GUIDE TOWARDS SUCCESSFUL HONEY BEE COLONY'S

Beekeeping is an incredible hobby and has the potential to lead into a passion. But there is an extensive learning curve. Please know that simply setting up a honey bee hive and returning to it in the late summer to harvest honey is not the picture of successful beekeeping. Successful beekeepers have taken time to learn about their honey bees and learn how best to partner with them to help them be successful and survive the cooler temperatures of the winter. Beekeeping is an investment; an investment with time spent learning, time in the colonies performing inspections, funds for equipment/tools/bees, and strength as beekeeping requires some muscle and stamina. Below is an outline (not all inclusive) of topics to consider while partnering with your bees.

THREE THINGS I SHARE WITH EVERYONE CONSIDERING THE HOBBY OF BEEKEEPING

1. Take a beekeeping 101 class before you get honey bees.
2. Get at least two colonies of honey bees. By only having one colony you do not know what "normal" looks like. By having at least two colonies you have a better idea of seeing the difference between the two colonies and may use resources of a strong colony to balance out the weaker colony.
3. Join a beekeeping organization. It is essential that you have a network of support and if possible, a mentor. You will have LOTS of questions your first three (3) years of beekeeping and having the opportunity to have a seasoned beekeeper to call, send pictures, etc. is critical towards your success.

BEES DO NOT WAIT UNTIL THINGS ARE CONVENIENT FOR US, THEY ARE ON THEIR OWN SCHEDULE AND DO NOT ALWAYS READ THE HONEY BEE MANUAL ~ Expect the unexpected

BUYING BEES

1. There are three main ways to purchase honey bees: purchase an entire established colony, purchase a nuc (nucleus or start colony with routinely five frames of resources, bees, and the queen), or purchase a package (normally 3 pounds of bees in a box and a separate queen).
2. There are pros and cons to each purchase option, but I would routinely suggest trying to buy local bees as they are acclimated to your geographical area, you are supporting a local beekeeper, you do not need to worry about transit over-heating issues with sterilizing the queen, you may have better guarantees.

3. I also recommend for new beekeepers to purchase nucs. The reason for this is because the colony already has some resources established and the queen is the mother queen to the bees within the nuc. With a new beekeeper these tend to be easier to set up and for you to see results faster.
4. Any option will work simply do your research with the location you purchase before buying. Look for testimonials.

5. Also know that drawing out wax (bees creating wax) is extremely expensive for them. It cost between 8-12 lbs. of nectar/honey for honey bees to make 1 lb. of wax. You will need to feed new colonies to ensure they have enough food to draw out the necessary comb for them to store resources. If you are able to purchase additional frames of drawn comb frames from the seller, it would be wise to do so.

SAFETY:

Safety comes in two forms: human safety and honey bee safety

PLACEMENT/LOCATION OF COLONY'S

One should take time when considering where to place their colony's. There are pros and cons to wooded area vs. full sun.

1. Honey bees perform constant thermoregulation within their colonies. This means you will need to consider the temperatures and help them when able. For example, if you place your colonies in full sun, you will want to provide more ventilation within the hive, consider: screened bottom boards, additional top board for venting, or cracking the lid to allow heat escape.
2. Colonies should be placed up off the ground (approximately 8-12 inches). Moisture is not good for honey bees. In addition, this height will place some pests in a vulnerable position as they attempt to enter hives (skunks, possums, raccoons, etc.).
3. Water sources must be close to honey bee hives as all living things require water. Honey bees use water for drinking but also to cool down colonies. Having a water source for your honey bees is also a state requirement, otherwise they will seek water sources from your neighbors.
4. Ideal to have a wind break if possible. During the cooler winter months, a temporary wind break may need to be placed for colony protection.
5. Ideally the colonies prefer to be facing South or Southeast. Though this is the preference of viral bee colonies, it does not seem to impede domestic bee colonies.

