

Introduction to Beekeeping



SIX CLASSROOM SESSIONS & THREE FIELD SESSIONS

What you need to know to keep bees successfully!

This class is presented by



MAINE **BEE** WELLNESS

Buzzing with the bees in Maine



Tonight's Instructor

Housekeeping

- Bath rooms are down the hall
- This class has a Facebook Group:
- Our text book is: Storey's Guide to Keeping Honey Bees, 2nd Edition
- Quizzes – nothing to worry about – at the start of classes 3 & 5
- BEES! The Club has a bee order. Orders will be taken at the end of class #2 for 3 pound packages with ___ queen, and 5 frame nucleus colonies with _____ queen. Quantities are limited.
- Completion Certificates awarded at the end of the course

Weather cancellations will follow the school class is being held at. The latest information will also be posted on the class Facebook Group.



The background of the slide is a close-up photograph of a honeycomb, showing a dense grid of hexagonal cells in various shades of orange and yellow. The lighting is bright, creating a warm and textured appearance.

Questions?

A question for you:

Why do you want to keep bees?



Honey? Help Save the bees?
Improve your garden/orchard pollination?
You think you'd look good in a bee suit?



There is a somewhat old fashioned view that bees should be treated as livestock. In this class we'll treat them as a kind of super livestock – not something to be coddled, but definitely something regarded with respect. This means the beekeeper needs to feed them when they need feeding, and in general intervene as necessary to keep them healthy.

We'll get started talking about bees with the next slide.

A goal of the class is providing you with information so that you can start keeping Honey bees. We want you to be successful. This first session tonight is an overview. New beekeepers often want to learn everything all at once. We understand that impatience. Starting with the next session we'll follow the text more closely.

We also realize that people learn in very different ways – that some of you will read the text book cover to cover by the next class. Others will search the Internet, look at YouTube videos, read forum posts.



Please keep an old beekeeping maxim in mind:

All Beekeeping is Local.



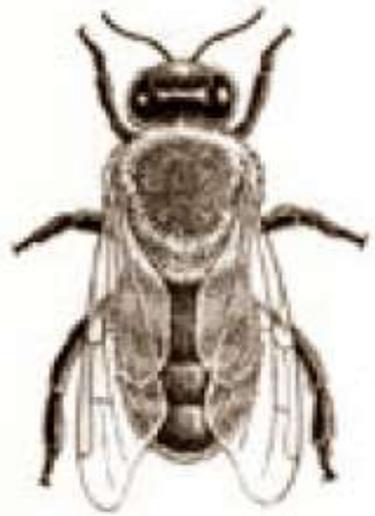
TWO DEFINITIONS

Colony – a collection of bees, including a queen and workers, that form a single biological unit.



Hive – a man made enclosure where a colony of bees makes their nest.

WHO'S WHO IN THE BEE HIVE?



