LANCASTER COUNTY
BEEKEEPERS SOCIETY

New Beekeeper Workshop
January 31, 2026

Honey Bee and Hive Biology

Denny Gorman
Certified Master Beekeeper (Cornell)
President, LCBS

HONEY BEE
Apis mellifera

- *Western or European honey bee*
- *Colonies of 20 to 50,000*
- *Sting is fatal for the bee*
- *Collects, stores and eats only honey and Pollen*
- *Excellent Pollinator*

YELLOW JACKET
Vespula species

- *A German Wasp,*
- *Often nests in the ground*
- *Colonies of up to 5,000*
- *Can sting multiple times*
- *Omnivore*
- *Poor pollinator*

POLLINATION SERVICES

Add $15 Billion in crop value

Pollinate 1/3 of all we eat

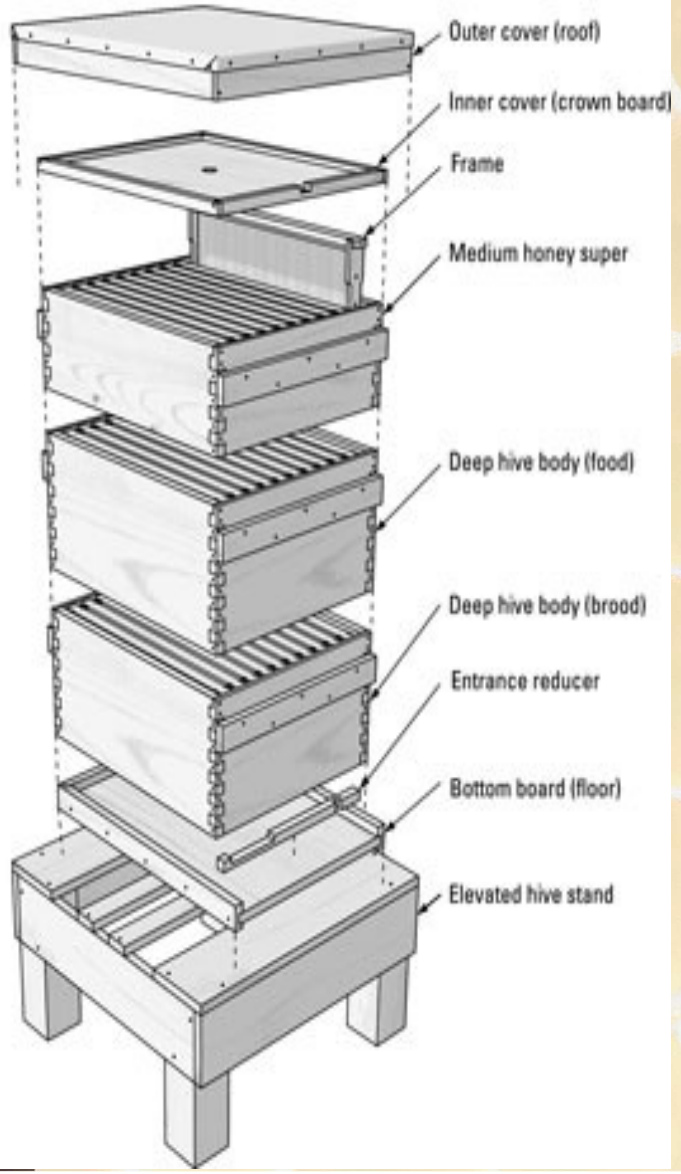
75% of all fruits and vegetables
80% of all flowering trees and plants

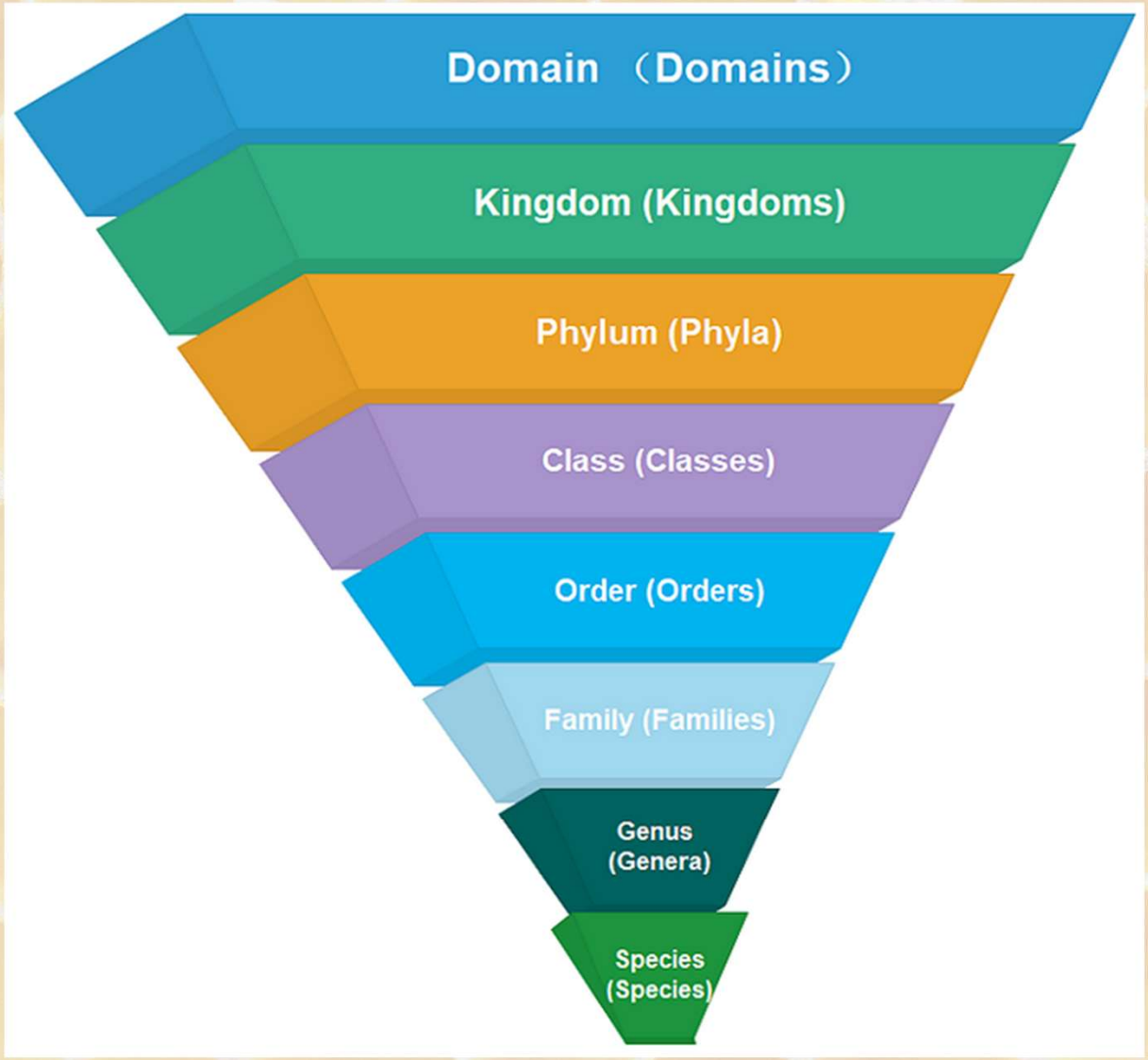
Rev. Lorenzo Langstroth 1810 -1895

Father of American Beekeeping

Discovered the

BEE SPACE 9.5mm (3/8 inch)





TAXONOMY

Animal

Arthropod

Insect

Hymenoptera

Apoidea / Apidae

Apis

mellifera

Apis mellifera

Super Organism

Collective Intelligence

Eusocial

Multigenerational groups
Cooperative brood care
Cooperative food gathering
Reproductive division of labor

