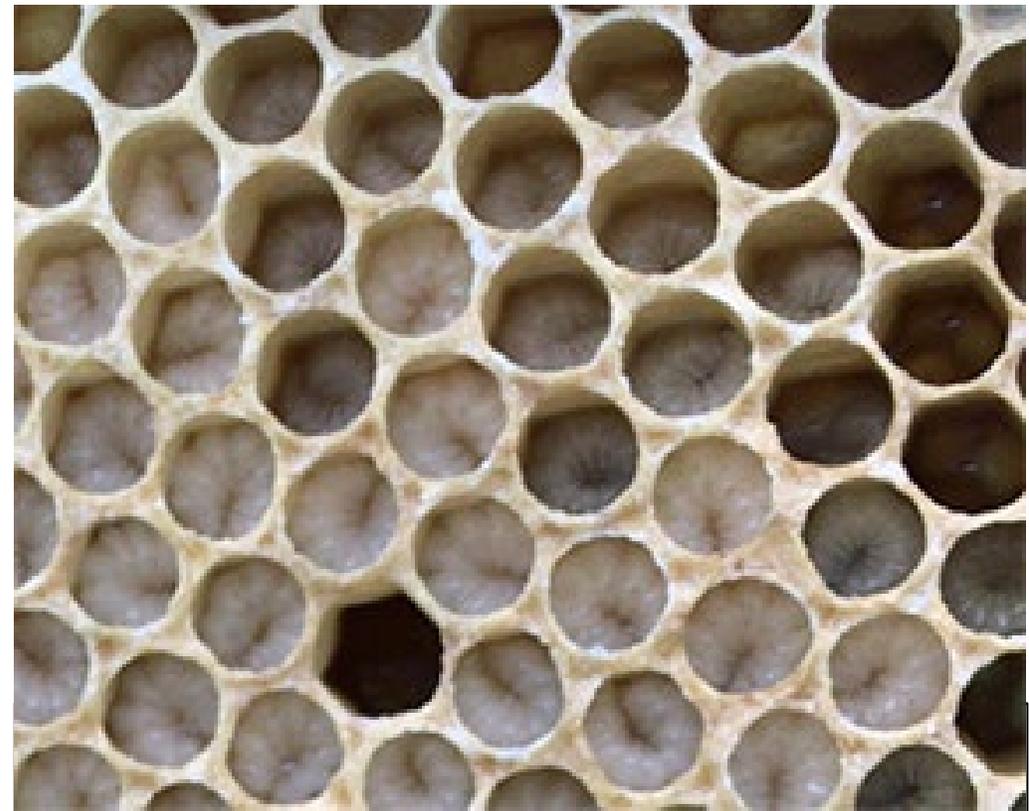
# Drone Comb

## □ Drone Comb

- Specially enlarged cells
- Workers will purpose build it for drones or enlarge existing comb
- Can be transformed for nectar and honey storage if bees prefer

## □ Location

- Can be anywhere in the hive, but often is found in the periphery
- May be built in the margins
- Sometimes build under frame bars or over the top bars



- Larger dimension to accommodate the size of drones.
- Capped with a domed cover



- **Capped Drone Comb**
  - Bullet shaped domes
  - Built over larger dimension cells which accommodate the growth of the drones

- **Location**
  - Found in the brood nest
  - Will be around the periphery of the nest.
    - Could be built in the margins, on top of frames, off the bottom of frames.



- **Drone Comb**
  - Prevalent at the time of nectar flow onset
  - Built during mating seasons; typically, spring and early summer



- **Emerging Brood**
  - Developing bees will emerge from their cocoons by chewing through the wax cappings
  - They often exhibit a pattern of 'center-out' >



- **Location**
  - Center of the nest

- **Emerging Brood**
  - Logically accompanied by new young bees
  - Typical for bees to start preparing the center section for the queen to lay new eggs



## □ Nectar Storage

- Nectar is collected by the foragers
- Light Liquid Deposited in the cells
- Eventually dried by the bees into a thick viscous liquid – appearing like glass >



## □ Location

- Throughout the hive
- Especially on the outer frames
- Is actively dried by the bees and then capped as honey

