



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

Beekeepers School

BABA Beekeeper's School 2026



BABA Beekeeping School

Week Two Setup



What is Covered in this Lesson

Week 2 Recap

Announcements

Agenda

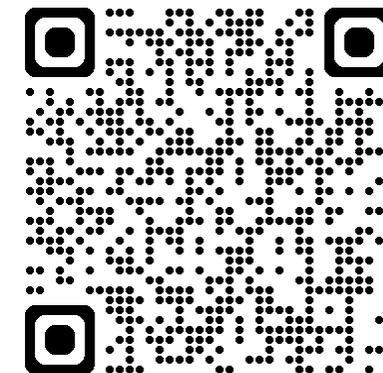


Welcome to Week 3

- **Week Two**
 - Week One Recap
 - Choosing A Style
 - Hive Fabrication, Building Frames, Painting Hives
 - Beekeeping is local – learn your apiary
 - The focus was on building equipment understanding the different styles of keeping bees



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

- **Sourcing, Transporting – Setting up your bee yard**
 - This week we **introduce you to the bees in the colony**
 - We review on **how to source bees**
 - We overview **how to transport bees** upon purchase
 - We will give guidance on **apiary design**

- Questions

Q&A





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Queen, Workers, Drones

Lesson | Meet the Colony Inhabitants



What is Covered in this Lesson

Honeybee Colonies

Superorganism

Queens

Workers

Drones

Bee Development

A 'Taste' of Colony Operations



Honeybee Colonies

- **Critical Insect to the earth *and humans***
 - Environment Pollination
 - Honey
 - Beeswax and other products of the hive
- **Social Dependency**
 - Eusocial Insect Organization
 - The colony is made up of individuals, but they cannot survive by themselves
 - No individuals directing the rest what to do

Definition

Eusocial

showing an advanced level of social organization, in which a single female or caste produces the offspring and nonreproductive individuals cooperate in caring for the young



Colony Superorganism

- **Honeybees are social insects that work together as a superorganism**
 - Together they support complex tasks like communication, nest construction, environmental control, defense, and distribution of labor
 - Three types of adult bees: workers, drones, and a queen.
 - Individual bees cannot survive without the support of the colony.
 - The goal of the colony is to expand and reproduce when possible, and sustain colony life during the non-growth windows



Makeup and Structure

- **A colony supports:**
 - A single queen
 - Several hundred drones during late spring and summer
 - Some may be present throughout the year
 - Tens-of-thousands of workers (roughly from 20,000 to 60,000)
- **Social Structure**
 - Colony activities are a balance between queen and workers through compendium of chemical pheromones and communicative dances



Labor and Reproduction

- **Bees distribute work amongst the individual**
 - There are some 20+ key jobs
 - Wax Builder, Undertaker, Forager, Water Collector, Nurse Bee, Hive Defense, Etc.
 - The superorganism will do what is required, and adapt as needed, based on the needs of the colony through a division of labor
- **Reproduction & Survival**
 - Reproduction and colony strength depend on the queen, food stores, and the size of the worker force. A better equipped colony does best.



Meet the Queen

- **One Queen**
 - Except during swarming preparations or supersedure
- **Primary Roles**
 - Egg Production
 - The queen also produces pheromones which govern colony operation





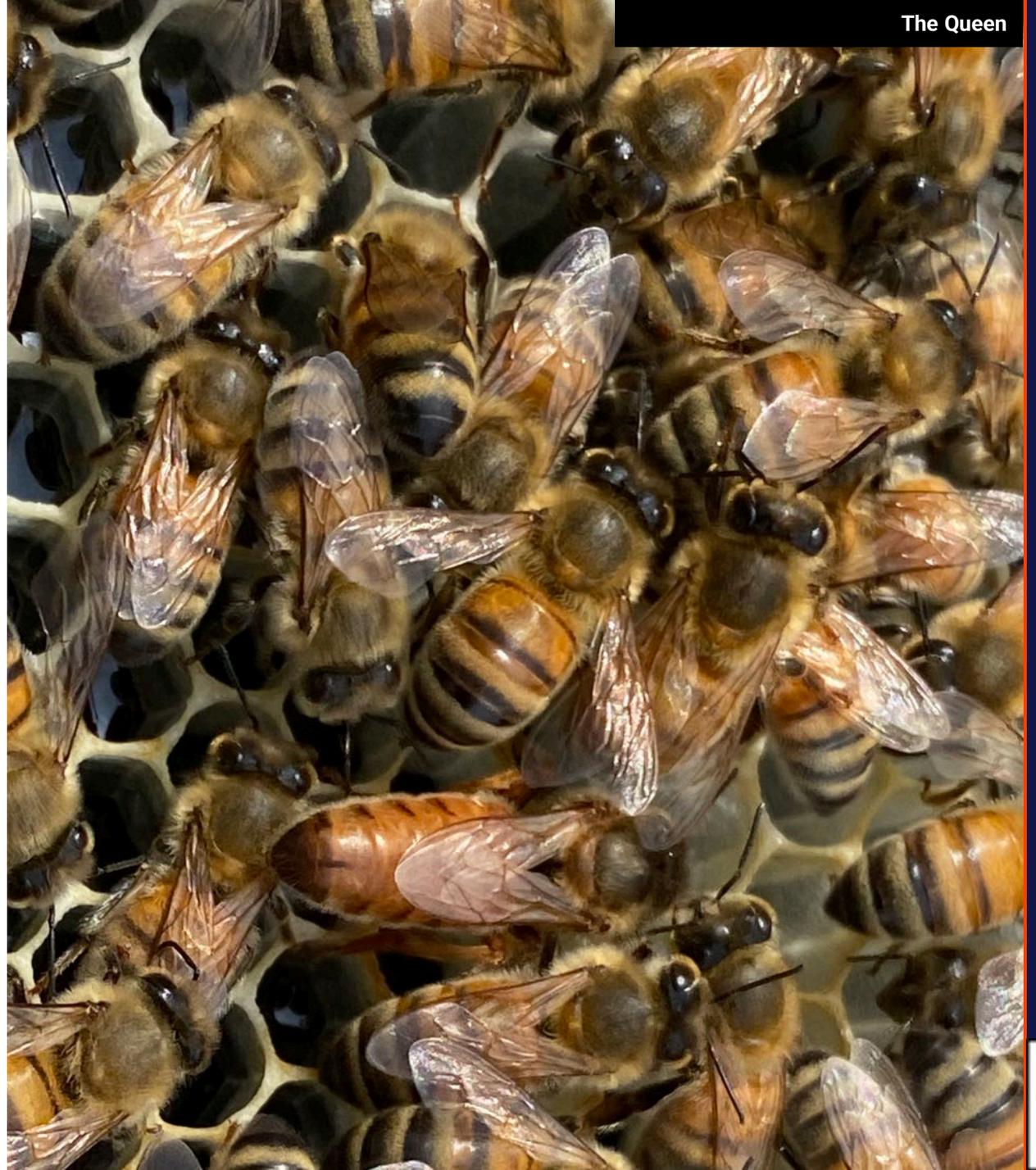
Meet the Queen

□ Egg Laying

- Lays up to 1,500 eggs per day
 - A queen can produce up to 250,000 eggs per year and live for several years
 - Average productivity: 2 to 3 years.

□ Pheromones

- Produces pheromones that act as a social “glue” for the colony





Queen Fertilization

□ Virgin Queens

- Virgins leave the hive and fly to a drone congregation area
- They mate with drones, taking on sperm in their spermatheca
- They return to the hive and begin laying eggs with 48-hours

□ Fertilized Eggs

- The combination of queen pheromone (like perfume for the workers) and the **presence of eggs** establish a working colony
- If these things are not present in the right ratio, the workers will detect the lack of 'proper' odors and seek to replace the queen
- This is how they know a queen is failing