Altruistic

Females forgo reproduction
Kin Selection

Haploid/diploid

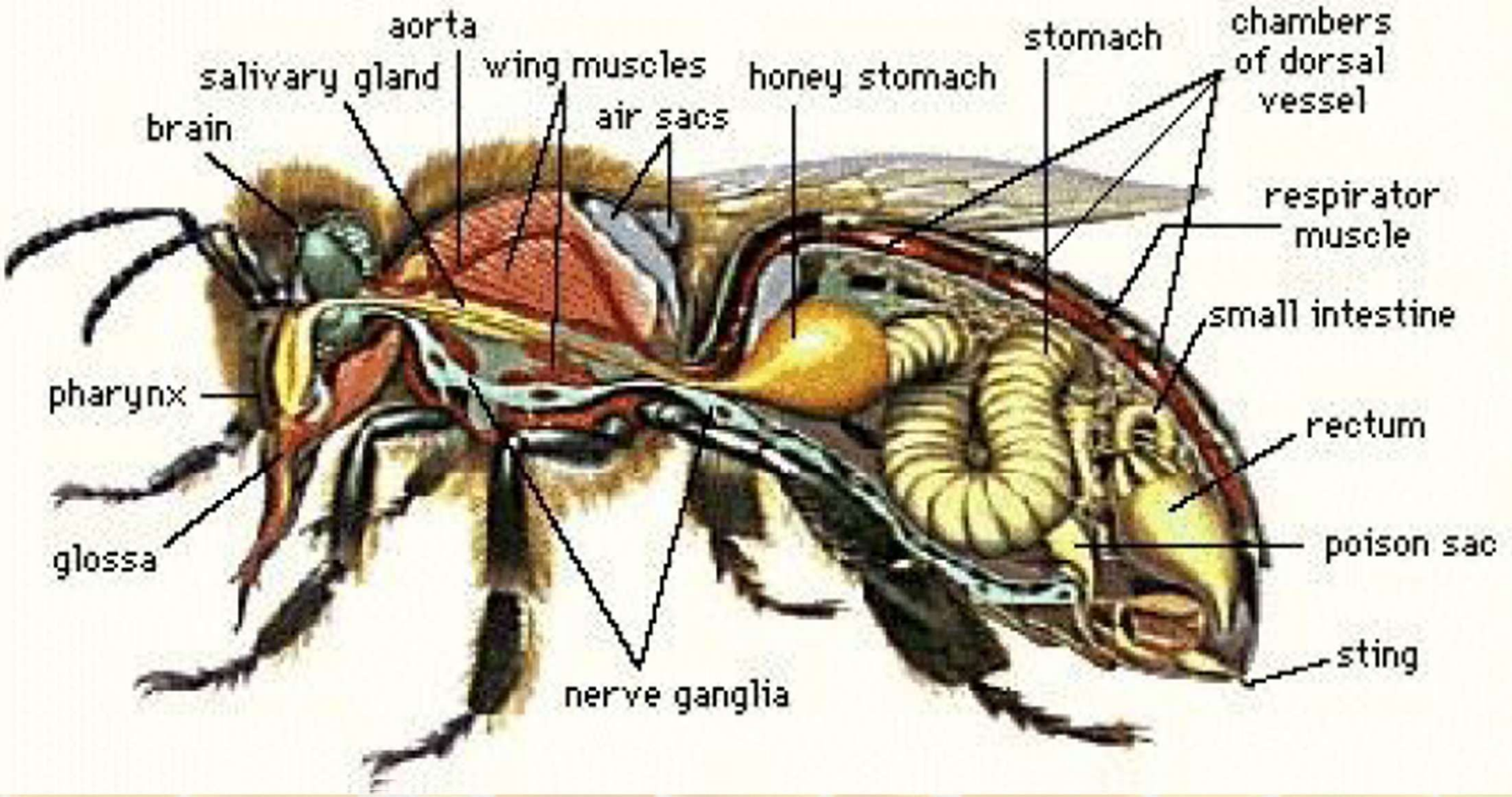
8 other Apis species

- *Apis dorsata--giant honey bee*
- *Apis cerana – Asian honeybee*
- *Apis floria – Red dwarf honeybee*
- *Apis andreniformis – black dwarf honeybee*
- *Apis koschenikove – Bornean or red honeybee*
- *Apis laborisa – Himalayan giant honey bee*
- *Apis nigrocincta – Phillipine honey bee*
- *Apis nuluensis – Borneo honey bee*

Subspecies of Apis mellifera (races) in U.S.

- GERMAN –A.m. mellifera (black bee), Virginia 1622
- ITALIAN – A. m. lingustica, Southern Italy, US, 1859
- CARNIOLAN -- A. m. carnica, Slovenia, late 1800's
- CAUCASIAN – A. m. caucasica, Caucasus mountains Black sea, early 1900's
- AFRICANIZED – A. m. scutellata, Sao Paulo, Brazil, 1960, Southern U.S. 1990
- RUSSIAN – A.m. artemisia, Ukraine, recent
- HYBREDS – Buckfast, VSH, Ankle Biters, Pol-Line
- MUTTS!

Exoskeleton, Hemolymph, Fat Body, Spiracles, Honey Crop



Reading Frames


Eggs


5 Day Old Larva →
←Open Brood→
1 Day Old
Egg→

honeybee
(*Apis mellifera*)

Honey Bee Gestation

QUEEN	**EGG 3 DAYS**	LARVA 6 DAYS , ROYAL JELLY, 6 days	PUPA 7 DAYS Queen Cell	**TOTAL 16 DAYS + -**
WORKER	EGG 3 DAYS	LARVA 6 DAYS ROYAL JELLY 2 - 3 days Then honey and pollen	PUPA 12 DAYS Capped Brood	TOTAL 21 DAYS + -
DRONE	EGG 3 DAYS UNFERTILIZED EGG (parthenogenesis)	LARVA 6 DAYS	PUPA 15 DAYS Dome or bullet shaped cap	TOTAL 24 DAYS + -

THIS TIMING IS CRITICAL FOR USE IN COLONY MANAGEMENT !

367 -1215

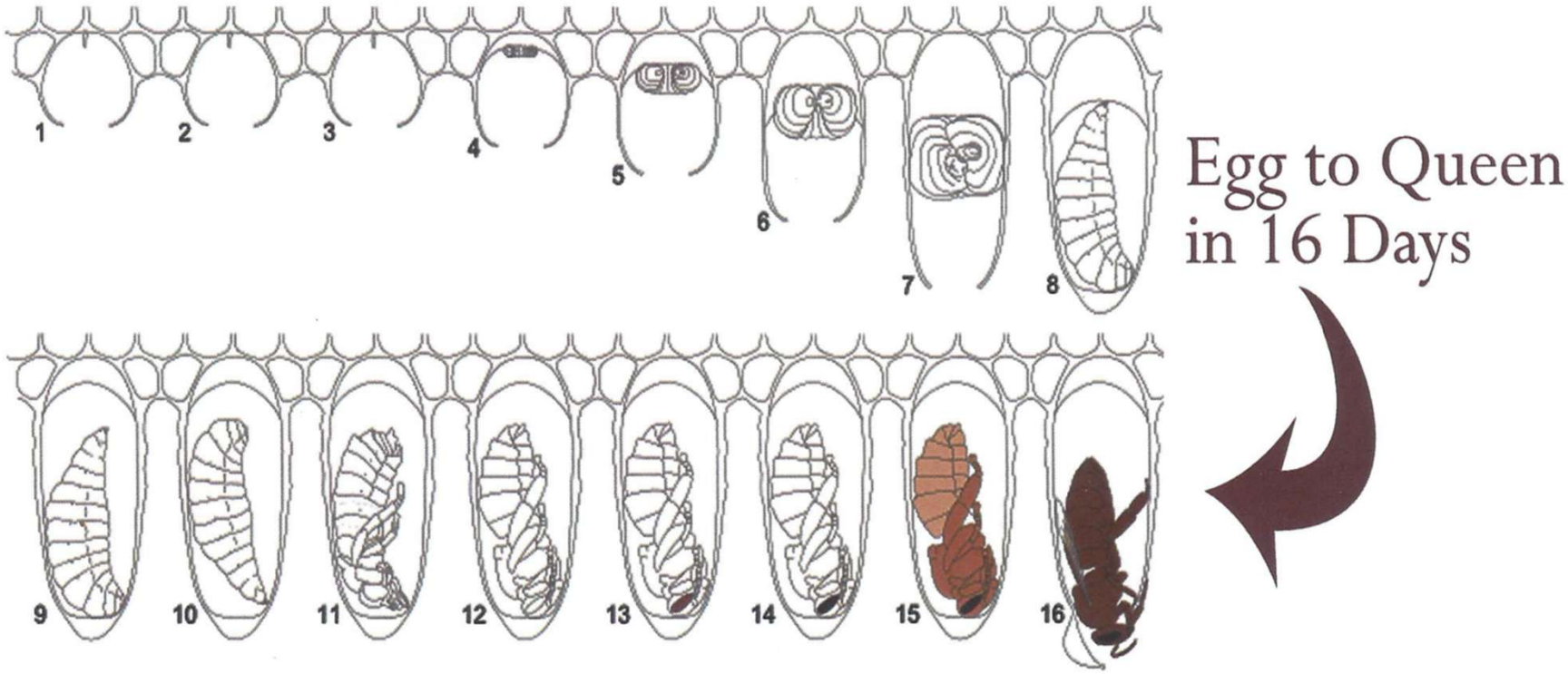
Q W D

The Queen

- *Will lay up to 1500 eggs per day*
- *Exudes Pheromones to control hive*
- *Lives about 2-5 years*
- *Mates with average of 12 to 15 drones*
- *Stores Sperm in Spermatheca*
- *Can choose sex by laying fertilized or unfertilized egg*
- *Usually will swarm after 1 year with half of original hive*

Development of a Queen

16 days



Images used with permission
Tofilski A. (2012) Honey bee.
Available from http://www.honeybee.drawwing.org.


Queen Cup


Empty Queen Cells.