Drone



Queen



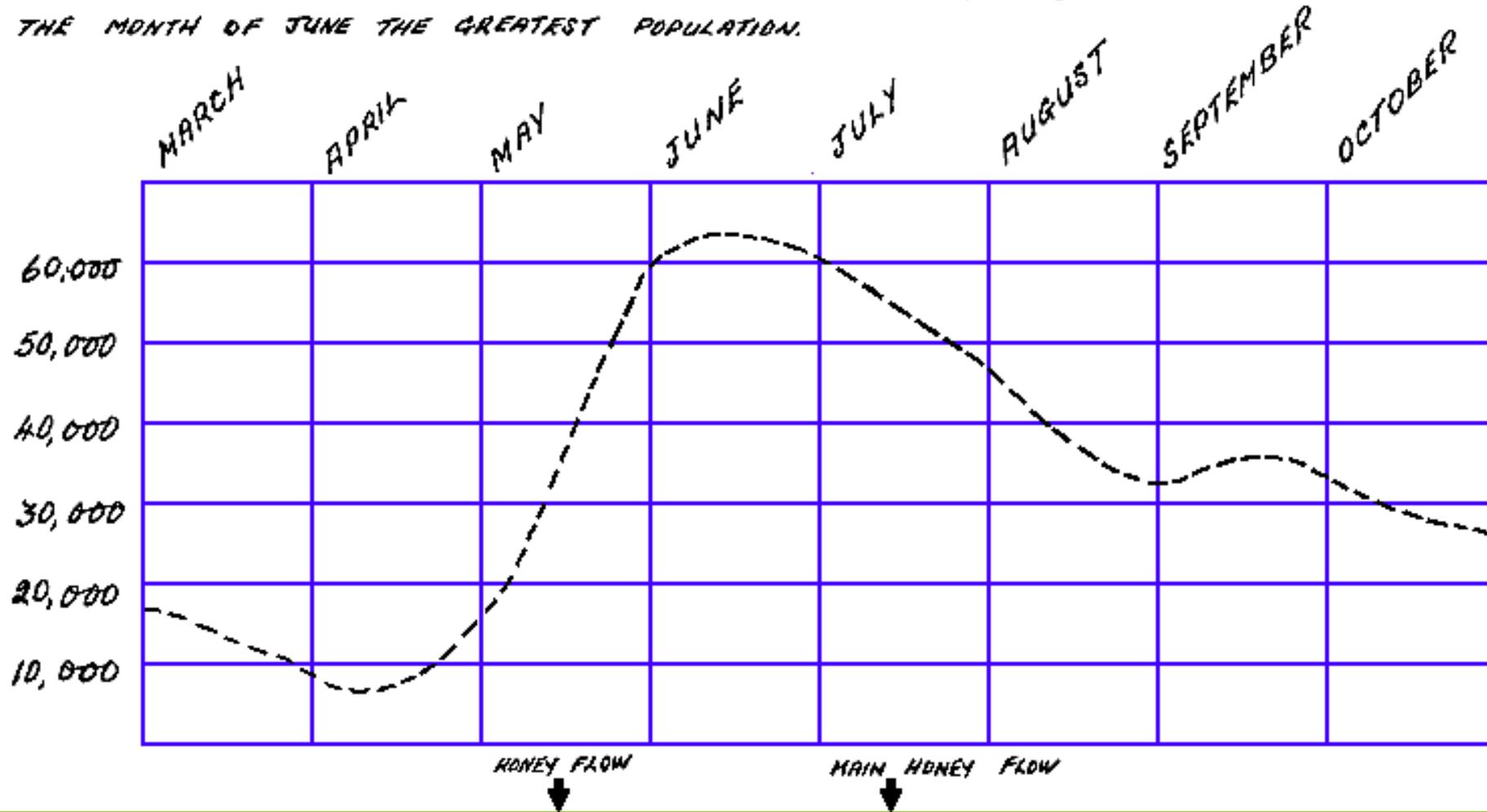
Worker

- Drone – the male reproductive, can live as long as 90 days. Their sole role is mating with young queens from other colonies.
- Queen – the female reproductive, the egg layer of the colony – at peak capacity many queens lay 1,500 eggs per day! She can live as long as 5 years (2 or 3 is much more typical) and communicates her presence with pheromones.
- Worker – females with undeveloped reproductive organs, can live anywhere between about 40 days to five months, depending on the time of year they are born. They have a huge variety of jobs that depend upon their age.

Bee Population goes up and down through the year!

PEAK OF POPULATION AT RIGHT TIME

THE CURVED LINE SHOWS THE VARIATION IN COLONY POPULATION THROUGH THE BREEDING SEASON. FIGURES AT LEFT INDICATE APPROXIMATE NUMBER OF BEES THE MONTH OF JUNE THE GREATEST POPULATION.



There is more to beekeeping than putting bees in a box and taking honey out.

Beekeeping is about learning about bees, their behavior, their role in nature, AND about how all of the above can be taken advantage of by humans who want to collect a crop. Keeping bees in a box is not natural AND keeping bees in parts of Maine can be quite difficult.



- What's the time commitment?
- What's it going to cost?
- Where do I get bees?
- Will I get stung?
- Can they live in my back yard?