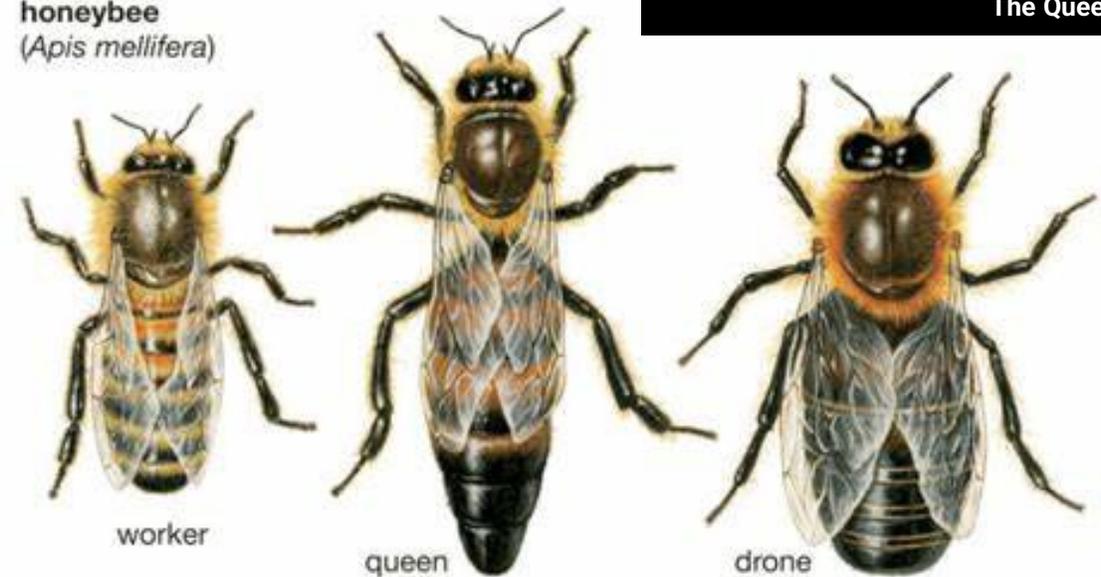


Queen Appearance

□ Queen Characteristics

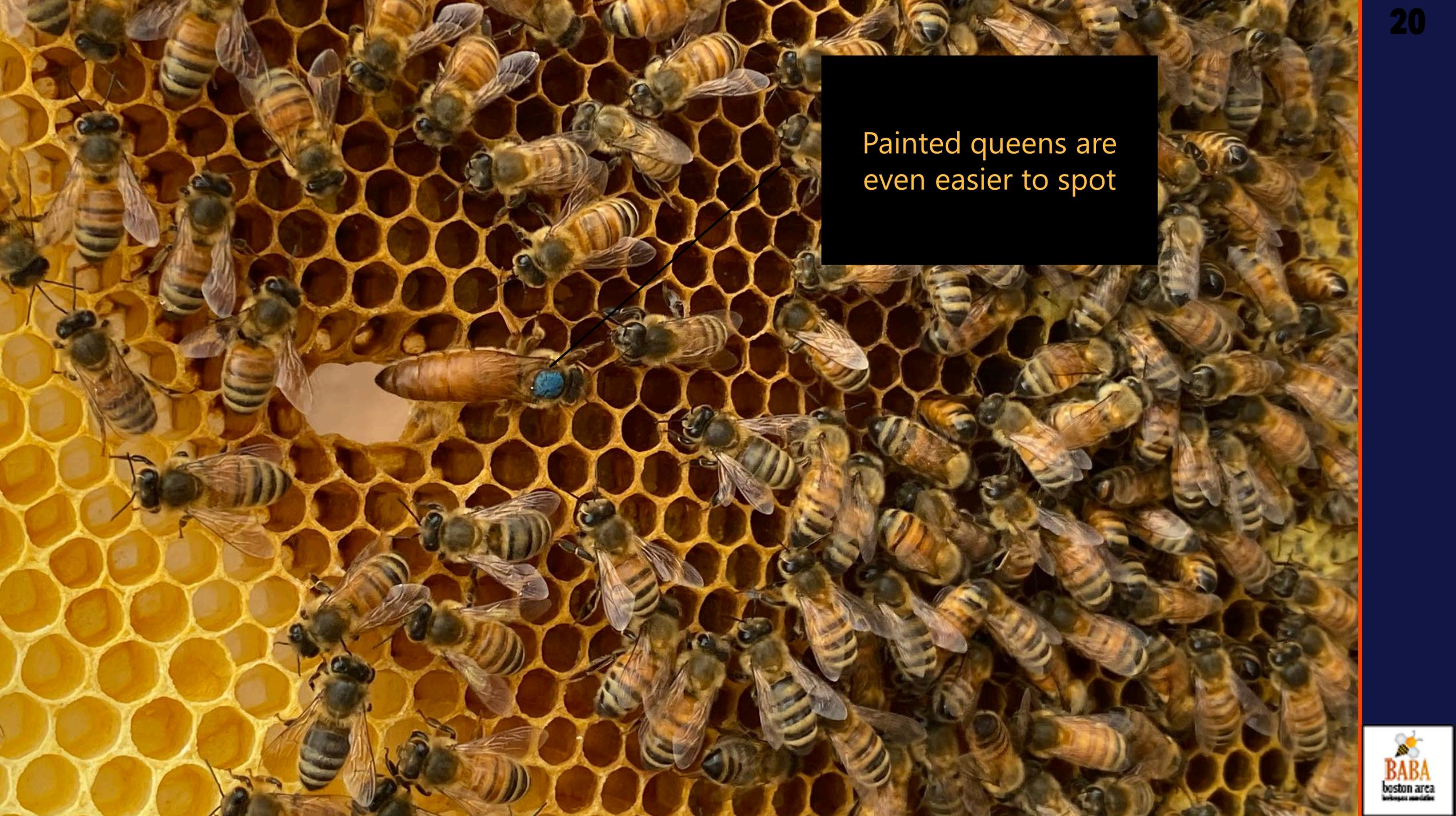
- The queen's body is longer
- Her wings cover only about two thirds of the abdomen
 - Worker and drone wings nearly reach the tip of the abdomen when folded
- The thorax is slightly larger than that of a worker
 - This is an important consideration as sometimes you can pick out the queen by the appearance of the dark (less hairy) thorax which stands out in the crowd of bees on the comb
 - It is also conducive to paint her – *that makes it far easier*

honeybee
(*Apis mellifera*)





Notice how prevalent the thorax is on this queen compared to the workers



Painted queens are
even easier to spot



Workers

- **Anatomically**
 - Smaller than queen and drones
 - Barbed Sting
 - Feature pollen baskets on their back legs
 - Baskets are not present on queen or drones
 - Workers do not produce pheromones like the queen





Workers

- **Anatomically**
 - Female workers do not have a developed reproductive system
 - They can lay eggs; but no spermatheca
 - They cannot fertilize an egg, and could not perform the role of replacing the queen
 - Wax Glands
 - Workers have wax glands on the bottom of their abdomen for creating wax sheets





Drones

- **Anatomically**
 - The largest bees in the colony.
 - Large stout body, large head, with eyes that cover the top surface of their head
 - A drone's compound eyes meet at the top of its head
 - The size serves their ability to see a queen in flight during mating
 - No stinger, pollen baskets, or wax glands
 - Fed by workers, and perform no known hive functions





Drones

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Drones

- **Anatomically**
 - They are fed by workers, and perform no known hive functions
- **Presence Limited**
 - Generally, mix into the colony from late spring to late summer
- **Function**
 - There is debate about any other roles they perform in colony operations; this is being studied



Drones

- **Function**
 - Their main function is to fertilize the virgin queens
- **Drones in Mating**
 - Drones become sexually mature about a week after emerging
 - Drones die because of the mating process with a queen
 - Their endophallus pulls out and they suffer a mortal wound as a part of the mating process



Bee Development

□ Development

- Bees being reared in the cells are commonly referred to as 'brood'
- They progress from:
 - **Egg to Larvae to Pupae**
- Open and Capped Brood
 - Eggs and Larva are open
 - Pupa develops under wax capping

Developmental stages of the three types

Developmental Stage	Duration of Stages		
	Queen	Worker	Drone
	-----	--Days-----	-----
Egg	3	3	3
Larval Stage	5 1/2	6	6 1/2
Pupal Stage	7 1/2	12	14 1/2

Total Time:	16	21	24

Typical colony population

- Colony size in winter 15,000 to 30,000+/-
- Colony size at the height ~50,000+



Drones are reared in cells that are larger than worker cells



Queens are reared in cells that resemble a peanut shell



Workers are reared in the typical honeycomb within the colony



Lifespans

□ Queens

- 2 to 5 years; this is typical
- Can go to 6 or 7; this is rare

□ Drones

- Typical lifespan is 2 months
 - Like workers, some drones can stay in the hive for months
 - Fall drones, could be found in the colony in February or March

□ Workers

- Varies upon workload/colony role
- Workers live about 6 weeks during summer.
- Workers reared in fall can live up to 6 months
 - This allows the colony to survive winter and assist in rearing new generations in spring.



Age Based Polyethism

- **Work is often guided by individual age**
 - Worker bees perform differing tasks as they age
 - Often tasks are tied to physical development (abilities) – things like gland development and physiology

- **Example progression**

- 1-2 days Clean Cells, Keep Brood Warm
- 3-5 days Feed Older Larvae (Nurse Bees)
- 6-11 days Feed Younger Larvae
- 12-18 days Produce Wax, Build Comb, Undertakers
- 18-21 days Protect Hive Entrance, Guard Duty
- 21-45* days Nectar, Water, Propolis Collection

This is just a representative sample

It is said that there are around 20 to 40 tasks undertaken by the bees

Definition

Local

belonging or relating to a particular area or neighborhood



Honeybee Glands

- **Honeybee Glands Play a Vital Role**
 - Glands in honeybees serve several functions in colony operation
 - Worker glands are used in food production, chemical communication and signals
 - The role of Worker glands in food production have much to do with bee development. What food is presented, as interspersed with gland secretions, determine the makeup of the bee being reared
 - Queens, Workers, and Drones are fed different formulations and that results in their specific physiology – the most prevalent example being Royal Jelly for queens
 - Queen glands produce pheromones which control colony behavior and sequester worker sexual production (among other things)



A 'Taste' of Colony Operations

□ Open vs. Clustering

- Honeybees operate in an open manner in normal weather
 - They move about the comb, performing whatever duties are required
- Clustered in winter (<45°F)
 - Winter over as unit, working together to generate heat by **clustering** together to stay warm

□ Hive Defense

- Workers will serve as guards, monitoring every bee that attempts to enter
 - They can distinguish their nest mates by smell
 - Each hive has its own individual odor
 - Exception: Often drones are allowed in from other hives



Colony Operations (cont.)

□ Nest Organization

- Typically, the queen operates in the brood area
- Brood area is synonymous with the 'nest'
- The brood area is flanked with food storage made up of pollen, nectar and ripened honey

□ Hoarding

- A trait of European Bees
- They will store more than they require
- Honey is often stored in the periphery and above the brood nest if storage space is available



Colony Operations (cont.)

□ Wax Building

- Wax is created by bees of a certain age
 - They have to be well nourished, and their wax glands need to be fully developed
- Bees can recycle wax and propolis when wax builders are not in operation

□ Propolis Envelope

- Honeybees have a limited immunity system
- They depend up on natural immunity from nature in the form of propolis
- They create a propolis envelope within the hive
 - Anti-Microbial, Anti-Bacterial, etc.



Colony Operations (cont.)