INSPECTIONS:

Honey bee colonies do require your attention and care. Once you learn the fundamentals of the honey bee you will want to perform colony inspections. Inspections are performed for a few reasons:

1. The colony is healthy and does not appear to have any viruses, pathogens, or pests (no presents of hive beetles, deformed wing virus, varroa mites, etc.).
2. The colony has a quality laying queen (assess the laying pattern of the queen, there are no swarm cells present, etc.).
3. The colony has enough space, and conditions are met (space where needed, no moisture detected, etc.).
4. Assessment of the resources and providing any needs (nectar/honey, pollen, quantity of bees).
5. Monthly performing varroa mite checks. Varroa mites are among the top threats to honey bees. Varroa mite count threshold does vary among the experts. Cornell University has identified the

threshold during spring months as 3 mites per one hundred bees or 2 mites during summer/fall as the need for treatment. However, other experts use 1 mite seen as the determiner to treat. If thresholds are met in an apiary, all colonies within that apiary should be treated. www.honeybeehealthcoalition.org is a terrific site resource. This resource also reviews available mite treatments.

6. The recommended frequency of inspection changes fluctuates depending upon the nectar flow. According to Cornell University, during the nectar flow, inspections should occur every 7-10 days. During the nectar dearth, inspections should occur every 3 weeks. During the winter months (temperatures below 57 degrees) colonies should not be opened but assessed for food needs (weight check of colony). If food is required, it is quickly slipped into the top of the colony.

FOOD/RESOURCES

1. All colonies should have some nectar/honey and pollen/beebread stored.
2. If your colony is new or starting, it is important to feed your bees.
3. Fed changes depending on the time of the season. Honey bees take the moisture out of nectar to create honey. This honey is then stored for winter months when foraging is not possible. Moisture will kill bees during cold temperatures, so the feeding reflects this moisture content. When making sugar syrup to feed the bees do not boil, as honey bees cannot digest caramelized sugar.

Spring /Early Summer	1:1 table sugar to water
Late Summer/Early Fall	2:1 table sugar to water
Winter	Solid table sugar, fondant, bee candy

4. Late winter/Early Spring (February/March in Northeast) is the number one time of year honey bees starve. This is when temperatures can greatly fluctuate, and foraging may initiate causing a significant increase in laying activity and the need for heightened food resources. If we suddenly get cold temperatures after warm weather the bees must be fed.

SEASON:

- **Spring**: time of immense growth with matching nectar flow (food source). The Queen lays up to 2000 eggs daily. Colonies are likely to swarm if conditions are met (run out of space, brood nest is congested, plenty of food sources, presence of drones).
- **Summer**: colonies may reach their highest numbers. Once nectar dearth arrives the queen will reduce her laying and plateau worker bee numbers. Activity will slow down with less resources to gather and worker bees may be found resting on the outside of the hive. Varroa mite numbers can escalate quickly during this time of year.
- **Late Summer/Early Fall**: There may be a short nectar flow causing a flurry of activity. Robbing from other bees/wasps can be high causing once calm colonies to become slightly defensive. Winter bees are being established and ensuring varroa mites are low is essential for winter survival. Feeding may be required at a 2:1 sugar:water ratio.
- **Fall**: Queen is laying minimal amounts and necessary resources are needed to ensure winter survival. Inspection activity is compression of colonies, reducing their size.

- **Winter**: Bees will be clustering during the cold temperatures. When temperatures exceed 50 degrees, worker bees will take cleansing flights. Emergency winter feeding may be required if their resources are low (solid options such as fondant). Queen will start laying a small area of eggs in January in the Northeast.

INSPECTION SHEETS WITH GUIDELINES

NEEDS OF A COLONY:

1. **Water** - all life needs water to sustain life and is used to thermoregulate the colony.
2. **Pollen** - will turn into beebread to feed developing larvae.
3. **Nectar** - may turn into honey.
4. **Propolis** - mixed with small amounts of wax and is used to seal cracks of the hive, also has antimicrobial properties.

IDENTIFY NEED FOR INSPECTION:

1. Determine available resources within the colony.
    a. Pollen or bee bread
    b. Nectar or honey
    c. Brood and adult bees
2. Space available within the colony.
    a. Brood chamber – 80% or more available.
    b. Honey supers – space is available/consider timing of nectar flow.
3. Colony is Queenright.
    a. Eggs are seen.
    b. Ratio of castes – drones should not exceed 5% of total numbers.
4. Overall health of colony.
    a. Assess behavior.
    b. Deformed wing virus seen.
    c. Pest seen (wax moth, hive beetle, varroa mites, mice, etc.).
    d. Identify conditions of brood (brood is solid vs. spotty).