Stings

Worker bees sting to protect their nest and when they are surprised. Stinging is always fatal for the Honey bee as their sting is barbed, and remains behind with the bee's poison sack, continuing to inject venom.

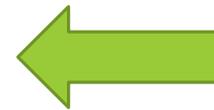
Bees also leave a “sting” or “alarm” pheromone at sting sites, making it important to remove the sting quickly and to regularly wash bee suits and gloves.



People react to stings differently – most people experience soreness, redness and swelling at the sting site, but others can have a reaction called anaphylaxis.

What's the time commitment?

New Beekeepers should inspect their colonies at least every 10-14 days during the bee season, AND spend time in addition watching the comings and goings of the bees. This is part of your beekeeping education! Winters are largely away from bees.



THE GOAL

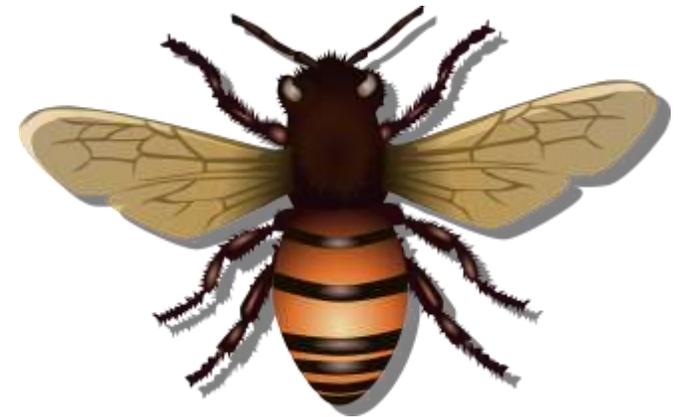
We'll talk more about inspections later Tonight!

Where are they going to live?

The short, and somewhat silly answer, is that the bees will live in a hive. Where that hive should go is the question that needs answering!

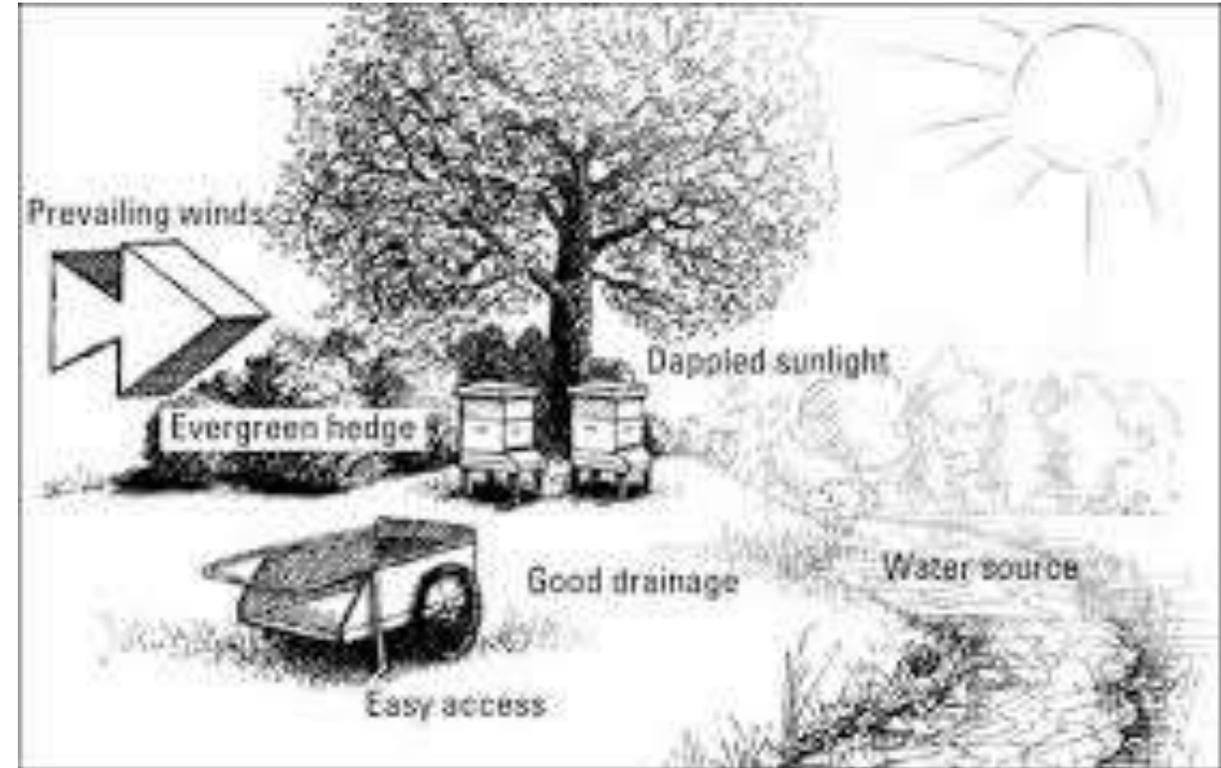
Honey bees routinely fly up to about three miles away to forage for their nutritional needs. Those needs are nectar, pollen and water. They also collect propolis, a resinous sticky substance, but not for nutrition. Instead they use propolis as a type of glue, sealing up cracks and things they think should not move.