□ Reproduction

- Bees reproduce by casting off swarms
- The swarm establishes a new colony with the old queen (old queen leaves with the swarm)
- The original colony rears a new queen

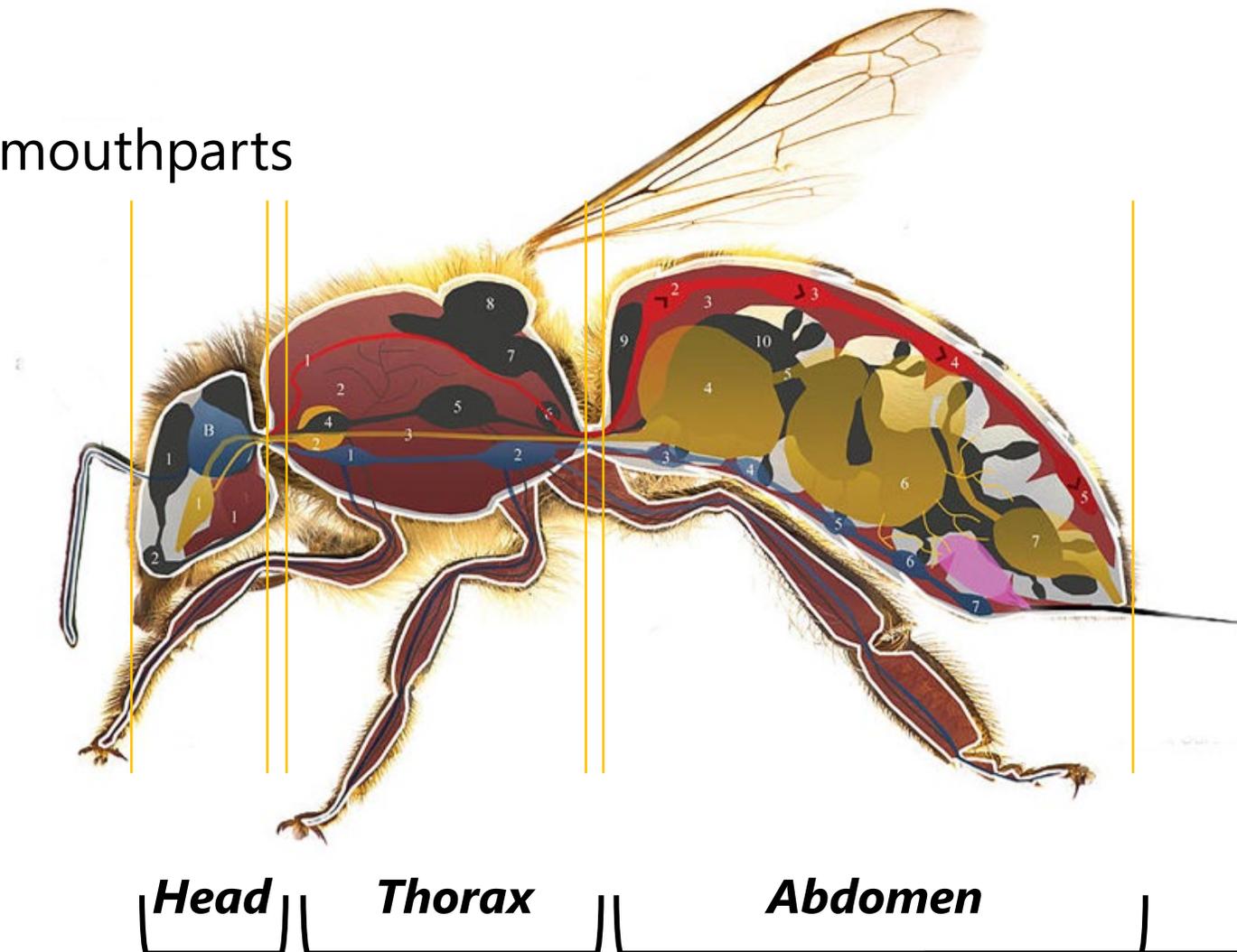
□ Queen Replacements

- If the queen is failing, the colony will rear new ones
- The new queens will emerge
 - Sometimes more than one emerges, and the queens will fight until one emerges as the victor
 - When new queens are present, workers will sequester and kill the old queen



Honeybee Anatomy

- Head**
 - Sight, sense, mouthparts
- Thorax**
 - Locomotion
- Abdomen**
 - Internals



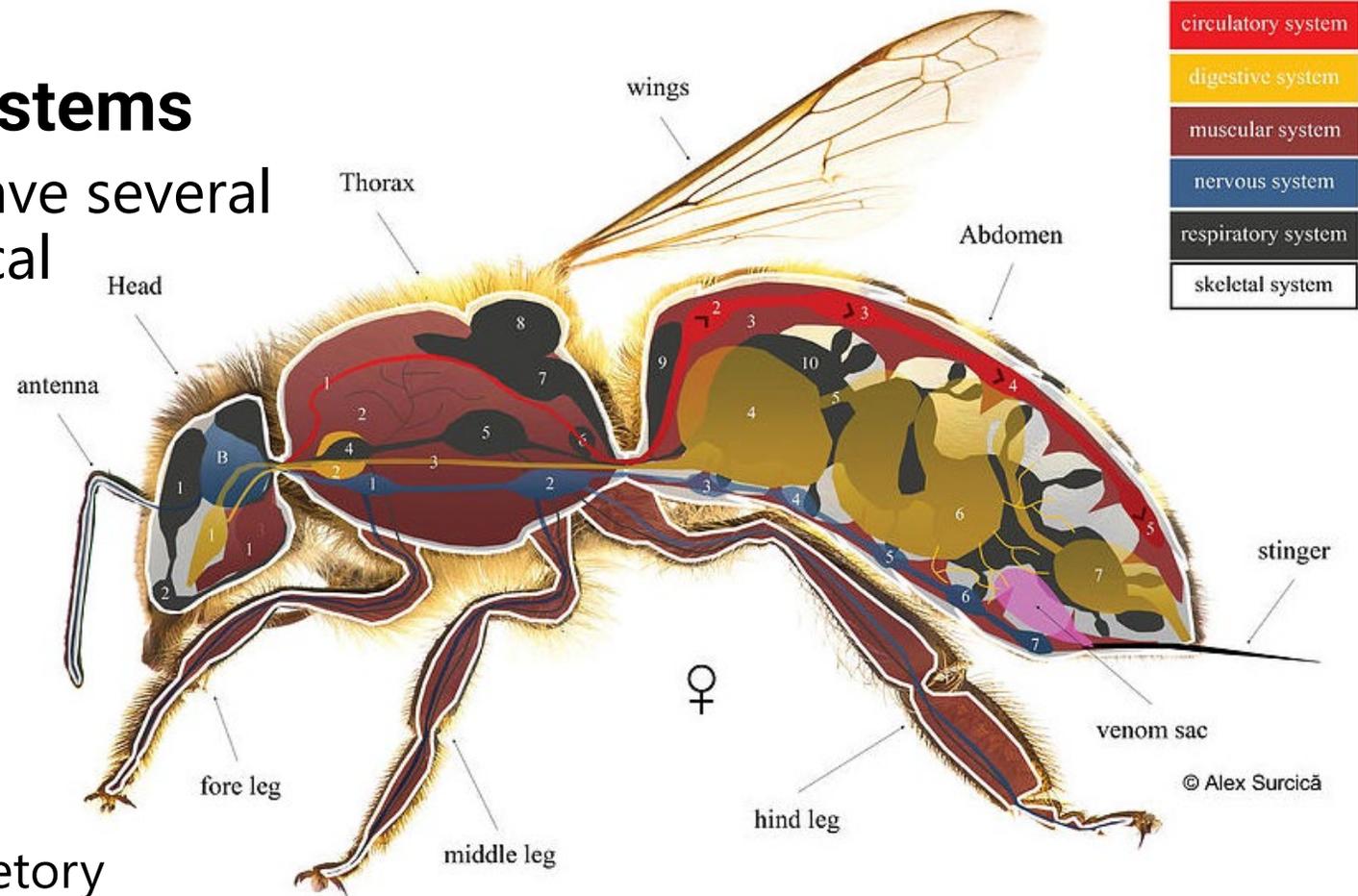


Honeybee Anatomy

□ Anatomical Systems

- Honeybees have several core anatomical **systems**

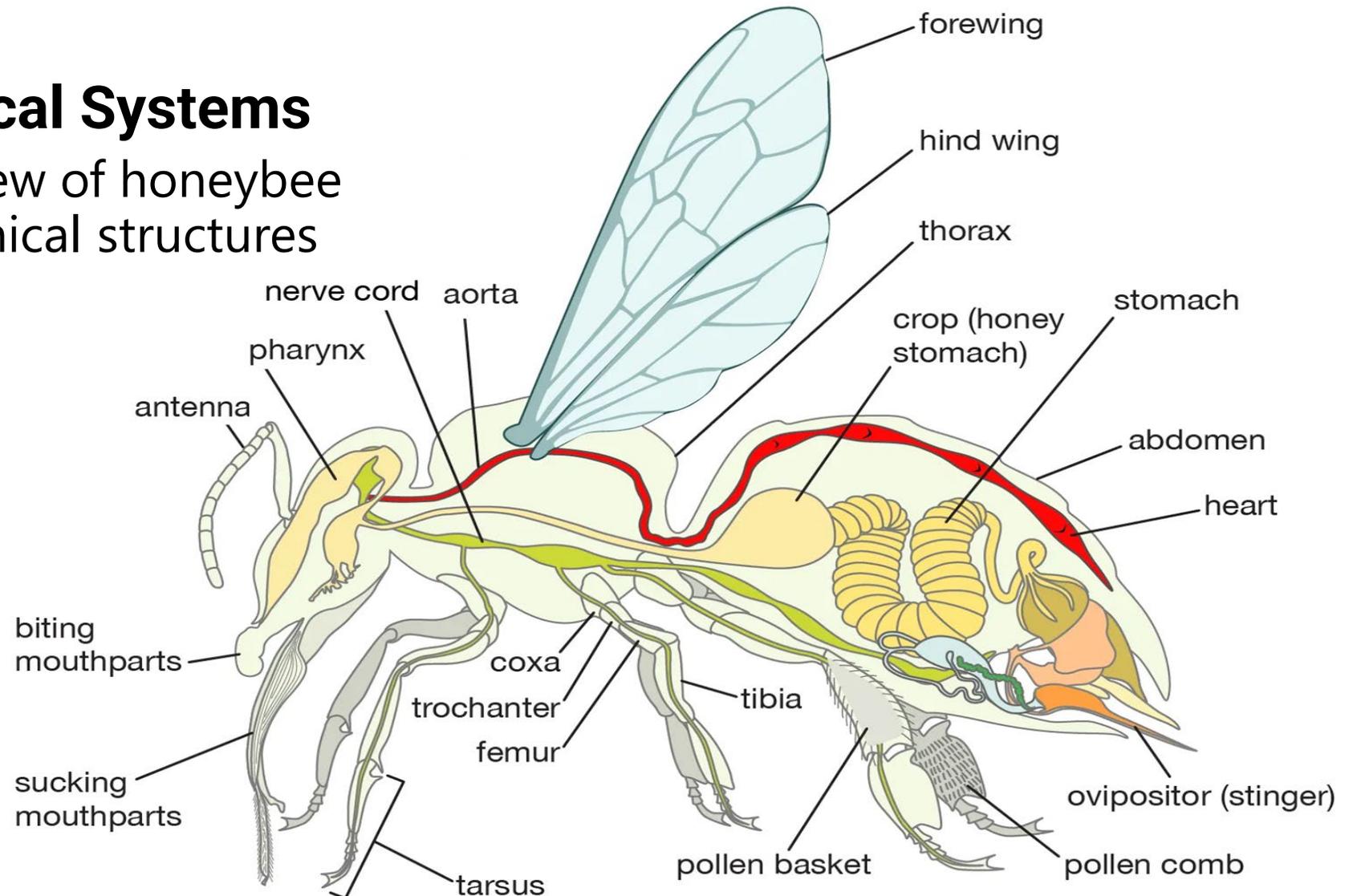
- Circulatory
- Glandular
- Muscular
- Nervous
- Skeletal
- Respiratory
- Reproductive
- Digestive/Excretory