Emergency Queen cell
SUPERSEDURE


VIDEO : Denny Gorman


Swarming
VIDEO: Denny Gorman

Drones (males)

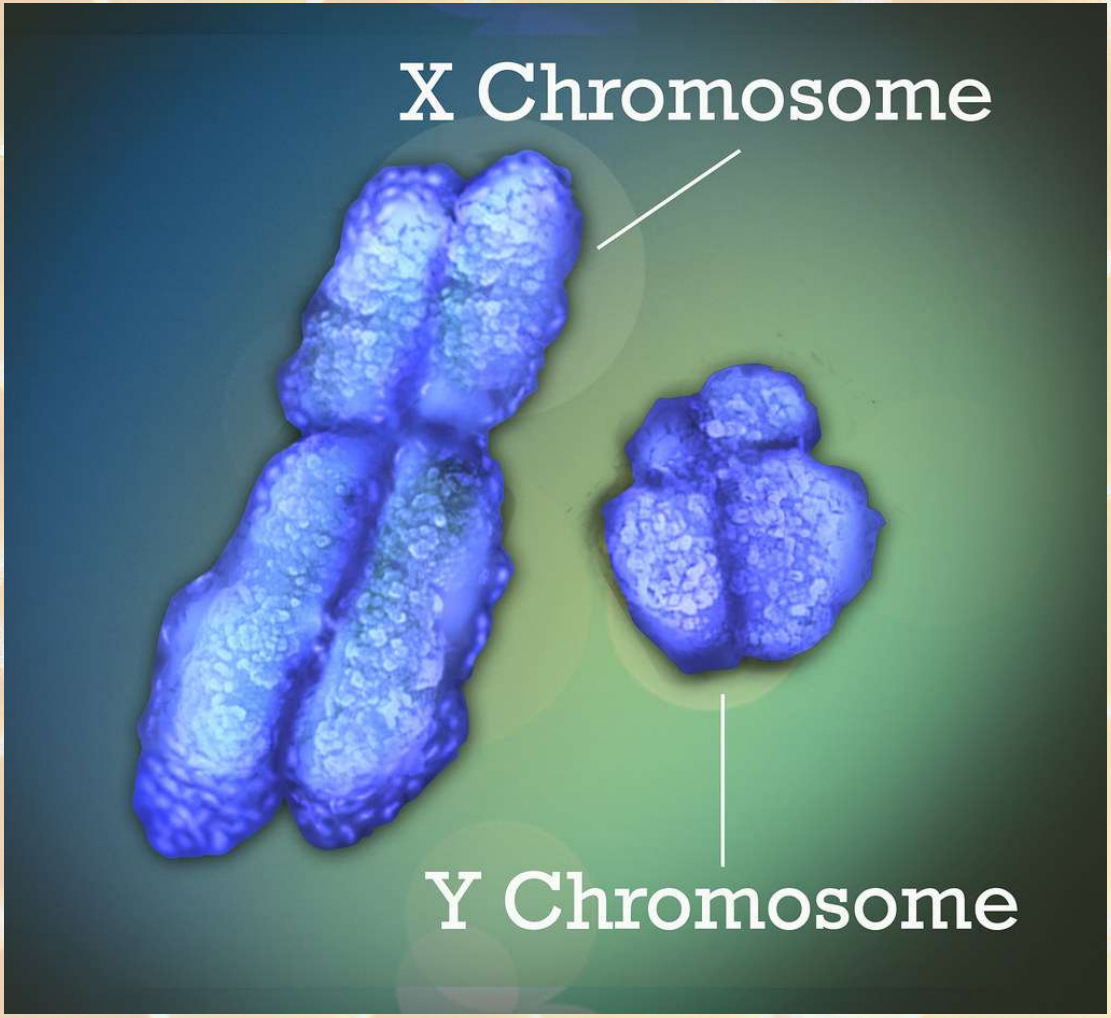
- Emerge from drone comb after 24 days
- From Unfertilized **HAPLOID** egg (Parthenogenesis)
- No sting, ENDOPHALLUS
- Does no work in the hive
- Will fly to **DCA** to mate with Virgin Queen
- Successful Mating is fatal
- Big Eyes, Barrel shaped

HAPLOID/ DIPLOID

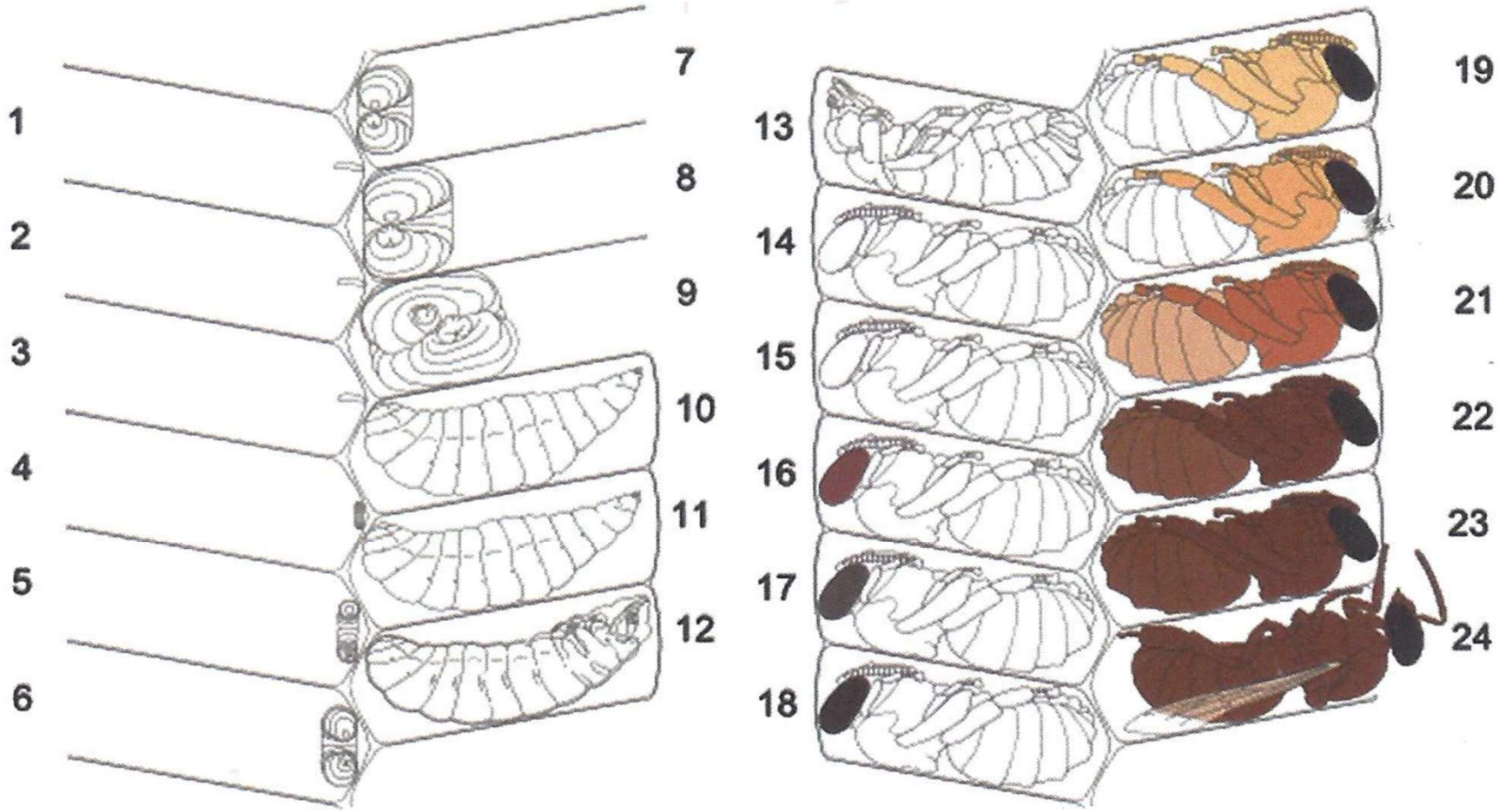
Drone - 1 set of Chromosomes
8 pair, (16) Haploid X

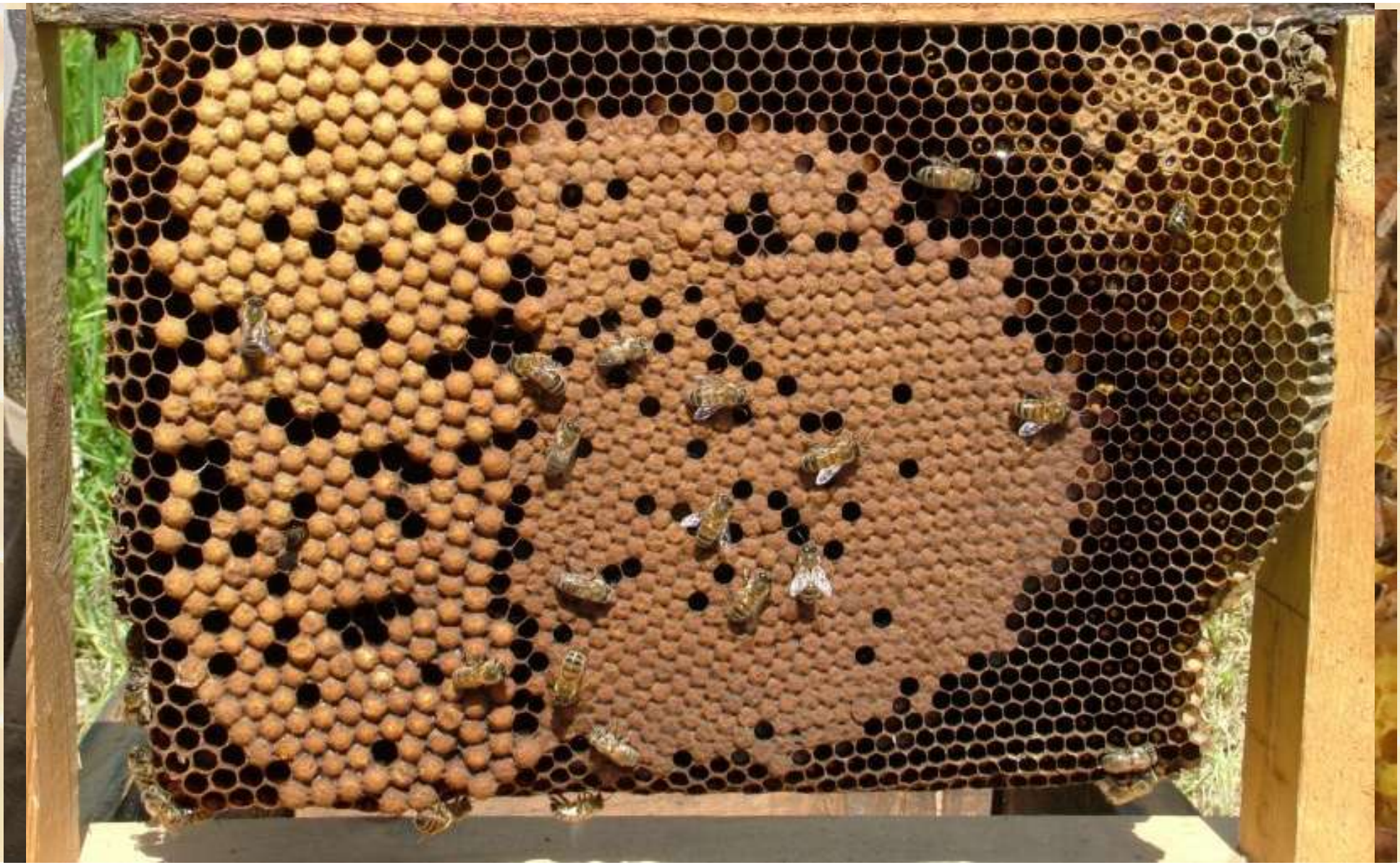
Queen and workers –
2 sets of Chromosomes
16 pair, (32) Diploid XY