The next slide will show you what a perfect site for Honey bees looks like.



The perfect site for your bee hive

- Level Ground
- Well Drained
- Wind Protection
- Accessible
- Nearby fresh water
- Nearby forage for nectar and pollen
- Located so the hives face South
- Located so the hives are in the sun most of the day
- NOT right next to a school bus stop
- NOT where bears/skunks play all night



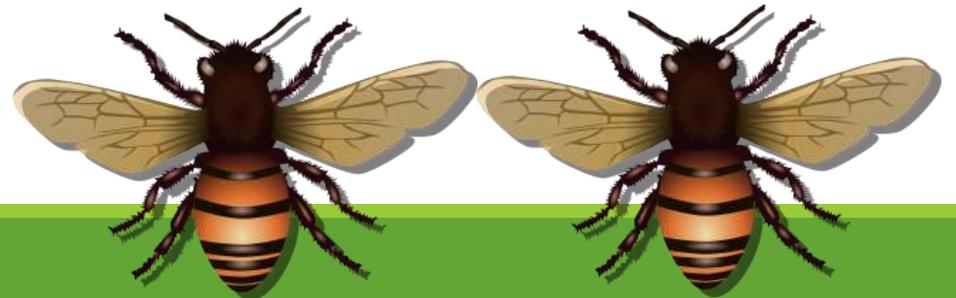
What's it all going to cost?

There is a little bit of good news bad news here. The Good news is that if you are a scrounger, have access to tools and wood, and enjoy building things, and have patience, you can start for \$50 or so per hive. In the first part of class 2, you'll hear about why you should start with at least two colonies. So if all of the above applies to you \$100 will get you started.

If on the other hand you like to buy everything off the shelf and new, you can easily spend \$1,000 or more getting started with two colonies.

It may help to look at the breakdowns here so you can get a better handle on costs.

Then again, you might want to just shut your eyes...



Costs Continued

*Within these categories are many choices.
The size of your budget may make some
choices easy!*

- Must Have Tools
- Personal Protective Gear
- Hives and Equipment
- Bees
- First Year Feed & Medications
- Nice to haves

Must have Tools



Why Smoke Works – A digression



Smoke masks communications pheromones so that the bees can't communicate that they are under attack!

Cool smoke from a smoldering fire is what you are after. Blow a little smoke in the entrance and top, then wait before inspecting.

You may hear that smoke confuses the bees into thinking there is a fire nearby, their hive is in danger, and they need to fill themselves with honey in case they have to evacuate.

NOT TRUE!

Costs Continued

➤ Personal Protective Gear

Personal preference rules when it comes to Personal Protective Gear. Some people like jackets. Others full suits. Still others just want the bees away from their face and head.