Honeybee Anatomy

- **Anatomical Systems**
 - Overview of honeybee anatomical structures





Important Anatomical Call Outs

- **Antenna**
 - Critical to world interaction and smell
- **Honey Crop**
 - Holds nectar in transit
- **Wings**
 - Forewing and hindwing work in conjunction to provide flight
- **Stomach / Intestines**
 - For digestion of foods – can hold a massive amount of food waste
- **Wings**
 - Forewing and hindwing work in conjunction to provide flight
- **Sting**
 - Barbed sting for defense



Important Anatomical Call Outs

- **Pollen Basket**
 - Specialized feature on the legs of workers that holds pollen in transport
- **Wax Glands**
 - Wax mirrors for producing wax for comb building
- **Compound Eyes/Ocelli**
 - Provide vision, and sense of speed and direction
- **Proboscis**
 - Sucking up Nectar and food
- **Mandibles/Mouthparts**
 - Chewing and food processing



Important Anatomical Call Outs

□ **Spiracles**

- Respiratory openings that provide for oxygen exchange

□ **Hemolymph**

- Interior fluid responsible for circulatory functions (like blood)

□ **Glands**

- Used for food production, chemical communication and more

□ **Surface Hairs**

- Cover the surface of the bees and perform several key functions



Important Anatomical Call Outs - Queens

□ Ovaries

- Fully developed ovaries for egg production

□ Spermatheca

- Specialized receptacle for holding sperm provided by drones

□ Extended Abdomen

- A larger abdomen allows the space for anatomy for egg production

□ Stinger

- Smooth barb, used for defense and against other queens



Scratching the Surface

- **This information is very superficial (*on purpose*)**
 - A whole course could focus on colony operations and anatomy
 - You have a lot of topics to learn when starting out
 - To add depth of content would be lost for three reasons
 - It takes some experience to understand the material
 - Your brain would be on overload with the information to process
 - There's not enough time to go into depth and cover the other things you need to know

Kevin
Moment





This is not to say this is unimportant...

Truly Critical
*in becoming an
educated
beekeeper*

□ Learning colony operation & anatomy

- This is one of the most critical things you can invest in as a beekeeper
 - When you know what they are doing, why they are doing it, and how they are equipped to do it – the puzzle comes together

□ Recommendation & and Pledge from you

- Please take the time after this course to learn the lower-level details
 - Dig in on how wax is formed – Dig in on the detail of how bees overwinter – Dig in on swarming and reproduction – Supercedures – Drone Layers/Laying Workers – Dig in on biology..... *Become a long-term learner...*

Kevin
Moment



- Questions

Q&A





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Honeybees for Sale

Lesson | Sourcing and Selecting Honeybees



What is Covered in this Lesson

Origin and Races of Bees

Traits of Bees

Purchase Drivers

Physically Obtaining Bees

What to Buy

Where to Buy

When to Buy

Origins of honeybees in the United States

- **Honeybees in America**
 - Honeybees are not native to America.
 - They were brought over by the settlers
 - As such, it was established that honeybees came from specific places
 - As a result, they are commonly referred to by a country-of-origin label.
 - It is customary to refer to bees as “Italian”, “Russian”, “Carniolian” (from the Carnica region of Europe).
 - Bees offered for sale often use these, or other common labels when advertised.

Differing Race of Bees

- **European prevails in the U.S.**
 - The Latin name for European Honeybees is Apis Mellifera.
 - Within the Apis Mellifera family are the following
 - The most popular bees in the US:
 - Apis Mellifera Liguistica (Italian)
 - Apis Mellifera Carnica (Carniolan)
 - Apis Mellifera Caucasica (Caucasian, Russian)
 - Apis Mellifera Mellifera (German, European dark, English)
 - There are also hybrids that combine races and exhibit some defining trait:
 - Examples include:
 - Buckfast (hybrid of many races), Cordovan (cream color), etc.

Exploring the traits of races

- **Traits of bees**
 - There are professed traits to different races
 - These are historical observations and/or traits that have been bred into specific bees.
 - The traits of bees are generally applied
 - Examples of traits include:
 - How gentle they are to work
 - How much honey is produced in comparison with other races
 - How much propolis is produced
 - Whether the bees are prone to swarm more
 - Whether they build up quickly
 - Whether they use resources in excess
 - How suitable they are to overwintering
 - Their ability to deal with disease and pests

Focus on Varroa

□ Varroa Destructor

■ Varroa Related Traits

- There has been work with breeding honeybees to make them more effective against Varroa mites
 - Two of the more well-known traits include
 - Bees that exhibit Varroa Sensitive Hygiene (VSH)
 - This means the workers will take proactive action against varroa mites in the cells.
 - Ankle Biter
 - Discovered by Perdu University, these bees are known to chew off the leg parts of Varroa mites.
 - New Versions....
 - Periodically new lines emerge beyond these two

Perspective on Traits

- **Desirable, *but somewhat nebulous***
 - Your mileage may vary with purchases and sourcing
 - The **availability of bees with confirmed traits is limited** and not widespread
 - There are pockets of known places to purchase but supplies are very limited
 - The claims of traits in the marketplace are often anecdotal
 - The only way to get true confirmation is with bees that are either tested or specifically bred with rigor – which is not common.
 - Rearing bees is a complicated business, especially when it comes to selection and replication of desirable traits.
 - It requires critical mass for the traits to persist
 - Each situation varies as to the success of establishing long-term traits in any operation

Race, Traits, Localization, other factors

- **What are the most important factors when seeking to buy bees?**
 - There are several ways to go
 - Practically, two drivers win out:
 - Availability to specific bees for sale by trait or race
 - Availability for cost and convenience
 - It is **personal preference** as to what compels you to select where you buy your bees
 - Most new beekeepers, typically make a choice on some factor that appeals to them
 - Or they buy because of a local recommendation or exposure.
 - Some beekeepers emphatically hold out for more
 - They select a purchase on trait, race, and other facets

What kind of bee is endorsed?

Insights

□ Reality

- Your mileage varies, but most reputable bee suppliers provide perfectly suitable bees.
 - There is no way to look at a bee and tell its quality
 - Unless it is instrumentally inseminated, **it is a mutt**
 - Bees are resilient and when managed well will almost always be fit for purpose
 - This is not to say that some are actually better.
 - It is more to say that even average bees will typically suffice.
- To be thorough we will review some background
 - Starting with some typical bees that are sold and their characteristics.

Its akin to buying a purebred dog... Hard to do these days

Buying bees based on Race

A word about Race

- **Using Italian bees as an example**
 - “Italian” bees are the most conventional bees.
 - Generally, **the marketplace takes liberties** with bee labels. Italian bees are typically not pure Italian...
 - If they look like Italian bees, and act like Italian bees, then they are sold as Italian bees.
 - The truth is there is a certain look that is prescribed to an Italian bee. That look, coupled with professed traits compels bee providers to label what they sell as “Italian”.
 - The same can be true of the other labels/races being sold.
 - Some do actually confirm scientifically what the origin species and sell pure stock.
 - Mostly what you will find, even with some bees that are sold as pure, is that unless someone is controlling the breeding with rigor, **the bees are going to be a mix of genetics.**

Race/Trait Overviews

Description and Traits of Italian Bees

- **Generalized description of Italian Bees**
 - **Appearance:** Golden yellow with black and dark brown bands on the abdomen
 - **Disposition:** Gentle, Calm on comb
 - **Behavior Traits:** Prone to rob other hives, Store excess honey, use more stores
 - **Honey Production:** Prolific Honey producers
 - **Build Up:** Large build up, quickly, sometimes wasteful
 - **Overwintering:** Adequate, professed to use stores more than others
 - **Swarming:** Moderate swarm impulses

Race/Trait Overviews

Description and Traits of Carniolian Bees

- **Generalized description of Carniolian Bees**
 - **Appearance:** Deep yellow to black with dark brown, gray or even black stripes on abdomen
 - **Disposition:** Gentle, Calm on comb
 - **Behavior Traits:** Not prone to robbing, will fly in more adverse weather conditions
 - **Honey Production:** Sufficient honey producers
 - **Build Up:** Slow conservative build up, lower use of reserves
 - **Overwintering:** Overwinter in smaller clusters, good choice for colder climates
 - **Swarming:** Grow fast in spring and prolific to swarming

Race/Trait Overviews

Description and Traits of Russian Bees

- **Generalized description of Russian Bees**
 - **Appearance:** Deep yellow and/or dark brown and black tones – but vary in color
 - **Disposition:** Descriptions vary, sometimes described as more assertive
 - **Behavior Traits:** Sought out for Varroa resistance
 - **Honey Production:** Sufficient honey producers
 - **Build Up:** Slow build up, lag in slowing during dearth
 - **Overwintering:** Well adapted to overwintering
 - **Swarming:** Moderate to high swarm tendencies

It could be noted that Russian bees are not a specific race. They are typically a blend of bees, but often are attributed to the Caucasian race: *Apis Mellifera Caucasia* | The Russian Honey bee Breeding Association (RHBA) does not certify a stock, line or individual bee as Russian. <http://www.russianbreeder.org>



Russian Bees

□ Not Suitable for You

- In my experience with Russian bees, they are
 - Aggressive and more prone to sting you (*and your neighbors*)
 - "Swarmy"
 - They build up quite fast in the spring, and therefore they can get ahead of you in the swarm season if you are not vigilant



What kind of bee

Insights

- **A simplification of buying bees to make it easier for you**
 - Yes, there are races of bees. Yes, there are bees selected for traits. Yes, bees come in different colors.
 - The emphasis of what you 'should buy' does not match up with the more common ways bees are purchased.
 - Factors in the purchase
 - Timing, Cost, Availability, Shipping, Format of purchase (Nuc, Package) etc.
 - Origin zone – remote or local