Human
23 pair, (46) Diploid XY



Development of a Drone *24 days*



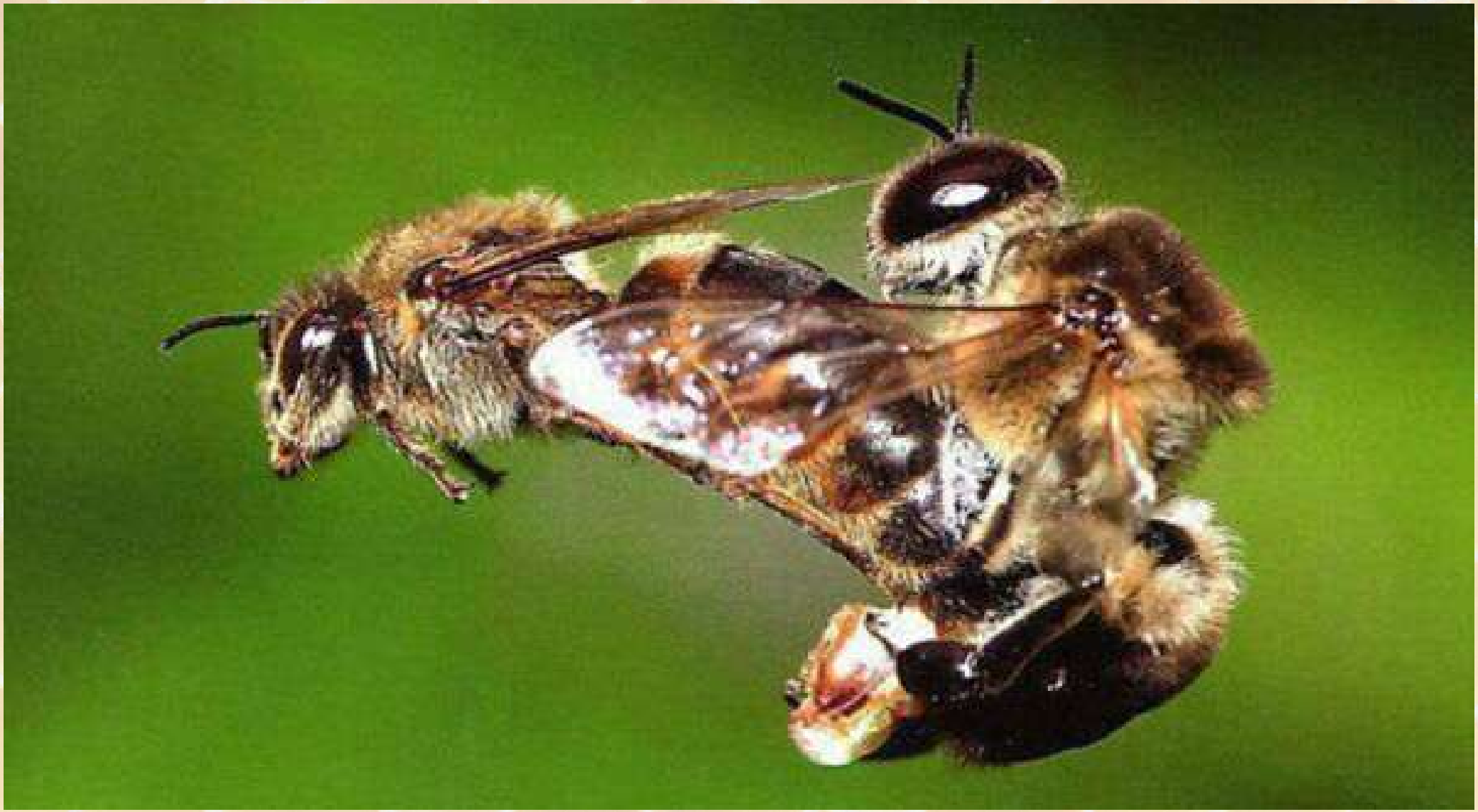


Invasive Varroa destructor mite

Drone Congregation Area (DCA)

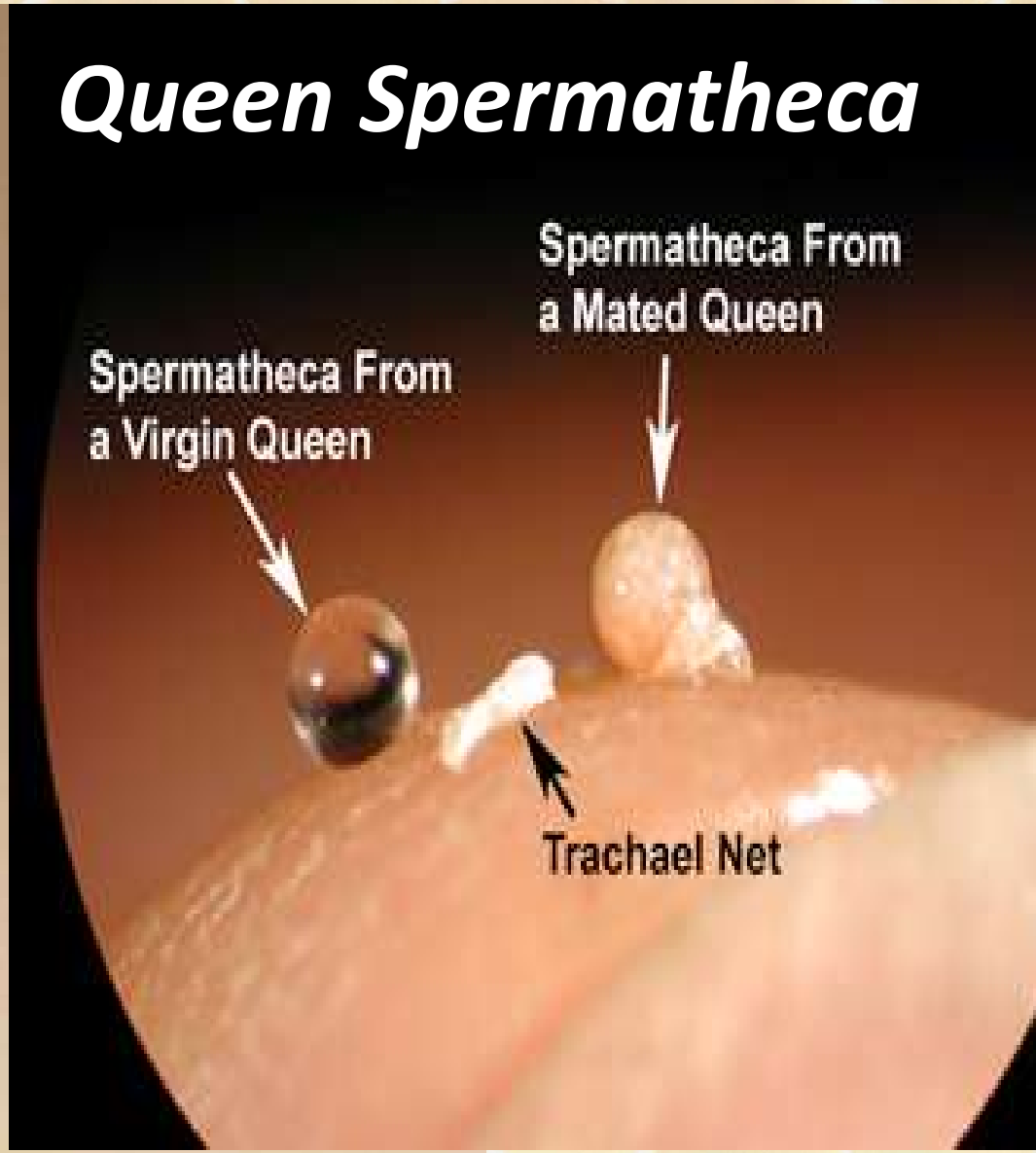
- *A place high in the air, persisting from year to year, where drones congregate to mate with virgin queens.*
- *Average of one DCA/Km in areas with multiple hives.*
- *At least 1,000 drones*