Gloves too are a preference. Many new beekeepers won't go near bees without them. A goal of gaining the confidence to work bees without gloves is a good one.

➤ Hives and Equipment



The modern bee hive is like a highly efficient multistoried factory with each "story" having a specific function. These "stories" work together to provide a home for bees and a honey factory for the beekeeper.

A) Hive Cover — telescoping cover "telescopes" over the sides of the top super to protect the hive. Galvanized covering.

B) Inner Cover — Creates a dead air space for insulation from heat and cold.

C) Shallow Supers — For "surplus" honey storage. Bees store their extra honey in these for the beekeeper to take. 6", 5" supers, or even hive bodies may be used.

D) Queen Excluder — Keeps the queen bee in the brood chambers as she is too large to pass through the excluder.

E) Hive Bodies — "Brood Chambers" are the bee's living quarters. Queen lays eggs in these chambers and brood is raised. Honey is also stored for the bees' food.

F) Bottom Board — Forms the floor of the hive. Shown with wooden entrance reducer in place to keep mice and some cold out during winter.

G) Hive Stand — Supports the hive off the ground to keep hive bottom dry and insulate hive.

Successful beekeeping means easy manipulation of the frames of brood and honey to provide a "surplus" of honey beyond that needed by the bees to live on and rear their replacements. It is this "surplus" that the beekeeper removes and markets.

Components of the Hive

Costs Continued

➤ First Year Feed & Medications



When first started, bees need to be fed, and they need feeding periodically thereafter, especially at times when there is no natural feed to get, or when they can't leave their hive to get it!

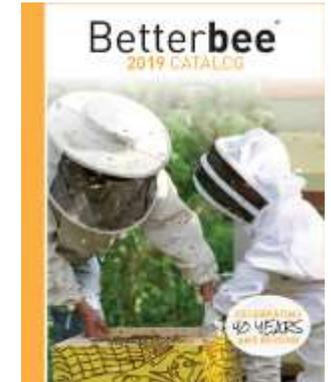
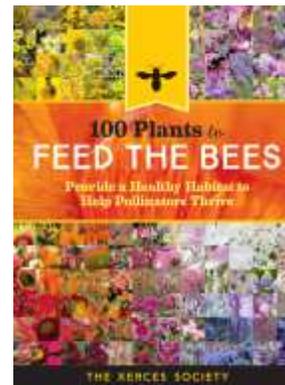
Cane sugar is surprisingly good bee food.

Bees can experience a variety of pests and diseases their first year. The Varroa mite being one. Learn how to test your bees and come up with a way to respond to your test results. There are certified organic treatments available. These are pesticides and come with labels that describe how to use the products safely.



➤ Nice to haves

- Bee School
- Club Membership
- MSBA Membership
- Queen Catcher
- Bee Culture Subscription
- Tar paper / Homasote Board
- Suit for your spouse
- Suit for your kids
- EAS Membership
- Various types of feeders
- Frame Grip
- Cappings Scratcher
- Bottling Bucket
- Uncapping Tank
- Escape Board
- Extractor
- Frame Perch
- Marking Pens



Costs - Bees

There are three common ways you get bees!

Buy a Package.



3 pounds of bees (about 10,000) and an unrelated queen.

First Available: Late April

Buy a nuc (short for nucleus colony)



Usually 4 or 5 drawn out frames with bees and a established queen.

First Available: Mid/Late May

Catch a Swarm



Need to be caught – which can either be a little or a lot of work.

First Available: Mid May

Inspections

Inspections are how beekeepers know what is going on in the hive.