Sourcing is an input to selection

- **How you come by the bees..**
 - Bees can be:
 - Purchased and shipped to you through the mail
 - Purchased and picked up at a provider or reseller
 - Purchased and delivered to you at your location
 - Captured in a swarm and brought home
 - Sometimes what you buy is preceded by the method by which you come by your bees



Sourcing is an input to selection

- **Local vs. Distant (Acclimated is better)**
 - Local bees are more than just proximity Local bees originate from the region and do not require trucking or shipping.
 - Local bees have the advantage of being acclimatized to the region
 - **Bees reared in warmer places are not adjusted to your weather conditions.** They can get by, but bees reared locally are perceived to perform better under the conditions.
 - A final thought to allay concerns.
 - Not being able to buy locally does not equate to avoiding bees provided from other regions.
 - Bees from the south are sourced widely every spring as the norm

Massachusetts

- **Purchasing Direct**
 - **Regional and Local Sales**
 - Mass. has a mix of regional and local options
 - Some drive long distances to source bees and others obtain them in their local community.
 - It all depends on what you choose, and **what is offered for sale in your location as this varies around the state.**
 - State and Local Association Listings
 - Consider research for bee purchases by looking at the **Mass Beekeepers Association Website**
 - Also consider consulting with **your local association** about possible options in the area
 - You might also consult with any local beekeepers that you might know

Mail Order

- **Mail Order**
 - It is possible to order bees and have them shipped.
 - This is often done by sourcing bees from suppliers who advertise in Trade Magazines
 - Consider looking at the ads in **Bee Culture** and **American Bee Journal**
 - **Check with your local post office to see if they will accommodate this**

Beekeeping Vendors

- **Beekeeping Suppliers**
 - Large suppliers that sell both supplies and bees
 - Some large bee suppliers advertise honeybee sales (nucs and packages)
 - **You often must travel to their facility**
 - This is more a regional thing, and sometimes beekeepers will go a few hours to get bees in this manner
 - Your Local Bee Club
 - Often bee clubs throughout the region arrange and sell bees to beekeepers
 - They arrange sales and pickup days



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Easy refills & top brands delivered

Shop pharmacy

Honey Bees

Home / Livestock / Beekeeping / Live Bees / Honey Bees

Sort by most popular

Pickup & Delivery

Brand

Price

Bee Variety

Bees Package Quantity

All filters



Harvest Lane Honey Live Italian Honey Bees, 3 lb.

3.4 (940) | Item # 129279099

Standard Delivery

\$229.99

Financing available

Free Delivery Offer.

Add to cart



Harvest Lane Honey Live Carniolan Honey Bees, 3 lb.

3.6 (542) | Item # 129279199

Standard Delivery

\$229.99

Financing available

Free Delivery Offer.

Add to cart

Farm Supply Stores

- Stores like Tractor Supply, and even some Home Depot outlets offer bees for sale
- You will have to check with them directly
- This might be more convenient for pickup/delivery

Order Early. Quantities are Limited

- **Bees are in high demand**
 - There is a high demand every spring for bees.
 - As such, it is prudent to **be very proactive in placing orders** for bees.
 - Local bees are often short in supply and high in demand. They may go for a premium
 - This is especially true for any specialty lines of bees
 - Demand outweighs supply: Often extremely limited choices
 - It is likely that you will be asked to provide a deposit to hold your order.
 - **Costs**
 - Costs climb every season. The going rate also have wide ranges in asking prices.
 - In 2025 costs were about \$150+ for packages, \$220+ for Nucs

Last Word

- **If in doubt, check with your local association**
 - Bee Clubs are very much attuned to where to source bees
 - Many bee clubs sell bees as a service
 - This is convenient for their members, and they might do it as a fund raiser to operate the association
 - State Associations almost always have a resource for bee sales
 - They usually have a good sense of who they are putting on their page when they add the resources

- Questions

Q&A





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Packages & Nucs

Lesson | Considerations for buying bees



What is Covered in this Lesson

Packages and Nucs Primer

Package Dynamics

How Packages are Assembled

The Quality of Package Queens and Bees

Why Queens are Rejected

Package Adaptability and Risk – Mitigating Problems

Optimal Purchasing for Nucs and Packages

Closing Thoughts on the Information



The Customary ways to start beekeeping

□ Packages or Nucleus Colonies

- Conventionally this is a very common way to source bees
 - As noted earlier, a package of bees is just that, a collection of bees in a shipping box that you move into a starter kit to establish a colony.
 - The bees are often placed in a completely new hive and build it out from scratch
 - On the other hand, is a Nucleus colony which is a colony in miniature
 - A Nuc in its most common form is five-frames of bees that you move into a kit as a ready-made start.
- You can of course start with a donated hive or a captured swarm
 - For this lesson we will focus on the more customary way to start; packages and nucs



Going Deeper

- **What is better, a package or Nuc?**
 - If cost were not a consideration, we would recommend you start with a Nucleus (**Nuc**) colony
 - They have the benefit of a working queen, and will build into a full-sized colony quite quickly
 - They are often source from bees started in the previous season and benefit from local stock, as well as a young queen.
 - The downside is that **they cost more**, and sometimes they are hard to find.

Term

Nuc The term Nuc is short for Nucleus. It is pronounced in a similar style to a nuclear weapon – Nuke....





Is a package a good choice?

- **Packages are perfectly viable**
 - Many beekeepers will tell you they started with package bees
 - Packages are a customary way to start
 - Packages are usually widely available each spring and are less costly than Nuc Colonies
 - Technically they are a perfectly suitable way to go but they do have some drawbacks.



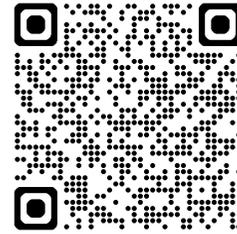


Package Dynamics

- **Generally good, but some known drawbacks**
 - Slow starters
 - New beekeepers literally pour new packages on foundation comb and the bees start from scratch to build out the honeycomb and nest.
 - This naturally takes more time to get underway when compared a Nuc
 - Sometimes subject to Queen Problems
 - This is not something that is spoke of, but it is pragmatic to share that package bees are subject at times to queen adoption problems
 - To understand that requires some background on how packages are prepared.



Package Assembly



- **The origin of the bees in a package**
 - A package supplier sources bees from colonies in a large operation.
 - During the assembly, bees are sourced from a collection of colonies, without the origin queen (she's set to the side)
 - Queens raised by the operation are inserted into a cage and each package gets a newly reared queen.
 - The photos show a very reputable package supplier from Georgia – Gardner Apiaries





Package Queen Quality

- **Dynamic Supplied Queens**
 - Most package producers rear their own queens for packages
 - This is an incredible skill, and the package producers have proven quite adept at this task. It is quite admirable, the service they provide to the beekeeping industry each year.
 - Ideally the package producer is an established operation and has demonstrated that they have a proven track record for their work and will stand behind the packages they produce.
 - The truth is many package producers were knocked in the past for the quality of the queens supplied and have taken great measures to breed high quality queens.
 - One shortcoming that cannot be controlled is the fact that queen reared in the south are not necessarily optimal for northern climates. Not much they can do about this.



Queen Quality and Acceptance

- **Your mileage may vary**
 - A suitable queen will be robust and last for several seasons.
 - Unfortunately, there are times when queens are not accepted right from the start.
 - We have witnessed persistent instances year-on-year where a colony starts out with their queen, things get going, and then they replace her.
 - Often times you will not know the reason.
 - It is ironic to point out that most times they restart by using a larva laid by the very queen they are rejecting.



Why are Queens Rejected?

- **There are several plausible reasons**
 - Most times a queen is rejected because the workers find something wrong with her or some circumstance is going on inside the colony
 - Poor mating, Genetic problem, injury to the queen, Queen not biologically working as nature requires (not laying enough eggs, poor pheromone, and other problems), queen chilled and sperm she holds is damaged and more.
 - Rejection from bees that do not accept their new queen after being with a previous queen out of their original colony.



Package Queens are Perfectly Suitable

□ Allaying some concerns

- While we have spent some time recognizing that there can be some problems....
- The fact is, researchers have focused on the quality of package queens and found that they are factually well produced.
 - For more information on this, see the research from Dr. David Tarpy NC State University.
 - Dr. Tarpy is lauded as one of the most progressive and informed researchers when it comes to honeybee queens and has found that sampled queens from honey package producers are quite acceptable when randomly sampled.

Tip: Search for Quality of Commercial Queens on YouTube



Adaptability and Risk

□ Package Bees and Timing

- Most package bees are assembled for shipment to the Northern states early in the spring.
 - It has to be recognized that there is significant pressure each year to provide a large quantity of bees to the north. This is hard to do with perfect success.
 - Sometimes the weather in the south is not conducive to building packages on a northern beekeeper's schedule and as such the packages are just not as high quality and as good as previous years.
- Shipping methods play a factor
 - Bees riding on a trailer for hundreds of miles may be damaged during transport if they are chilled or mistreated.



Package Queen Acceptance Technique

- **A 2021 Study has provided us with this advice**
 - Supply a frame of eggs and young larva
 - A recent study demonstrated that installing a package of bees into a hive with a single frame of eggs and young larvae resulted in a 200% increase in acceptance of the package queen
 - The net result was an 86.7% total success rate of colony installation and queen survival.
- **The challenge**
 - Obviously as new beekeepers you will not have a frame to use...



Package Shortcomings

□ Recapping Some Factors

- Some years the weather of the package provider plays a factor in the availability and quality of the bees in the package.
- Sometimes the handling of the packages in shipping damages the bees
- These are prevalent enough to necessitate telling you that sometimes package bee installations fail, and it is not through the fault of the new beekeeper.



Nuc Shortcomings

- **To be fair, and balanced**
 - Nucleus colonies can have problems too
 - Sometimes the queens fail since they have been in service for a while
 - Poorly mated queens sometimes decline in their second year and many nucs sold have second year queens on many occasions.
 - Established bees can be subject to Mite Problems
 - On the contrary, most Mite packages are not prone to problems from mites.
 - Nuc colonies are often distributed to you with old honeycomb
 - Old comb, as you will learn in the lessons, can carry disease, and other problems that impacts the bees. We address this concern in upcoming lessons.



Mitigating Package Problems

□ Vendor Support

- Most years things go ok, but sometimes problems come up
 - Ultimately it is the responsibility of your vendor to address problems with packages that have difficulties
 - As an example, many sellers have spare queens because they know that sometimes supplied queens in packages have problems.