Drone Comet



Drone Endophallus

Queen Spermatheca



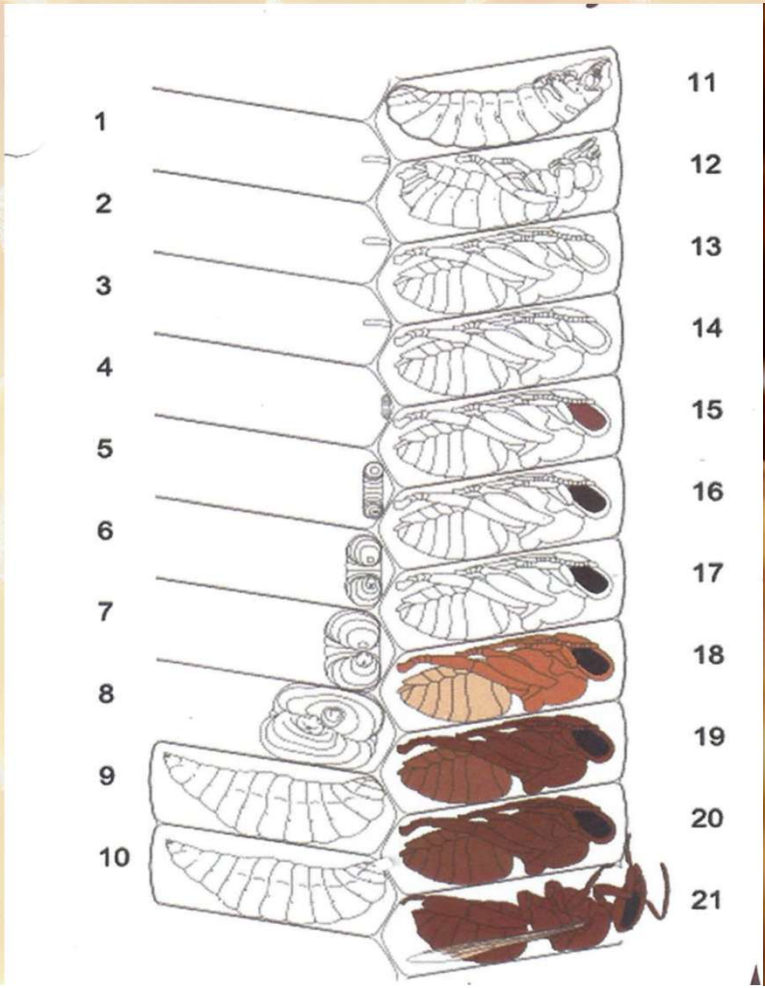
Worker Bee Life Span

- *Spring and Fall Bees -- 4 to 8 weeks*
- *Summer Bees -- 2 to 5 weeks*
- *Winter Bees -- 16 to 20 weeks*

- ***Worker Polyethism***
- *First half of life as a HOUSE Bee*
- *Second half of life as a FIELD Bee*