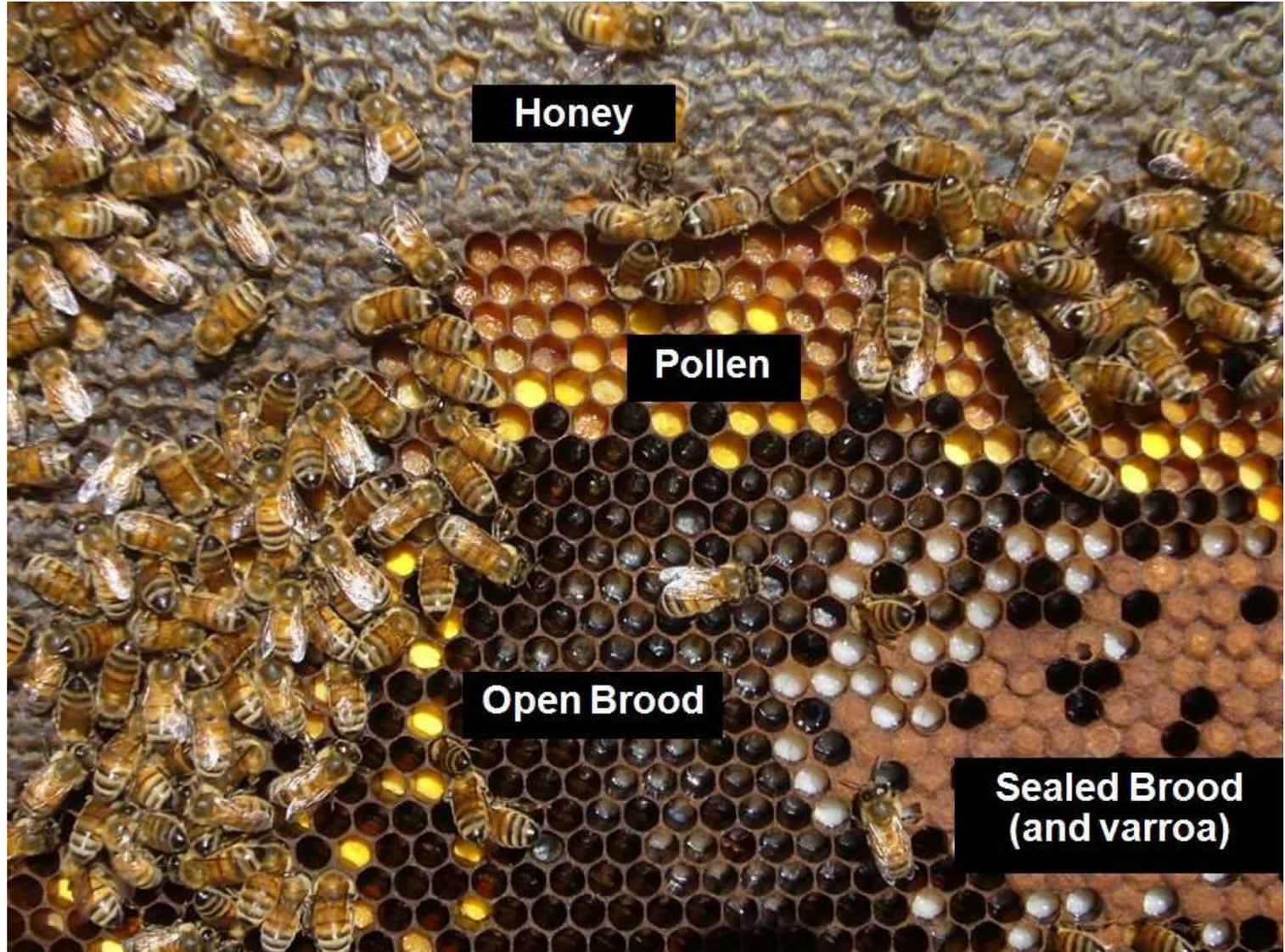
Use 60°F as the threshold for removing frames.

If you are concerned the bees need food, you can remove the top and look down at any temperature.

When you can, avoid windy days for inspecting your hives.

Likewise, don't bother the bees just before rain is likely.

A good time for inspection is just after noon, as many of the bees will be out foraging.



Inspection

Each Inspection will include some basics:

- Do the bees have enough food?
- Are there bees in all stages of development?
- Does the hive seem healthy?
- Is there something interesting going on?

**A REASONABLE GOAL FOR THIS IS 10
MINUTES PER COLONY.**

When you do your first inspection, 45 minutes is more likely.