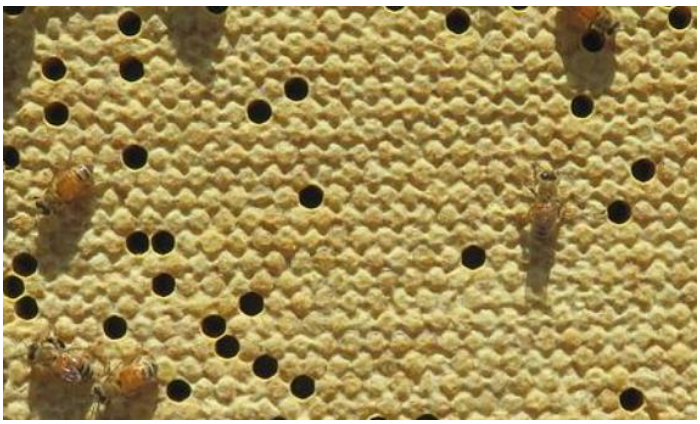
FREQUENCY OF INSPECTIONS (Cornell University recommendations)

1. Spring during the nectar flow, inspections should be performed every 7-10 days.
    a. Mite counts will be performed every month.
    b. This is during the swarm season. Because there is excess food and high laying frequency space can quickly become an issue.
2. Summer/Fall during nectar dearth, inspections should be performed approximately every 3 weeks.
3. Late Fall/Winter assess colony weight to determine food needs approximately every 4 weeks.

COLONY INSPECTIONS

1. Before entering the colony observe the entrance activity.
    a. How many bees are coming/going?
    b. What are the foragers bringing in?
    c. What are the weather conditions?
    d. What is the time of day?
    e. Any presents of bees outside the hive and if so what is their behavior?
2. Colony set-up and quantities.
    a. Honey supers are routinely high in the hive while brood chambers are maintained lower in the hive.
    b. Two-three frames of nectar/honey should be inspected.
    c. A minimum of four frames of brood should be inspected.
3. Brood patterns will determine the quality of the queen (development/mating) &/or conditions affecting the colony such as viruses caused by varroa mites.
    a. Solid brood patterns are ideal.
    b. Spotty brood patterns are an indicator of issues:
        i. Under-developed queen (if laying has been consistently poor)
        ii. Queen not mated well
        iii. Queen has in-bred
        iv. Brood is unhealthy and worker bees are performing hygienic behavior (removing the eggs/larvae)

SOLID BROOD



SPOTTY BROOD w/ hygienic behavior

4. Temperament considerations
    a. Ideal inspections times are when forager bees are absent from colony (colony is reduced by 1/3 the number of bees). This time would roughly be between the hours of 10:00am-2:00pm.

b. Conducting colony inspections during poor weather conditions will negatively affect their temperament.
c. Conducting colony inspections during excessive temperatures will negatively affect their temperament.
d. Unhealthy or pest infected colonies will negatively affect their temperament.
e. Increase in noise, vibrations, smells will negatively affect their temperament (avoid bananas and gasoline).
f. Avoid wearing dark colors and standing in the flight path of the bees as these can cause defensive behaviors.
g. Inspections during the nectar dearth could encourage robbing of neighboring bees and cause defensive behavior.

5. Common Pests/Ailments

VARROA MITES

WAX MOTHS

HIVE BEETLES

DEFORMED WING VIRUS

COLONY INSPECTION SHEET

Date/Time:	Blooming:
Weather:	Temperature:

Colony Name:	Location:
# Hive Bodies:	Queen Specifics:
PURPOSE OF INSPECTION:	

EXTERNAL INSPECTION

Number coming/going w/in 1 minute:	Behavior:
Resources coming in:	

HIVE CONDITIONS

Honey Flow(high,med,low):	Pollen(high,med,low):

BROOD

Pattern(solid,spotty):	Stage %(Egg,Larvae,Pupa):

TEMPERAMENT/POPULATION

Temperament(calm,crazy,aggressive):	Population(low,normal,crowded):

HIVE HEALTH/PESTS:

- ⬭ Hive Beetles: _____
- ⬭ Varroa Mites: _____
- ⬭ Deformed Wing Virus: _____
- ⬭ Ants: _____
- ⬭ Other: _____

ACTIONS (feed, medicate, super, merge):

NEXT INSPECTION (feed medication):