This information is shared for consideration. It is not our takeaway to say that we do not endorse packages.

Quite frankly they are necessary when considering costs, fulfilling demands by new beekeepers, and other factors.

Still, it is important to know the dynamics recognize the risks, and be prepared if problems do arise



Mitigating Package Problems

- **Association / Mentor Support**
 - Resolution through intervention
 - Sometimes problems can be triaged and sorted through a collaboration with a seasoned beekeeper who can provide guidance

This information is shared for consideration. It is not our takeaway to say that we do not endorse packages.

Quite frankly they are necessary when considering costs, fulfilling demands by new beekeepers, and other factors.

Still, it is important to know the dynamics recognize the risks, and be prepared if problems do arise



Closing thoughts...

Take a moment to imagine if you were doing this on your own; what would happen if you happen to encounter the rare but plausible problems discussed.

□ Recognizing the Uncertainty Tone

- We recognize that it is not very comfortable to consider what was covered
 - For transparency though, would rather share the risk out loud, and have you informed of potential problems.
 - This allows awareness and provides the ability to recognize challenges and be on the lookout for any problems





Closing thoughts...

Take a moment to imagine if you were doing this on your own; what would happen if you happen to encounter the rare but plausible problems discussed.



- **Recognizing the Uncertainty Tone**
 - We recognize that it is not very comfortable to consider what was covered
 - It is likely disconcerting to discover the reality of risk when spending money and investing time in the quest to be a beekeeper starts out with notions of failure due to circumstances you cannot control.
 - The truth is sometimes colonies fail, and you must restart. This is not meant to serve as an alarmist message as newly installed bees often do well



Purchasing Guidance

- **Knowing what good looks like...**
 - We want to spend a moment telling you what an optimal purchase of a Nuc or Package looks like.
 - In the next two slides we will cover what to look for in Nuc and Package purchase



Nucleus Colony

□ Five Frame is Customary

- Most nucs sold come with a full five-frames (sometimes it is 3 or 4)
 - The colony should have a quality queen that has a good laying pattern and is prolifically laying eggs upon purchase.
 - You likely do not know what this means when starting, so follow the next attribute
 - The box should be full of bees and resources and the seller should disclose what they have done to address any varroa mite concerns.
 - All five of the frames should have honeycomb built out, and the box should be full of bees
 - Ideally the seller will tell you the background of the hive and it is best if it had overwintered (which draws a premium price in many areas)



Package Bees

There are approximately 3300 bees to a pound and 10,000 bees in a package

- **A full 3-Pound Package**
 - Most colonies are sold after being physically weight on a scale
 - 3-pounds of bees equates to around 10,000 total bees. The colony will increase to 30,000+.
 - The carrier box should have been protected during transport
 - It should show no signs of damage, and the bees inside should be alive
 - It is customary for some dead bees to be on the floor of the package. Only a handful though, not an excessive amount.
 - The seller should provide some information and guidance
 - Most sellers will tell you where the bees came from (state of origin) and provide handling instructions as well as some guidance for how to install them into your equipment

- Questions

Q&A





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

Beekeepers School

BABA Beekeeper's School 2026



BABA Beekeeping School

What is Covered in this Lesson

Anchored Colonies

3-Yards or 3-Miles Concept

Choosing a Permanent Location

Suitable for Humans

Suitable for Bees

Placement Recommendations

Alternative Placement Options

Water Source



Honeybee Orientation

□ Orientation

■ Forager Orientation

- Forager Bees orient to their home upon first flight.

■ Orientation is done in several steps.

- They view the world from the hive entrance
- They take a short flight from the entrance and stay within sight of the hive.
- In time they will fly further, reviewing the landscape elements and familiarizing themselves with their surrounding while flying farther from the hive on subsequent days

Visualizing orientations

A bee will leave the entrance and fly in circular motions around the hive.

- They are taking in the location of the sun, the location of hive, and the landscape features.
- They will fly close to the hive down low, up high, and on late mornings or early afternoons you can see bees flying circles around the hives.
- The physical spot, within inches, is imprinted in the forager's memory.



Orientation Video: YouTube [Link](https://youtu.be/WFD5h57IDC8?t=43)
<https://youtu.be/WFD5h57IDC8?t=43>



3-Yards or 3-Miles

Recall bees orient to the exact spot of the hive

□ The adage:

Moving bees, *move them 3-yards or 3-miles* > Why?

■ The 3-yard concept

- If you move a colony on a hive stand more than three yards, any bees that have oriented to that spot will physically come back to the original spot, even if the hive is nearby.
 - They will fly to the spot, hover above the space, and sometimes they will land and gather together on the ground.
 - Other times they will simply fly away and look for some suitable new home (not necessarily the hive)
- If it is still within 3-yard however, the belief is they will be able to discern their original hive and eventually will fly to it and go inside.



3-Yards or 3-Miles (cont.)

- **The adage:**

Moving bees, *move them 3-yards or 3-miles* > Why?

- **The 3 mile concept**

- Normal foragers will fly miles from the original hive for forage if necessary
 - As part of this activity they log landscape features so they can find their way bak,
- If you move less than three miles, you risk that they recognize features
 - If you move them and they are still see things they know, they will likely use those clues to go back to the original location
- More than 3-miles and you should be ok that they realize they have a new home, and they will re-orient to that site and reset



Fooling the Bees

□ Ignore 3-Mile Rule

- There is a common belief that you do not have to move hives 3 miles
 - Move the hive to a new location, with an entrance modification
 - The wisdom is that you can move a hive to another location in proximity where it was
 - Simply move the hive and then create some barrier at the entrance that the bees have to deal with
 - The premise came from – what happens when a tree falls in the woods, how do the bee adapt?
 - When the bees deal with the obstruction, they realize things have changed and reorient
 - How does it work?
 - Sometimes it works but, in our experience, often it fails. Follow the 3-mile rule to be trouble free



Scoping out a Permanent Location

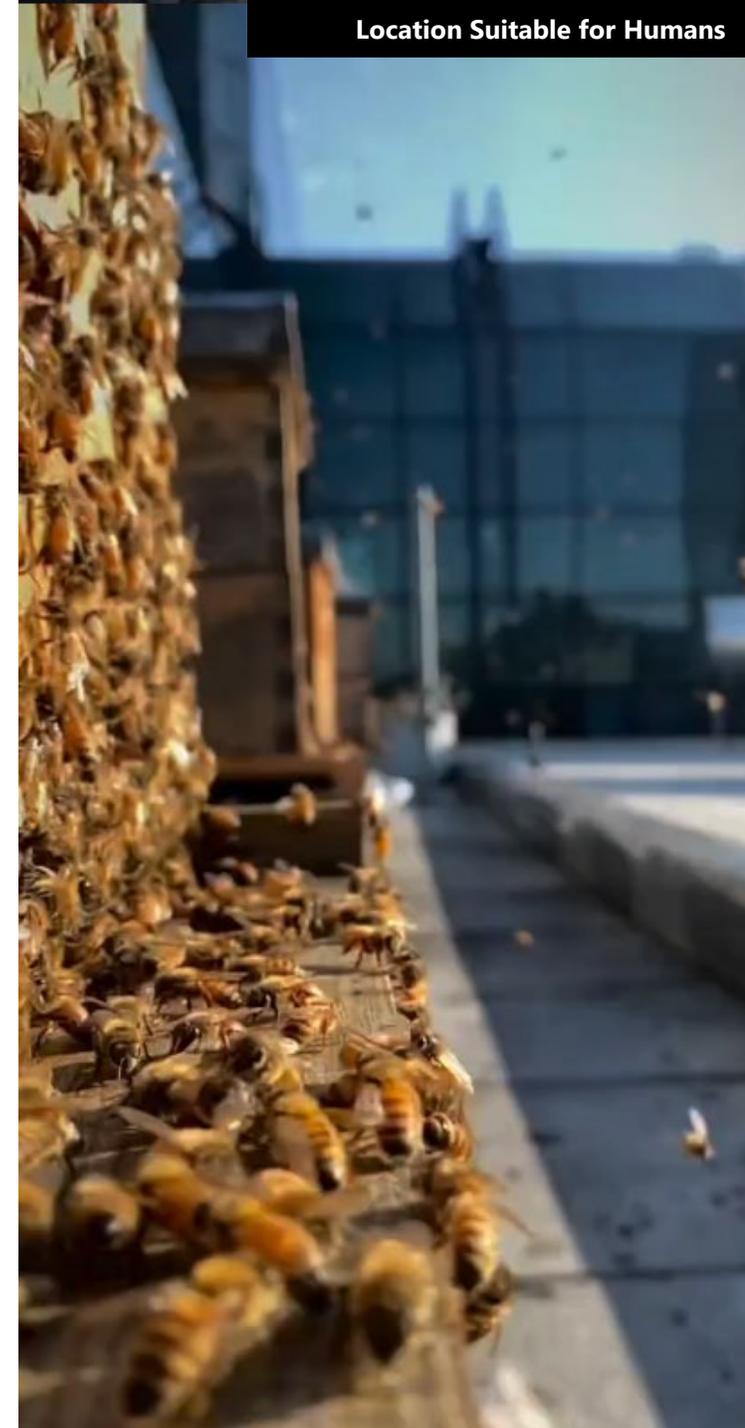
□ Analysis

- Knowing about orientation anchoring a colony, the selection of a site is an important decision.
- Selecting a location usually falls into two categories:
 - What is suitable for the beekeepers
 - Consider access to the bees and other facets to make a workable apiary
 - What is suitable for the bees
 - Taking into consideration what the bees need – what is optimal for them.



Access and Landscape Features

- **You need access and the ability to work**
 - Access
 - Access by Car is optimal. Access by Cart or equivalent is mandatory
 - Features
 - Dry, Level or slightly sloped ground that has exemplary drainage
 - An area that will *never* flood, ever, no matter what nature throws at you.
 - Consider the worse case scenario before choosing a spot
 - Away from foot traffic (humans). Not near porches, backyard patios, or other places where people walk through or congregate.