You don't need to find the queen each time you inspect. Instead learn the signs she is there!



Commercial beekeeper Randy Oliver examines a frame – in this instance he is looking for specific disease signs. (AFB Scale)

Inspection – Other Reasons for “going in”



- Burr Comb removal
- Is another box needed?
 - Mite Sampling
- How many honey supers should be added?
 - Getting ready for Winter
 - Introducing a new queen
 - Replacing frames
 - Swarm check
 - Medicating

As we near the end of this first class, there are several other topics to address.



➤ Getting the liquid reward – honey

➤ Selling honey in Maine

➤ A few interesting bee behaviors

➤ And more



Getting the honey reward

Liquid honey is a relatively new way for humans to eat honey. For centuries honey was eaten along with the honey comb.



When harvesting liquid honey you can either use an extractor or what is called “Crush and Strain.” Both methods start with getting the bees out of the honey super.

The wax – once it has been drained of all honey – can be cleaned and then used for candles, lip balms, etc.



Selling honey in Maine

The laws for selling honey in Maine have recently changed and which law you fall under depends on your town's having adopted (or not) "home rule" for farm sales.



Most people need a license from the state in order to “process” honey – that is remove it from the comb and put it in a jar. This type of license isn't tough or expensive to obtain; basically the state wants to make sure your honey is processed sanitarilly.

An interesting bee behavior - Swarming

Honey bee colonies reproduce by swarming (some find it helps to think of a colony as a Super Organism) – roughly half the bees and the old queen leave and make a new nest. The sad part is that swarms in the wild survive their first winter about 28% of the time.



Swarms leave their hive without having an end destination in mind. They often gather on a tree branch, which is where a beekeeper can collect them. Some of these mid point gathering spots can be 3 feet off the ground or equally likely, 70'. Replacement Queens are started before a colony swarms. Queen Cell presence is often a beekeepers first warning sign that the colony intends to swarm.

Honey bee swarms have no home to defend and are most often exceedingly gentle. Being surrounded by bees as a swarm flies in mass is one of those experiences seldom forgotten. It can be very intimidating to people who don't understand that what they are seeing is biology in action!



Some Beekeepers set out swarm traps for bees in hopes that a swarm of bees will move in! A swarm trap isn't complicated to build, but does need to be checked regularly. Books like [Honeybee Democracy](#) go deeply into swarm decision making behavior and what an appealing new nest site looks like.

An Interesting Bee Behavior - Mating

Honey bee queens go on one (occasionally two or more) mating flights where they mate with as many as 20 drones. This happens when they are about 5-10 days old.



Each afternoon, sexually mature Drone Honey bees (male) find their way to Drone Congregation Areas, essentially waiting for their chance to mate with a Honey bee queen. Drone Congregation Areas are anywhere from 15 to more than 100 feet in the air, and tend to be consistently located year after year.

Drones die when mating occurs, as their endophallus remains in the queen, tearing away from the drone's body after mating.

The once virgin queen often flies to a Drone Congregation area farther away from her hive to avoid mating with her brothers. On her mating flight a queen will collect all the sperm she'll use in her lifetime. The drones fly after the queen with the fastest drone "winning" the opportunity to mate. This is done in the air.



The sperm (which can number 6 million) is stored inside the queen's spermatheca where it is well mixed. She can determine when she releases it. This is all the sperm she'll collect in her lifetime.

After mating, queens return to their colony location, "harden", and begin laying after about 5 days.

An Interesting Bee Behavior – Orientation Flights

Young bees need to learn where their nest is and how to return - in large part for preparation when they age into foraging duties. These flight lessons start when the bees are just a few days old.



Activity at the hive entrance increases as the air – mostly in front of the hive – is full of young bees, practicing taking off, flying, and landing.

An Interesting Bee Behavior - Robbing

The Honey bee may have a reputation for being industrious, but they'd rather not work if they don't have to. Honey and pollen that are poorly guarded are fair game for stealing! Honey bees are not the only ones who steal – Yellow Jackets and Bald Face Hornets enjoy free meals too!