Development of a Worker

21 days



Nurse bees


Video
Denny Gorman


QUEEN'S RETINUE

NECTAR to HONEY

heaters, coolers, dehydrators

Comb Building and repair

Workers 11 to 16 days old produce wax, wax mirrors

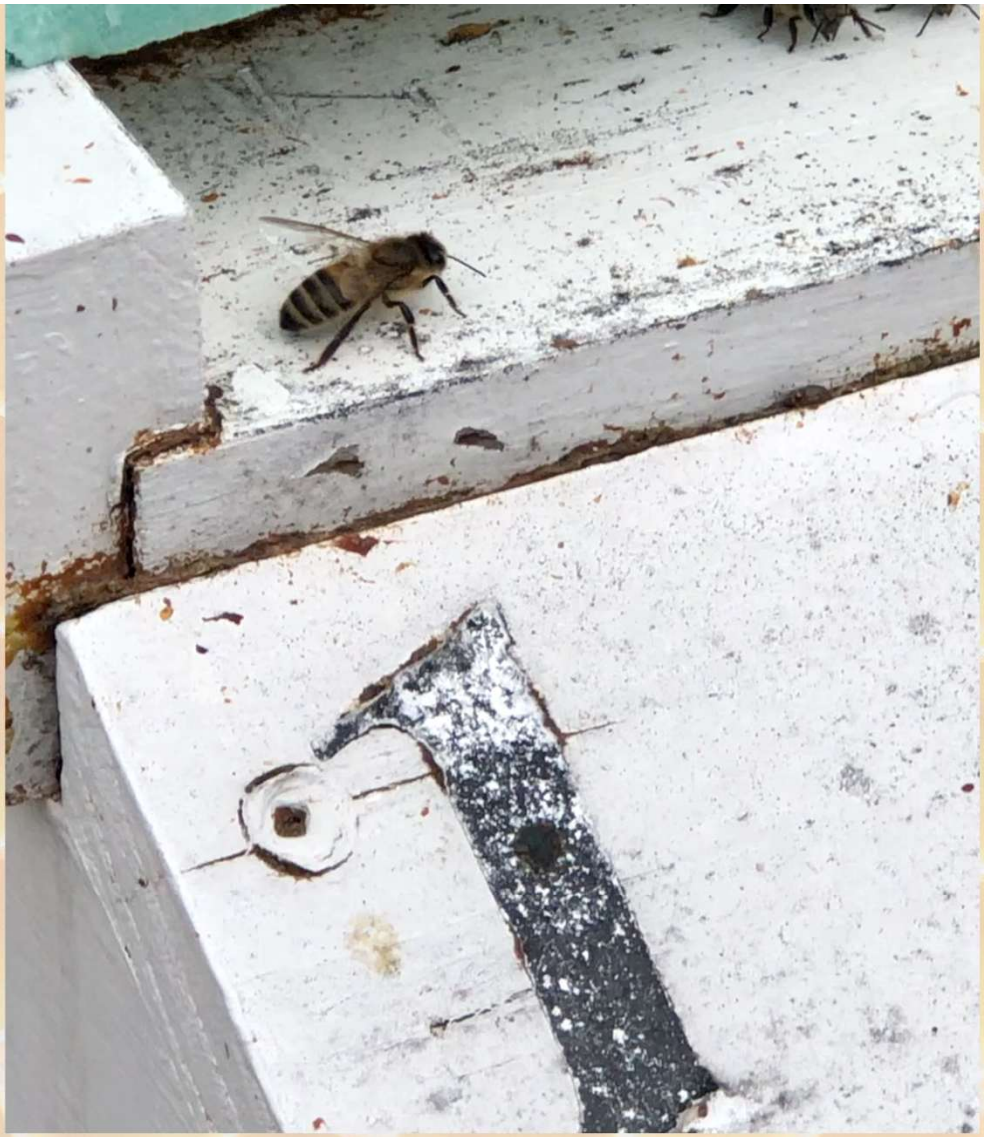
Photo: Matt Libhart

Festooning

Trophallaxis


Guard Bees

Guard Bee



VIDEO: Denny Gorman

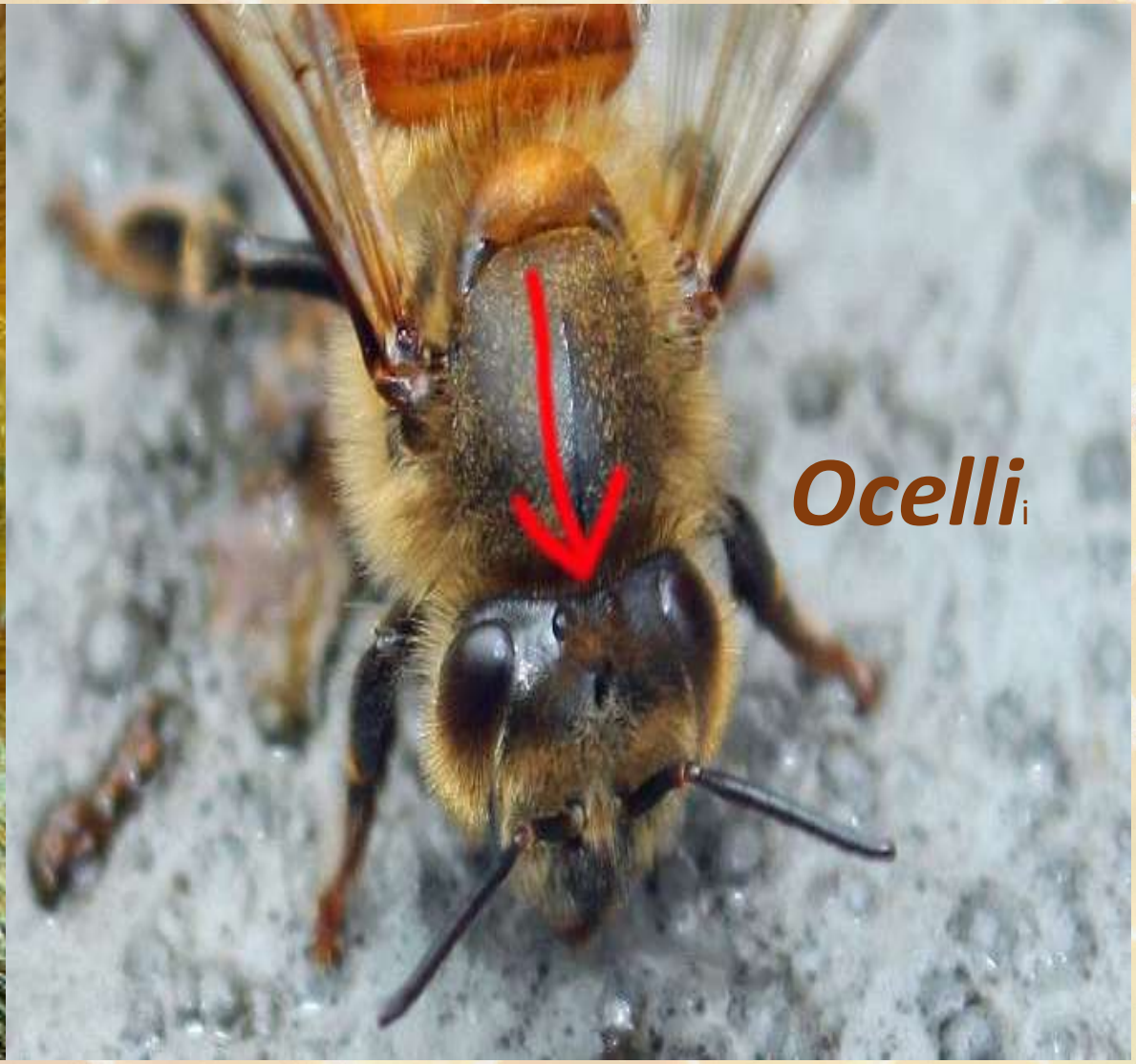

UNDERTAKER
Video: Denny Gorman

Nectar Foraging

Communication and Control

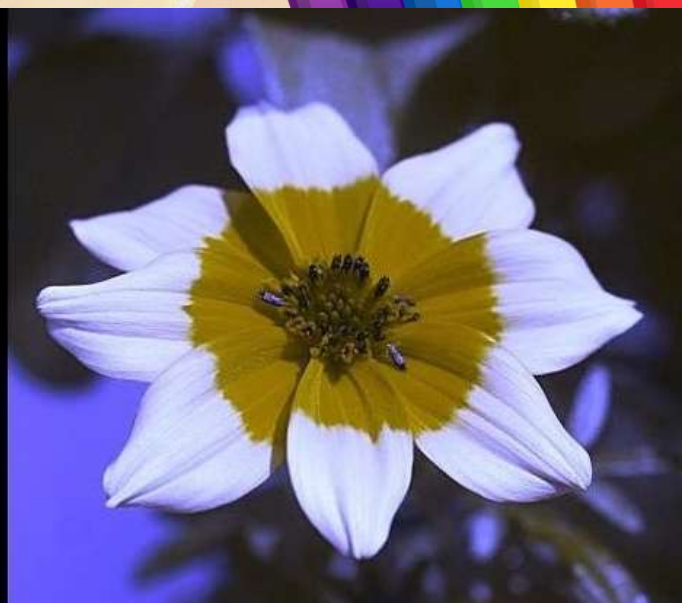
- Pheromone Producing Glands
  - QUEEN
    - (QMP/ 9 ODA) prevents worker ovulation
    - Queen Brood Pheromone, keeps nurses on brood
  - WORKER
    - Come to me pheromone, Nasonov Gland
    - Nestmate recognition, Dufours Gland
    - Sting, Alarm Pheromone, isoamyl acetate
  - WORKER Royal Jelly, Hypopharyngeal and Mandibular Glands
  - Antennal Touching
  - Waggle Dance

Bee Senses


Ocelli

BEE VISION – UV

Polorized light



The Waggle Dance

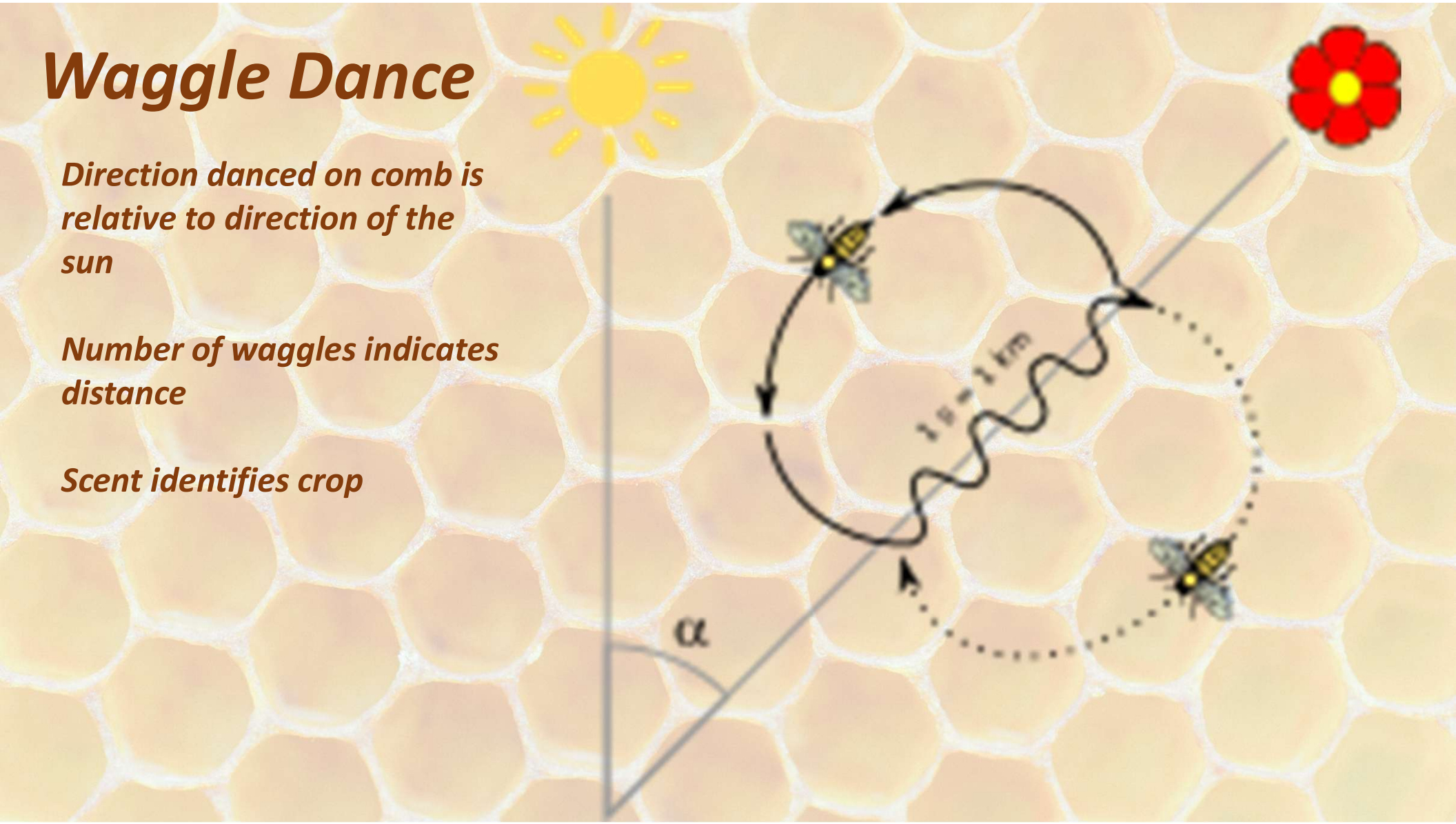

VIDEO: Denny Gorman

Waggle Dance

Direction danced on comb is relative to direction of the sun

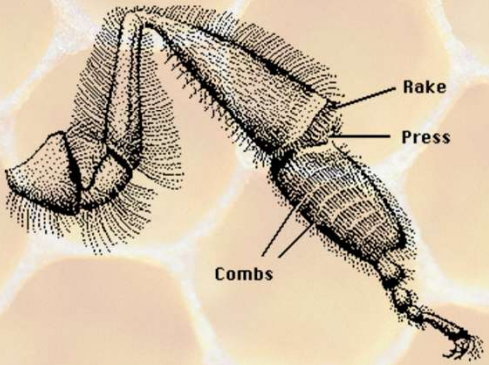
Number of waggles indicates distance

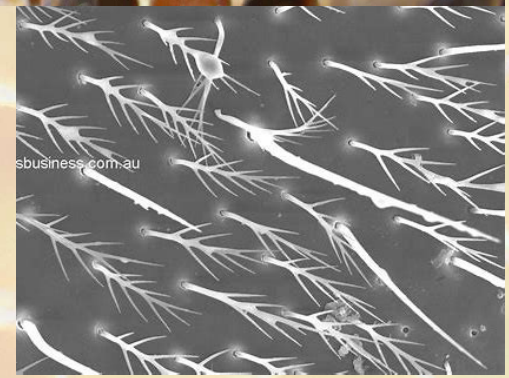
Scent identifies crop



Corbicula –pollen basket

Bee Bread






ringing in pollen


Bee Bringing
in Pollen→
Pollen Filled Cells→
←BeeBread

On-Line resources

- www.Lancasterbeekeepers.org
- http://honeybeehealthcoalition.org
- https://extension.psu.edu/
- https://ento.psu.edu/pollinators
- kroccasecc@pa.gov

TIPS FOR A SUCCESFUL FIRST YEAR

- **KEEP RECORDS at EVERY HIVE VISIT**
- **ATTEND CLUB HIVE CHECKS AND MEETINGS**
- **STAY ACTIVE WITH THE CLUB, CONTINUE TO LEARN**
- **SUBSCRIBE TO ABJ OR BEE CULTURE**
- **FIND A MENTOR (watch The Karate Kid)**
- **ASK QUESTIONS**
- **READ a BEE BOOK**

THANK YOU FOR YOUR ATTENTION

- **DENNY GORMAN 717 368 2050 president@lancaster beekeepers.org**

Table Talk

Chat at your table for 10 minutes about this latest topic

Apiary Site Selection

Table of Contents

Neighbors, Regulations, and Avoiding Trouble

- Regulations and Zoning
  - No more than 4 colonies per quarter acre lot
  - Post your name and phone number so it can be read
  - Colonies within 20 feet of a property line need a 6 foot tall flight barrier (such as a hedge).
  - Re-queen each year
  - If no one sees them, no one will complain

Neighbors

- Neighborly relations
  - Out of sight of neighbors, walking paths, or roads.
  - Sweeten the neighbors with a jar of honey
  - Away from domestic animals, child play area, kennel, patio, laundry drying line
  - A professional lawn service will not mow near colonies.