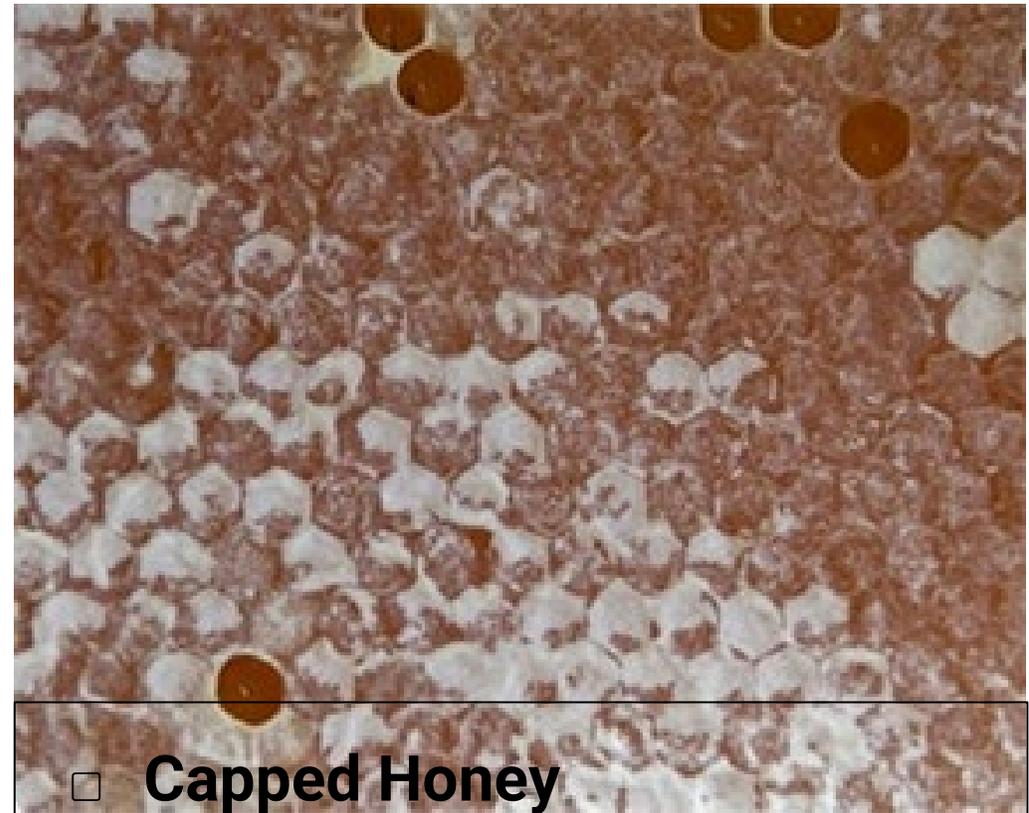
## □ Nectar (food) Storage

- During forage windows nectar is collected by plants
- When beekeepers feed bees sugar solution it is stored much in the same way as nectar from nature





- **Capped Honey**
  - Honey sealed in the cell, capped over by a wax coating.
  - May look different depending on how it is prepared by the bees
    - Wet Capping
      - This is a capping where they honey under the cell comes into contact with the wax, creating a dark liquid look under the capping
    - Dry Capping
      - The capping maintains a bit of air space under the wax and displays as a white wax over the capped honey



- **Capped Honey**

- Freshly covered honey has a new wax appearance.
- The appearance will change with age and when bees walk over the surface.



- **Honey Storage Comb**
  - Begins with placement of nectar.
  - Nectar is dried through evaporation of moisture.
  - Once dried, out, it is capped



- **Location**
  - In the outer spaced beyond the brood chamber
  - Can also be in the corners of brood comb and near to bees being reared.

- **Honey Comb**
  - Honey over the nest can be called a 'honey dome'
    - The queen often does not cross over the honey dome to rear bees.
    - This often results in the queen staying out supers



## □ Pollen

- Multi-color granules packed into cells
- Often coated with a shiny surface (light honey coating)
- Color varies based on plant source



## □ Location

- Typically found in proximity to the brood nest
- Often found in a loop around brood patches
- Frequently stored in bulk (full frame side) alongside the brood nest.