Robbing is easy to identify after the fact – the stores are gone – ripped from the colony. Dead bees are in front of the hive. Large bits of wax are in piles on the bottom board. The colony is dead and empty.

There are defenses which we'll talk about.

An Interesting Bee Behavior - Absconding

Absconding is when the bees in the hive all leave to find another nest. It does not happen very often, though it tends to manifest when bees are introduced to a new home or are fleeing from a pest or disease buildup.



A colony established from a newly installed package or swarm does sometimes abscond. There is something the bees don't like about their new home, and they have no brood or stores to stay to protect.

Late Season absconds are generally neglected colonies that can no longer cope with a pest. They depart, leaving behind brood, nectar and pollen. The stores are quickly robbed out.



Such robbing can lead to the demise of other colonies.

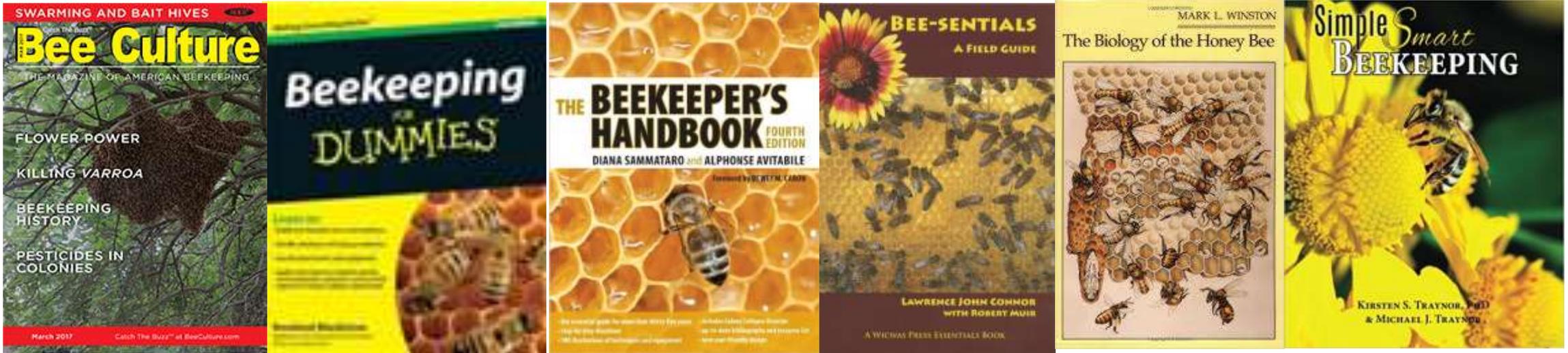
Mentors & Bee Buddies

- Good mentors or knowledgeable and experienced beekeepers who are willing to work with new beekeepers can be tough to find. Your local club may have a formal mentoring program or may be able to suggest some possible mentors to you.
- If you have trouble finding a mentor, you may find it helpful to have a bee buddy – someone who is also learning the craft to go through your hives with you. And you reciprocate, Between the two of you, you probably know more than you think.



Study Resources

Traditionally books, magazines and clubs have been the primary resources for new beekeepers. While they still are wonderful resources, the internet is increasingly becoming the place people turn to for information.



Please remember what was said earlier about All Beekeeping Being Local. In addition when exploring the internet you need to vet sources. It is much easier to use a web site – like mebw.org - where this has been done for you.

In general, if you want to explore on your own, look for materials from academic institutions – like the many videos by The University of Guelph that are on YouTube.

“If the internet is anything at all, it's a huge library. And whether it's of use depends on what you are looking for: history, science, entertainment, conspiracy theories ... it's definitely not 'all good.’” – Peter L Borst, beekeeper, Ithaca, NY

Questions?

This week has been a quick over view of what is involved with keeping Honey bees. Starting next week we take a deeper dive inside the hive and the world of keeping Honey bees.

Your homework is to read chapters 1-4 in your text.