Written Understanding with the Landowner

- Ownership of colonies
- Contact information
- How much time you will have to remove colonies in case of trouble
- Who will mow and trim brush
- Time of day to enter to attend them
- Response time to remove a swarm
- A legal contract would be alarming

Neighbors, Regulations, and Avoiding Trouble

- Avoid nuisance in advance
  - Before you place colonies, provide mildly salty water closer than horses, swimming pool, bird bath, dog's water dish
  - Before you place colonies, provide flower pots of potting soil. Bees will gather minerals from them.
- On a continuing basis
  - Re-queen if your colony is aggressive
  - Manage your colonies to minimize defensive behavior, and swarming.
  - Check your apiary regularly for evidence skunks

Considerations Related to the Honeybees

- Avoid dampness
  - Full sun to combat dampness and for bee morale
  - South or East exposure gets them flying early in the morning
  - Against a south wall for extra sun
- Avoid windy areas
  - Wind funnels between buildings
  - Tops of hills are windy
  - Cold air pools at night at the bottom of hills
- Dry ground and dry air
  - On a hive stand with airflow underneath

More Considerations Related to the Honeybees

- Suburban settings usually have good forage
- Orchards have 2 wks of bounty, and 50 of little
- Non-drowning source of water. Stones in a poultry watering fountain.
- If any chance of bears, put up an electric fence in the fall
- Not where likely to be sprayed with pesticides
- Don’t place too many colonies for the local forage

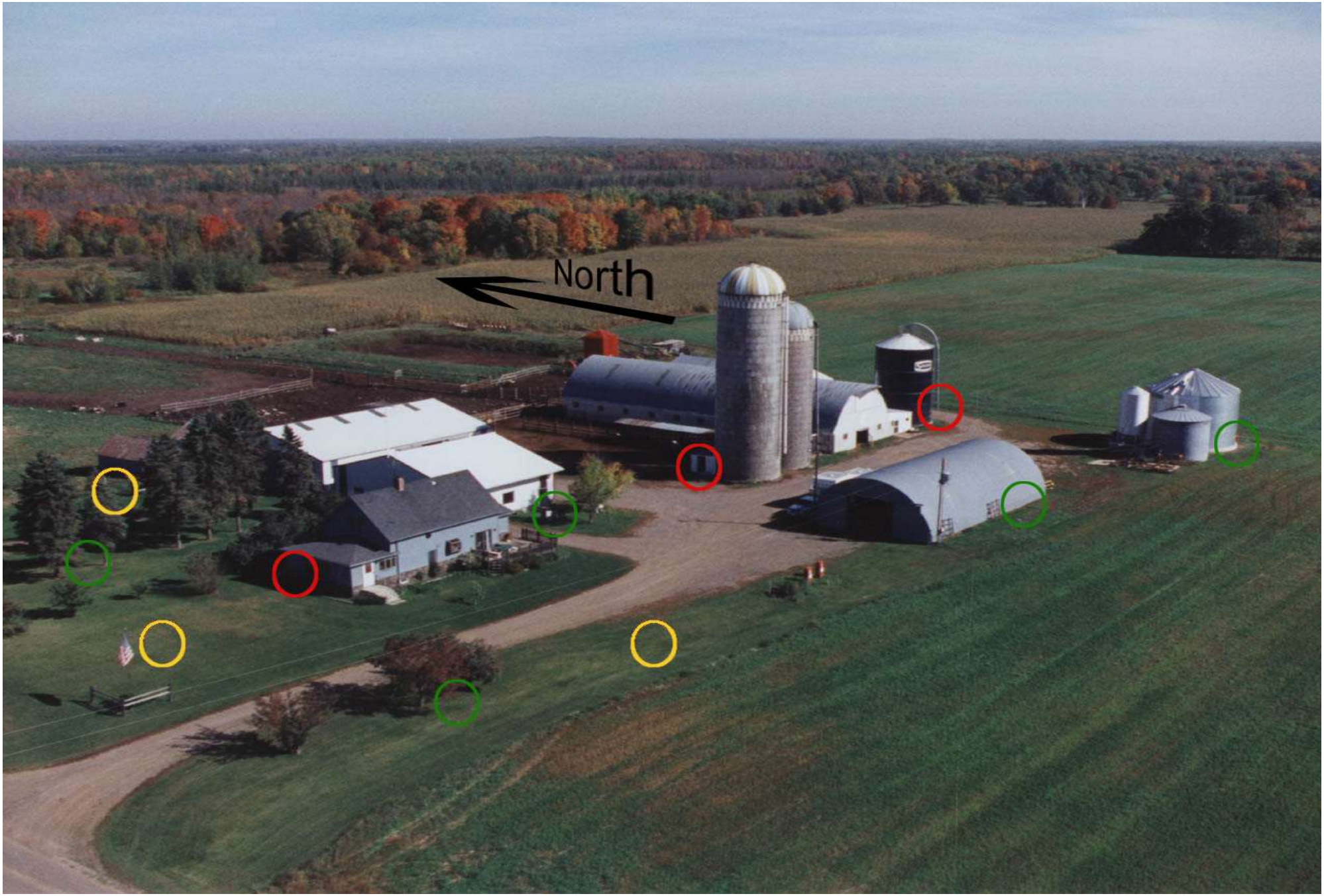
Considerations Related to the Beekeeper

- Close to home or work so you visit them regularly
- Access
  - Vehicle access, if possible
  - If no vehicle access, hand truck or garden way cart
  - Avoid ground that become soggy

More Considerations Related to the Beekeeper

– Amenities

- Have an alternate apiary site, even if not currently used
- Covered bucket of sand or shovel for fire suppression
- A hive working stand
- Electricity if possible – power tools
- Piped water if possible – clean up
- How will you move the mower to it?


North


NORTH

Table Talk

Chat at your table for 10 minutes about this latest topic


Where To Get Your Bees

Sources Of Bees

1. **Nucleus Hives (aka Nucs)**
2. **Packages**
3. **Swarms**

Each has its pros and cons

Nucs

A nucleus hive is simply a hive made up of only a few frames, usually 3-5. It is complete in every other way.

Advantages

- Working hive with all parts in motion
- Drawn comb
- Could be winter survivors (if assured by an honest seller)

Disadvantages

- Not shippable, must find a local supplier
- Equipment size must match yours
- Can be costly, so shop around
- Not always reliably delivered

Packages

A package is just bees and a queen and sold by the weight of the bees, usually 3lbs. The queen is among the bees but protected in a queen cage.

Advantages

- Available to be shipped, more sources
- Most reliable way to get bees
- Generally very gentle bees
- Generally arrives earlier than a nuc would be available
- Less expensive than a nuc
- Just bees, so your equipment is your own, put them in any size equipment you choose

Disadvantages

- Although fairly rare, packages are more likely to abscond
- You must introduce the queen
- No brood, so 3-4 weeks until new bees appear
- No drawn comb, so bees must be fed more overall

Swarms

A swarm is a group of bees that has split from its parent colony and most likely has a mated queen amongst the bees

Advantages

- Free Bees!
- Most likely winter survivors
- Can set bait hives (swarm traps)
- Draw comb extremely quickly, usually without being fed