Spacing and Resource Protection

□ Space

- Enough room to operate. Preferably where you can space the hives out
 - Spacing allows for you to groom the area and mow around the colonies
 - Spacing is also good for the bees (covered later)
- Away from property lines and valuable resources
 - Hives have to be set back from property lines. Do not set against property lines
 - Away from places where bee poop is not going to cause damage
 - Bees fly out front of their hives when doing cleansing flights. Anything in front of the hive (cars, furniture, etc.) are subject to being covered with droppings



Individual Pad vs. Rail Placement

- ❑ Individual Pad Recommended





Individual Hive Stands

□ Space (continued)

■ Individual Hive Stands

■ Making a pitch for single hive stands

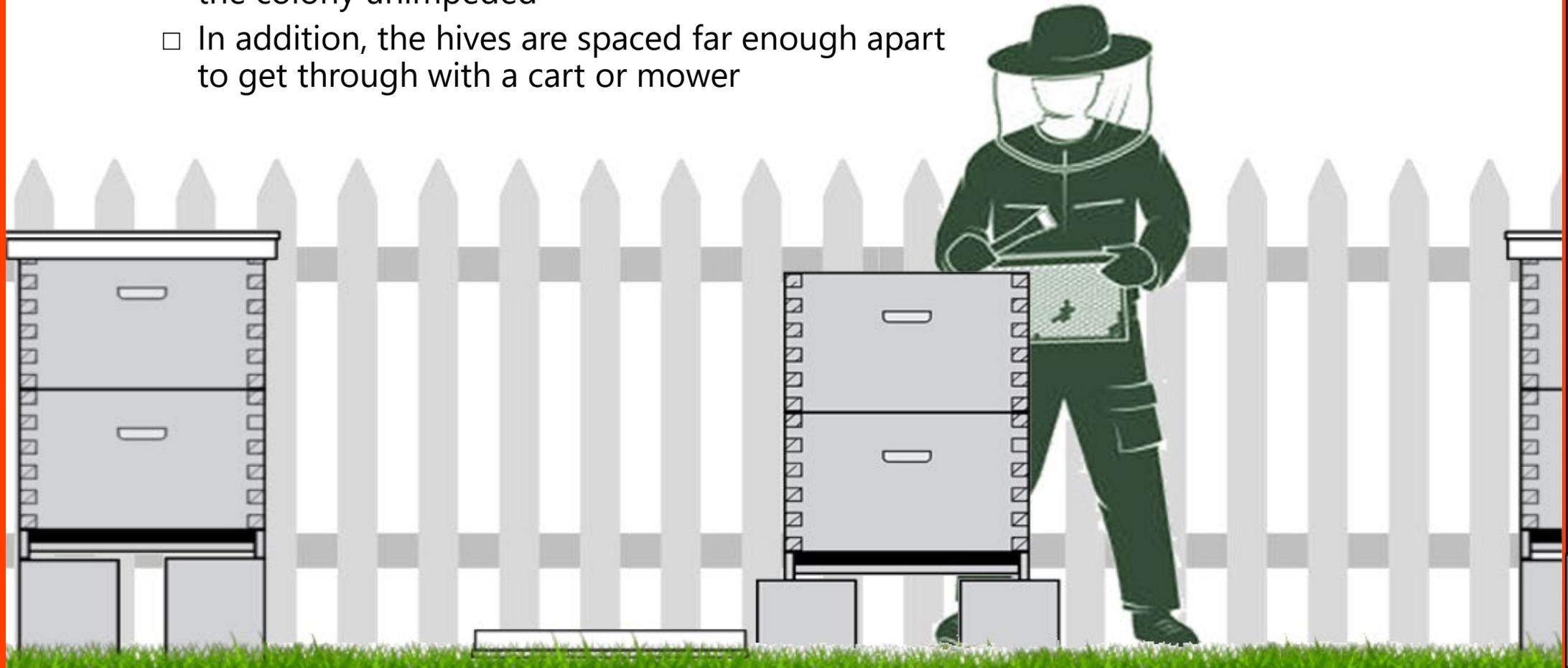
- Many apiaries provide a 'rail system' that lines up multiple hives on one rail
 - One aside is when you work one hive any movement translates down the rail to the other hives.
 - Rails limit your ability to truly get alongside
- Opinion: Single Hive Stands are Superior
 - Given your access you can work the hives better – lifting, placing boxes down, placing boxes back on the stack, and **this is better for your back**. Less awkward reaches and twists like a rail system.
 - They let you work all sides. They usually let you space the hives farther away from each other if you want. They also let you face each hive in a different direction.





Space around the pad

- Space to work
 - Ideally you will have the space to work around the hive – left or right side, *as well as the back*.
 - You can take the lid off and set alongside the hive, and still have room to walk around the colony unimpeded
 - In addition, the hives are spaced far enough apart to get through with a cart or mower





Gentle Bees & Proximity

□ Conservative Suggestions

- When you are new, error on the side of caution
- Get to know your bees and learn your tolerances
- When you are more familiar, you can consider taking more risks based on your experience
- Making changeovers from season to season affords opportunities to make placement decisions and is a good play once you have a season or two under your belt.



Placement Do's and Don'ts for Bees

□ Recommendations and Suggestions

■ Every situation is unique.

- When placing bees, there are many recommendations, and some may or may not apply in your situation.
- The next set of slides will run through several topics for consideration
 - Some are best practices and others are along the line of suggestions.
- Keep in mind that bees can be kept on properties that have several acres, on city lots, rooftops, and in other situations
 - If your situation is unique, make an inquiry
 - If your situation is not conducive to host bees, there will be a recommendation



Locating the Apiary

□ Full Sun Preferred

- Full Sun, or as much sun as can be supplied

- Sun is beneficial for bees. Hotter environments are less conducive for honeybee pests

- Bees can be kept on wooded lots. This is not ideal, but it can be done if there is no other recourse. The takeaway is full sun is optimal.

□ Proximity to Forage

- Ideally there will be forage preferably within 1/2 mile and up to 3 flight miles

- Cities and Urban landscapes are quite suitable



Location Features

- **Water Source / Feature close by**
 - Water is a necessity. Within a ¼ mile at minimum.
 - The closer the water source, the better for the bees. Less round-trip time for bees fetching water equals less work and more productivity for the colony
 - **You should supply water for the bees**, and that will be covered later in this module

- **Airflow and surface drainage**
 - Hives require air exchange in the apiary. Stagnant air is not optimal
 - Especially avoid low-lying damp areas, and ensure the site has excellent drainage
 - Air flow is desirable. Areas with high wind (not common) are not optimal



Place away from other features

□ Fencing, Trees, and other Items

- Keep the hives far enough away from any items that are adjacent to where you have placed your hives.
 - Keep them far enough away from fences, nearby trees, overhanging limbs, buildings, shrubs, brush piles, undergrowth, and other objects.
- Predator Spacing
 - If you are in bear territory, distance the hives back from the bear fence
 - Keep them far enough that they cannot reach through, drop down over the fence
 - Keep low fencing for racoons, skunks, and other predators if this is a concern



Room to Grow, or GO

□ Provide for Expansion

■ Pick a spot that can expand

- Sometime expansion comes on purpose (making splits) and other times it comes unexpectedly (captured swarms)
- Whether you plan to have more hives or not, give some consideration for either permanent or temporary space to hive additional hives.
- Keep in mind setbacks and property lines while planning for expansion

□ Build a **BUG OUT** plan

- Always consider having an alternate ready in case you are faced with having to move your bees out



Hives in Snow

□ Access

- Be sure you can get to hives in snow to care for them... and that you have access
- Consider sun for melting the snow from the entrances



Level Side to Side, Slight Tilt Forward

- **Hive should sit level side to side**
 - Get this wrong and the bees will not build the comb properly
 - Bees hang from one another (called festooning) when placing wax deposits to build comb. If the hive is off (tilted) they will not be able to build proper comb
- **Slight tilt forward**
 - Water that falls on the landing will run off the front; not into the hive





Location Features **Ground**

□ **Firm Ground**

- Rocky ground is ideal, Sandy Soil is not

- Some pests of the honeybee leave the hive and burrow into the ground below the colony. If they encounter hard rocks, this thwarts their success. They do very well in sandy soil

□ **Snow Melt**

- Choose the area where the snow melts quickly

- Avoid any area where the snow melts slowly on your property.
- Damp and cold conditions are detrimental for bees, especially in winter.



Location Features **Roof**

- **High Barriers**
 - Ideally there will be walls around the roof that mask the hives and provide protection from weather and wind

- **Firmly Anchored**
 - Cinder Block Bases
 - Strong Straps





Location Features **Roof**

- **Secure Extra Equipment**
 - Never leave loose beekeeping equipment around the hives in a rooftop setting
- **Security**
 - Ensure you have a good working relationship with the building maintenance team





Location Features **Roof**

- **Rooftop Infrastructure**
 - Know what you are placing your hives next to
 - Ensure the bees do not interfere with maintenance
 - Also ensure that anything on the roof is not going to be harmful to your bees
 - Consider storage
 - A place to keep equipment
 - It is not always easy to move equipment up to a roof apiary