## □ Pollen Stores

- Abundantly gathered in spring, and in fall
- May be scarce in dearth periods





## □ Queen Cups

- Queen cups are the precursor to bees building queen cells
- They are a shallow cup that is sometimes bowl shaped and other times more formed like the image shown here



## □ Location

- Can be found throughout the frames in the brood nest
- Often built in the outer edges in the frames or anywhere vertical surfaces develop in the comb (holes for example)

## □ Queen Cups

- Very typical in every hive
- Not indicative of queen problems. Bees just build them to have them
- They are cups when they are not 'charged' with an egg



## □ Queen Cells

- Vertical wax pinky shaped queen cells
- Typically have a mottled appearance (Mr. Peanut texture)
- Start out as queen cups; enlarged once queen is being reared by the bees



## □ Location

- Often found in the periphery of a frame
- Lower edges, or outside
- Especially where holes are developed in the comb from the bees for passage ways
- Sometimes on comb face

## □ Queen Cells

- Swarm Cell: Cell in preparation for Swarming
- Supersedure: Cell for queen replacement (Something wrong)
- Emergency: Cell created when queen is no longer present



- **Open Queen Cells**
  - Queen cell with the end chewed off and open
  - This signifies that the queen has emerged and is in the hive somewhere



- **Location**
  - Often found in the periphery of a frame, lower edges, or outside
  - Especially where holes are developed in the comb from the bees for passageways
  - Sometimes on comb face

- **Open Queen Cells**
  - Open queen cells indicate that a queen has emerged
  - Sometimes they even have the end flap present



- **Burr / Bridge Comb**
  - Excess wax deposited throughout the hive
  - Bees will sometimes place wax in errant places
    - Especially when they have wax bees during nectar flow
    - Bridge comb to help move from one surface to another



- **Location**
  - Found in places where bees space is violated
  - Gap areas bigger than 1/4"
  - On top bars
  - On hive box interiors
  - Between frames

- **Burr /Bridge Comb**
  - Each colony behaves differently. Some build a lot, some do not build at all
  - Mind the gaps around your frames to keep this in check
  - Recommend maintenance – keep cleaned up



# Poor Honeycomb “Wonky”



Bonus Lesson – Wonky Comb





## □ Guard Bees

- Guards will be at the entrance
- Display an 'posture'
  - If alarmed, they will release a chemical that will alert other bees to defend the colony resources
- Work the entrance and surrounding area



## □ Location

- Found on the landing board and any openings (ie. upper entrance)
  - Will also fly around the periphery of the hive
- They likely will fly the apiary and sometimes an even larger domain

## □ Typical Behavior

- Will patrol the entrance and inspect arriving bees
- Will respond to a 'call to alarm' chemical release (pheromone)
- Will patrol the area surrounding the hive



## □ Scenting Bees

- Bees with their heads down, abdomens up
- Actively fanning their wings
- Back abdomen tip tilted down with a light white slit (Nasanov gland) open to the air



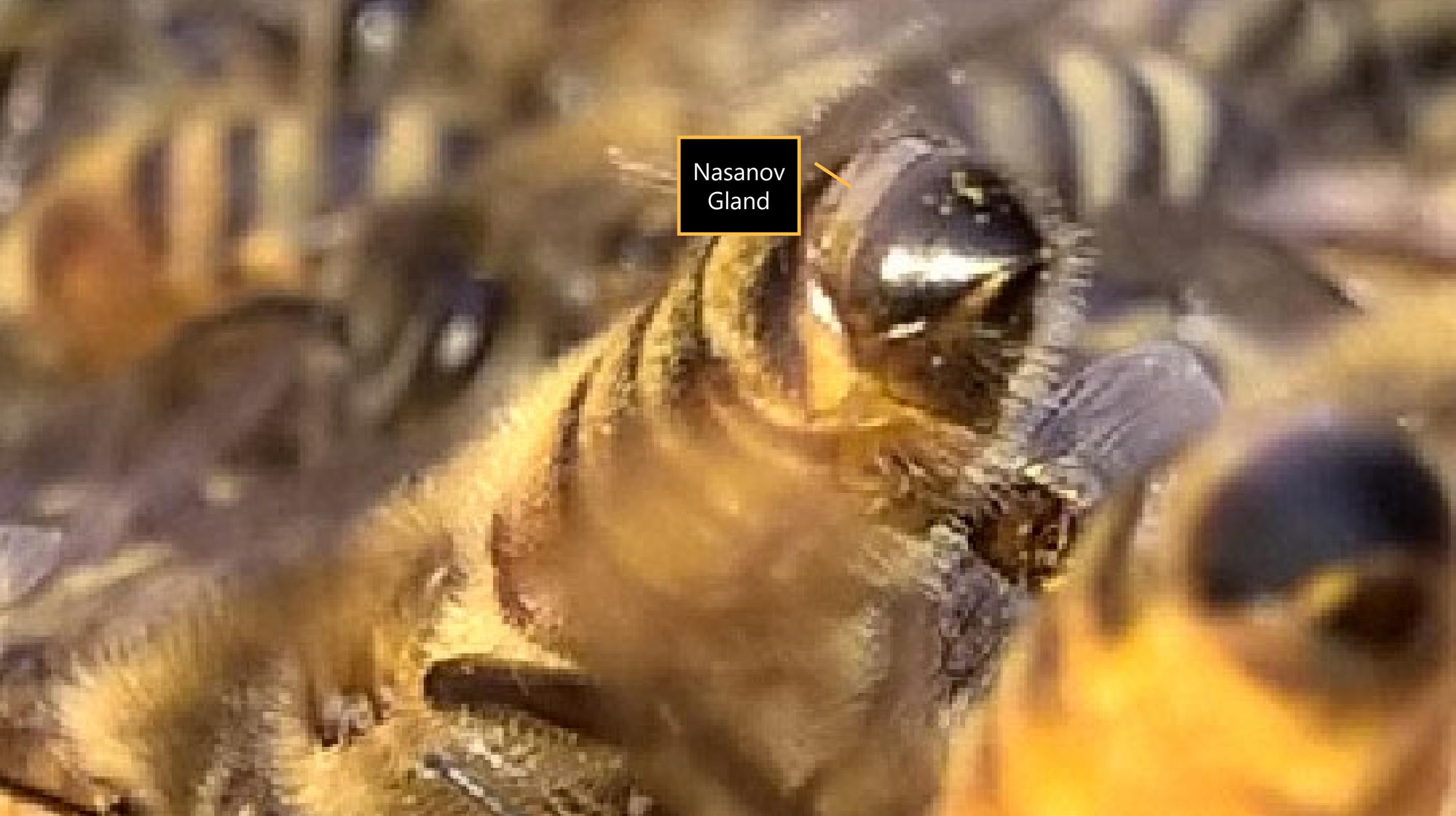
## □ Location

- Found on the landing board and any openings (le. upper entrance)
- May also be on the top of the hive if the hive is open

## □ Typical Behavior

- They are distributing a scent that attracts nestmates to their location
- Bees do this when they want the bees to gather with them

Nasanov  
Gland





Scenting Bees



- **Bearding**
  - A compensation mechanism for the bees
    - They use it for heat control
      - Less bees inside, less heat
    - They use it for congestion relief
      - Less bee inside, more room to work