Location Features **Roof**

□ Consider Height

Bees can only be so high from the ground

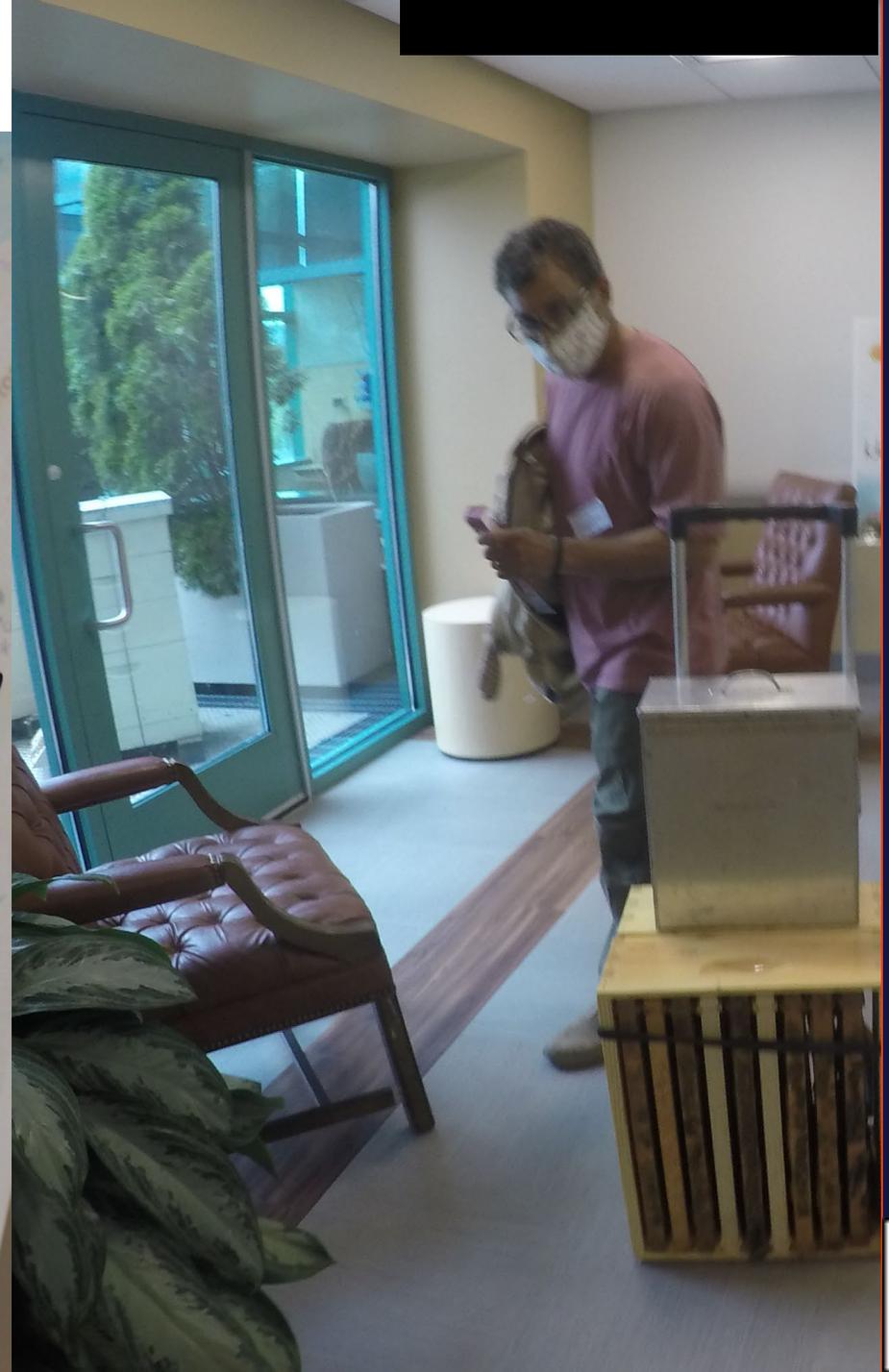
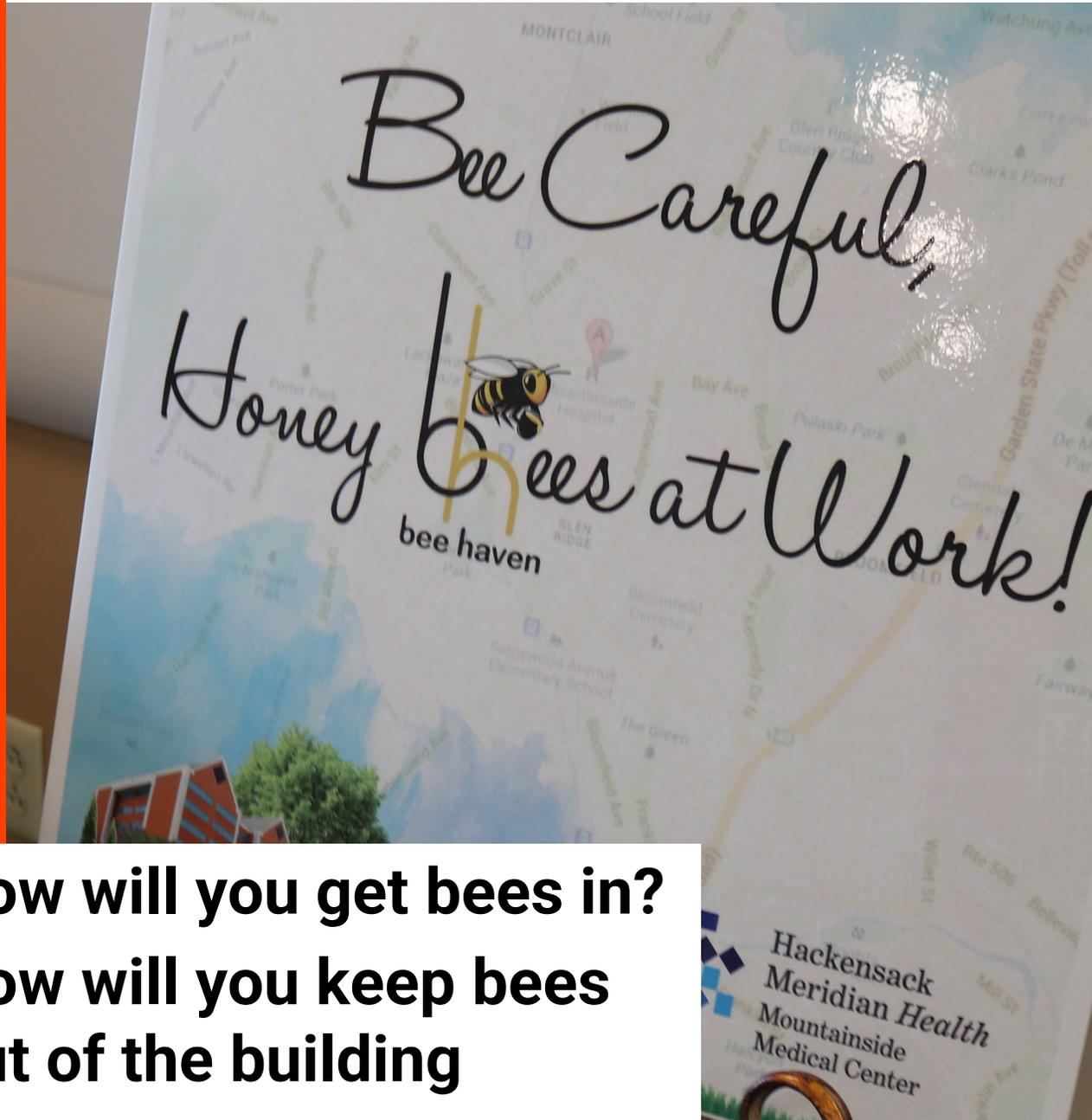


Placement Recommendations





Consider Rooftop Access



- How will you get bees in?
- How will you keep bees out of the building



Away from Live Beings

□ Away from Predators, Livestock, and Pets

■ Away from Predators

■ In Open Space - Away from havens for Predators

- Keep away from brush piles, and dense brush which provide shelter for predators

- Keep brush cut back right in the apiary to negate **ants**, mice, moles, voles, and other pests

■ Away from known predator water sources

- Locate away from known bear territories, or paths that are conducive for bears to travel

■ Away from Livestock

- Place away from animal holding areas (horses, cows, sheep, chickens, dog coops, etc.)



Considerations: Theft & Security

- **In some areas this is a problem**
 - If it is a concern, consider your circumstances
 - Plan for security: Secure Enclosure, Identifiers in and on hive
 - Camera Solutions
 - Strapping hives with locking straps and tamperproof enclosures
 - Consider your safety
 - Will you need to work bees in isolation? At Night? Alone?
 - Is the location conducive to any situations that might arise?



Orientation

- **Face the hives toward the morning sun**
 - The hives should face south or southeast
 - Point them as close as possible to where the sun rises in the spring
 - Morning sun heats the hives and provides light and warmth; bees work earlier. Hives that do not face the morning sun are ok, but they tend to be less productive
- **Wind Barriers > Prevailing Side of Apiary**
 - Review your location and learn prevailing winds patterns
 - Employ wind breaks or a barrier to prevent gusty winds from blowing through the apiary
 - Do not locate your hive at the base of a hill or places where the dampness collects



Broader Concerns

- **Away from other Beekeepers**
 - If there are beekeepers nearby, consider the pressure on the space
 - It might be prudent not to add to the burden and choose an alternate location
 - **Away from Agricultural, Industrial, and Chemical Threats**
 - Do not locate your apiary near a site where the bees will encounter undesirable elements
 - Some farms use pesticides that will kill bees. The same can be true for golf courses.
 - Consider the area and do not locate your operation where there is the possibility of pesticide and pest control exposures; especially if they are there already. It is a recipe for conflict.



Alternative Situations

- **Lack of Space and Proximity Concerns**
 - Sometimes you can make this work with some proper adjustments
 - Bees close to humans – Build a fly way barrier
 - If you place a tall fence or barrier next to the hives, the bees will fly up and over them to get to their destination
 - Once a bee is at height, they tend to stay up there and you might walk on the other side of a fence where bees are present and not even detect they are there



□ Lack of Space and Proximity Concerns

■ Enclosures

- Out of sight, out of mind. Selective screening around an apiary can make the operation a little more discreet.



Alternative Placements

□ Out Yards

- Sometimes the best answer is > somewhere else
 - If your property does not work, other options are out there. Farms, other landowners, corporations – if you work at it, there are alternatives to place bees

□ Community Gardens

- With the right setup, many successful community apiaries exist
 - This takes some communication and/or planning but can yield good results

Consider that, bad situations rarely get better with bees.

Don't force an issue or expect that masking is an end all solution

The West Seattle Bee Garden is one of our Favorite Examples (Google It!)





Water – A Key Ingredient

- **Reiterating! Establish a Water Source**
 - Don't impact your neighbors...
 - Bees are unaware that it is your neighbors pool, birdbath, hummingbird feeder, or kiddy pool. You cannot break them of a selection.
 - Water Feature Advice
 - Between your bees and your neighbor's pool
- **Bees cannot survive without water**
 - Processing food, Keeping the hive cool, Other activities....



Giving Bees Water

Around your property

- **Water is critical for bees**
 - Provide water
 - We recommend a bucket with holes and floaties
 - Place in 30 yards or so from the hive.
 - Scent and Salt the water
 - Add a drop of Anise Extract, or lemongrass oil, to the water as an attractant
 - Salt the water – this also makes the water more attractive to the bees - Enough salt so that the water has just a touch of salty taste to you.





Giving Bees Water

Right at the entrance of a hive

- **Water is critical for bees**
 - Feed water at the entrance
 - You can provide water at the entrance
 - A suitable use for a Boardman Style feeder (the name for the feeder shown)
 - Early has an added benefit
 - Do this early and bees will come to your water source, not your neighbors water sources



□ Questions

Next Week

- Regulations – ‘Beeing’ a good neighbor
- Packages and Nuc Installations
- The basics of Hive Inspections

Q&A