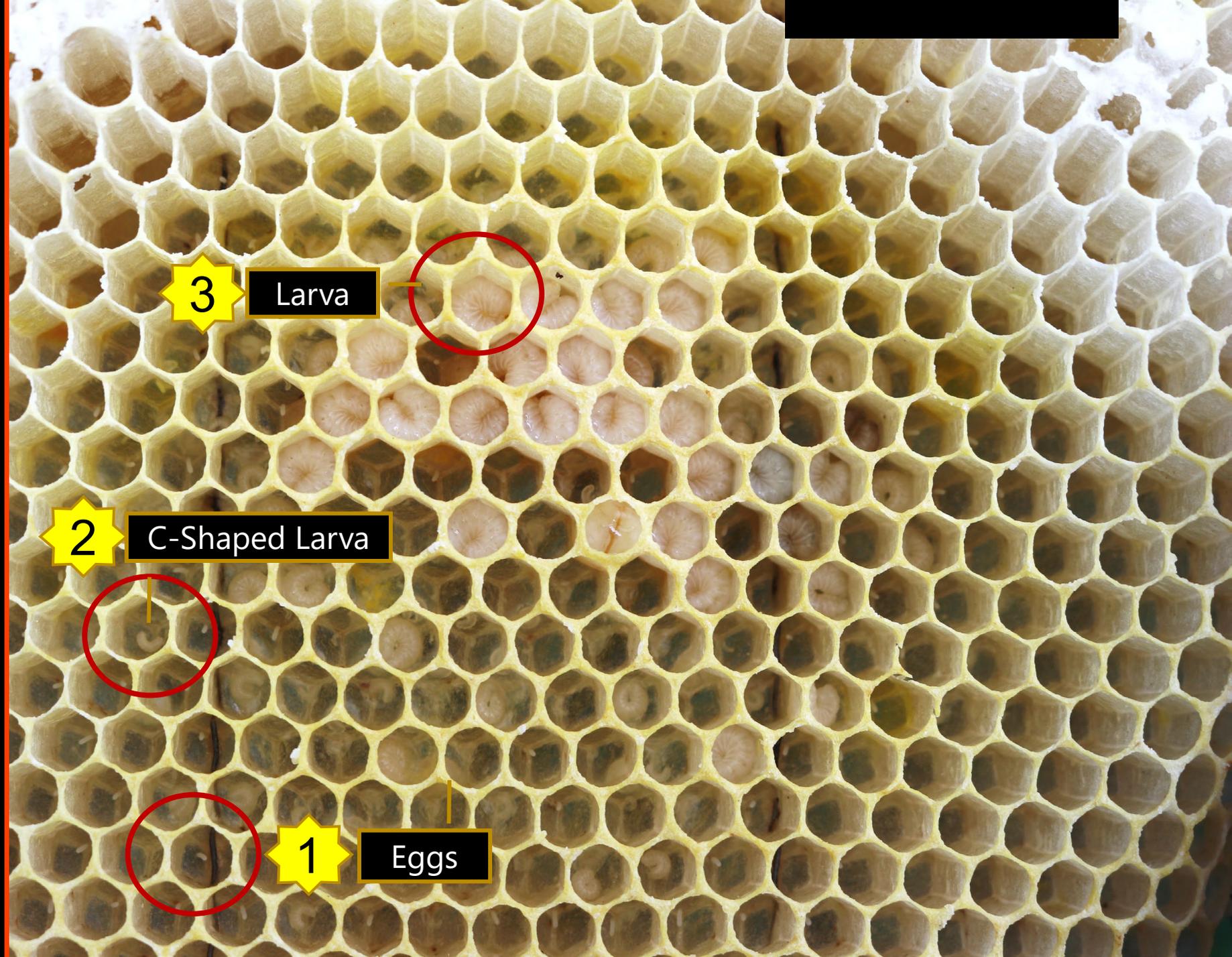


- **Location**
  - Found on the front of the hive
  - Also found suspended in clumps of bees hanging under the colony

- **Typical Behavior**
  - This is seen in the summertime, especially when hot
  - It is also common for the bees to do this when they are drying nectar



# Brood in All Stages (BIAS)





Remember...

Things you  
likely will  
**NOT** see





# The Rainbow Effect



The **Rainbow** Effect



# A Great Brood Frame

*Trust the Rainbow*

- **Good brood frame characteristics**
  - Honey in the corners, Halo of pollen, surrounding newly capped brood, Nurse bees abound, good patterns





# Sting Reaction

- **Stings cause reactions**
  - Should be local and topical
    - Redness, swelling, itching > Normal
  - Reactions that are a concern
    - Reactions **remote to the sting site**
      - Stung on lower arm; exhibiting different symptoms remote from the arm
      - Stings on head and neck should be watched carefully
    - Difficulty breathing
    - Difficulty swallowing
    - Manifestation of Hives





- Questions

**Q&A**