Disadvantages

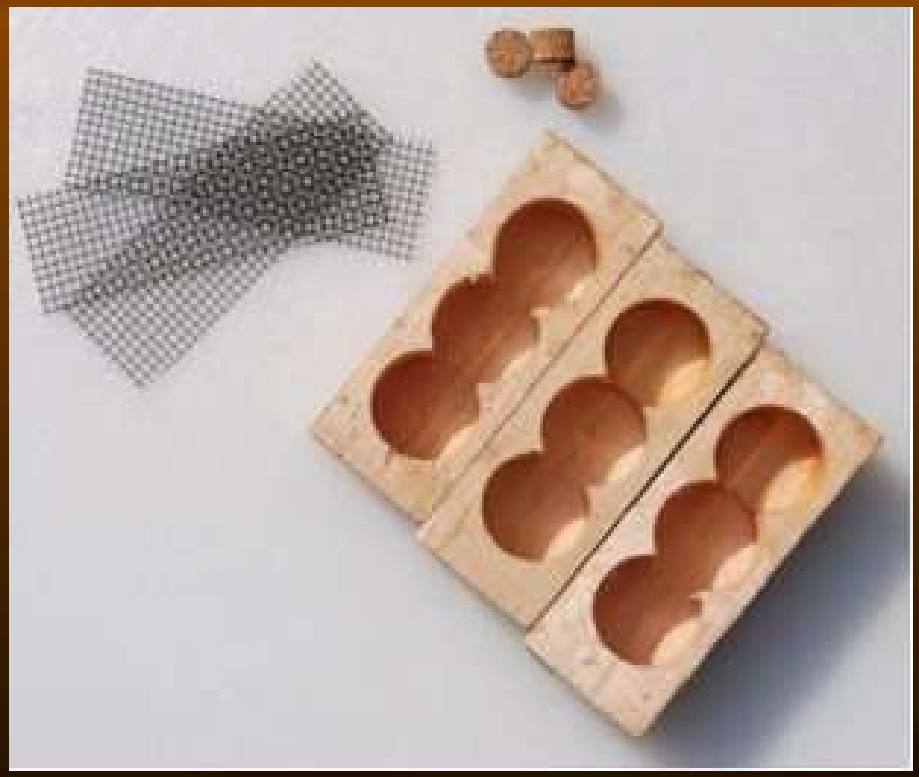
- Unreliable, you're waiting for a call
- Could be difficult to retrieve
- No brood or comb
- No guarantee they won't simply leave their resting place or your hive once you get them home

Nucs vs Packages

- “Doesn’t buying a local nuc mean my bees are guaranteed to survive?”
  - Your diligence as a beekeeper will be a far greater factor in your bees’ survival
  - A good beekeeper with a package is more likely to succeed than a poor beekeeper with a local nuc

Queen Cage Changes

Traditional 3-Hole Cage



Queen Cage Changes

You may not get one of these candy tubes.

Then what...?

Queen Cage Changes

Be sure to bring some mini marshmallows

Launch Video 1

Launch Video 2

Installation Tips

- You can use a flat thumb tack or tape to secure the queen cage to the package at first and then to an undrawn frame via the plastic/metal strip that held it in the package
- BOTH ends of a 3 hole queen cage will have a cork. Look for the candy first before deciding which cork to remove
- Use the small lauan lid to your advantage, keeping it close by and covering the package opening when dealing with the queen cage
- If you're using a screened bottom board, close it up until the bees are well established. An “airy” hive is a major cause of absconding packages/swarms


Feeding Your Bees

What To Feed

- During warmer months, the main food recommended is sugar syrup
- During cold months, fondant, granulated sugar, or 'candy' can be fed.
- Pollen or pollen substitutes are fed to help stimulate brood rearing (most used by commercial beekeepers)

When Do We Feed

- Feed syrup when…
  - The bees must build a lot of new comb, as when a package or nuc is first installed
  - Any time the bees are low on nectar stores and there is no nectar coming in
  - In autumn, if your bees need stores for the winter

How To Make Syrup

Syrup is mixed/described by *sugar:water* ratio

- 1:1 - Feed during spring and summer
- 2:1 - Feed in the fall (2 parts sugar to 1 part water)

Ratios are by weight or volume, they are very close.

So what's the recipe

- "A pint's a pound the world around"
- 4lbs of water is 8 cups
- 4lbs of sugar + 8 cups of water = 1:1 syrup …OR…
- 4lbs of sugar + 4 cups of water = 2:1

Making Syrup

- 1:1 recipe above will make a little under 1 gallon of syrup
- Warm the water first, then mix with the sugar off the heat
- No need to boil water (get water fairly hot if making 2:1)
- Never boil the syrup
- Allow syrup to cool completely to room temperature before putting it on the hive

Delivering The Syrup

Lots of feeder designs

- Boardman (front) feeder
- Division Board (frame) feeder
- Top Feeder
- Bucket Feeder
- Zip Top Bag
- Others

Feeders

Boardman Feeder

+ Can see level and refill w/o opening the hive.
- Can cause robbing

Division Board Feeder

+ Syrup is right at the bees
- Need to open hive to see and fill
- Drowns some bees

More Feeders

Top Feeder

+ Large volume
+ Just lift cover to see and fill
- Can drown some bees
- Can get moldy

Bucket Feeder

+ Cheap
+ Large volume
+ No drowning
- Must lift to check level
- Requires extra box to surround and protect the bucket

Yet Another Feeder

Zip Top Bag Feeder

+ Cheap
+ Puts syrup close to the bees
- Requires a shim (rim)
- Can be messy

Prevent Robbing

Force a robber to take a long distance trip through the hive.

- Close notch in inner cover when using a top feeder
- Use a reducer if using a front (Boardman) feeder
- Robbing is much more prevalent in the fall.
- Before fall, research how to prevent robbing, and also to recognize and stop it should it occur.

Honey Bee Pests & Diseases

Hive Pests

1. Pests Outside the Hive
2. Wax Moths and Hive Beetles
3. Brood Diseases
4. Mites, Enemy #1

Hive Pests

1 Pests Outside the Hive

Pests Outside the Hive

- Skunks
- Bears
- Other insects

Skunks

Skunks will scratch at the entrance,
then eat the bees that come to investigate

Skunks

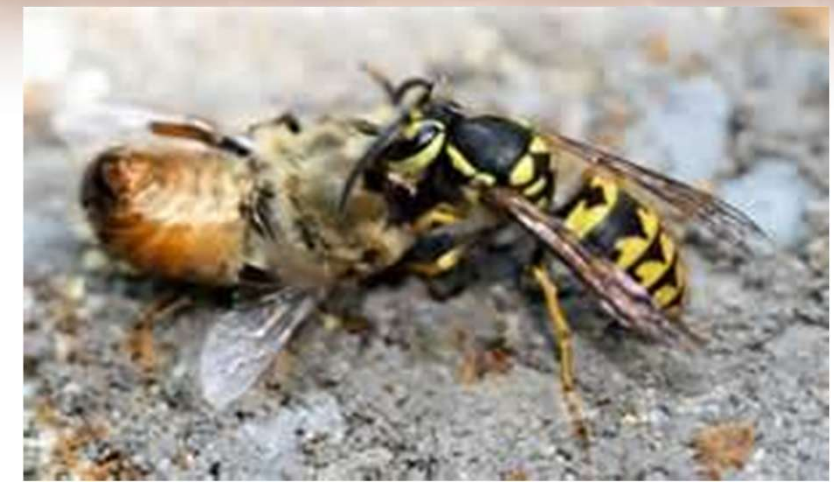
- You may have a skunk problem if you see the grass or dirt trampled down in front of your hives. Your bees may also be unusually aggressive when you try to inspect them.
- Raising the hive up higher will usually correct this problem.
- You could also put tack strips in front of the hive.

Bears

- Not much of problem in Lancaster Co.
- For those of you elsewhere, bears destroy hives for the protein rich larvae, the honey is just dessert.

Once found by a bear, you <u>WILL</u> need a powerful electric fence surrounding your hives. Of course, this is after you replace the bees you've lost.

Yellow Jackets



- Yellow jackets will kill and take sick and dying bees from the front of the hive, but usually are not a threat to a healthy, strong hive.
- If they begin entering the hive and taking bees, reducing the entrance will help your bees defend their hive.

Mice

- Mice can cause quite a bit of damage during the winter months. They get into the lower part of the hive when the bees are clustered in the upper part.
- They chew up the comb, build nests between frames, and urinate everywhere.
- Mouse guards installed in the fall will protect your hive from damage. Put them on while bees are still active. You do not want to trap a mouse inside the hive.

The Rest

- Ants will sneak into hives and take some syrup but usually are not a threat to your hive.
- Roaches will sometimes be seen in hives between the inner cover and the top cover but will do little or no harm to the hive.
- Spiders around your hive can take a bee or two…creepy to you, but little threat to the hive.

Hive Pests

2 Wax Moths and Small Hive Beetles

Wax Moths

- Adult females lay their eggs in the hive.
- Larvae feed on old bee pupae cocoons, weaving webs as they go.
- Will be found most often on brood frames, less often on frames not used yet for brood
- Appropriately sized hives can keep moths in check
    - Ideally, at least some worker bees should be on every drawn area in the warm months.

Wax Moth Damage

Protecting Your Comb

- Most damage is done when storing frames of comb.
- Freeze the frames for 48hrs.
- Store below freezing or tightly sealed full time...

  OR

- Store in hive bodies or a sealed trash bag with a small dish of moth crystals containing paradichlorobenzene.
- *DO NOT* use moth balls or anything containing naphthalene.
- Frames should be aired out for a few days prior to using them after being stored with crystals.

Small Hive Beetles

Small Hive Beetles

- Can fly, which is how they enter your hive
- Adults live and reproduce in the hive.
- Beetle larvae feed on pollen and honey
- Leave a slimy mess the bees do not like to clean up, and can cause the bees to abscond
- Beetle larvae pupate in the ground after feeding in the hive.

Small Hive Beetles

Small Hive Beetles

What You Can Do

- As with wax moths, ensure the box size is appropriate for the bee population.
- Simple beetle traps exist and are sold by the supply companies.
- Nothing special to do for beetles when storing frames (remember, frames require freezing or moth crystals).
- Diatomaceous earth can be spread on the ground around a hive, but will kill/injure bees as well, so be careful

Guard Your Comb

- Guard your drawn comb against pests.
- Drawn comb is a valuable asset.
- Comb can be reused, even from dead hives
  - A package on drawn comb will have a large advantage
  - Protect it from wax moths, mice and anything else that will destroy it.

Hive Pests

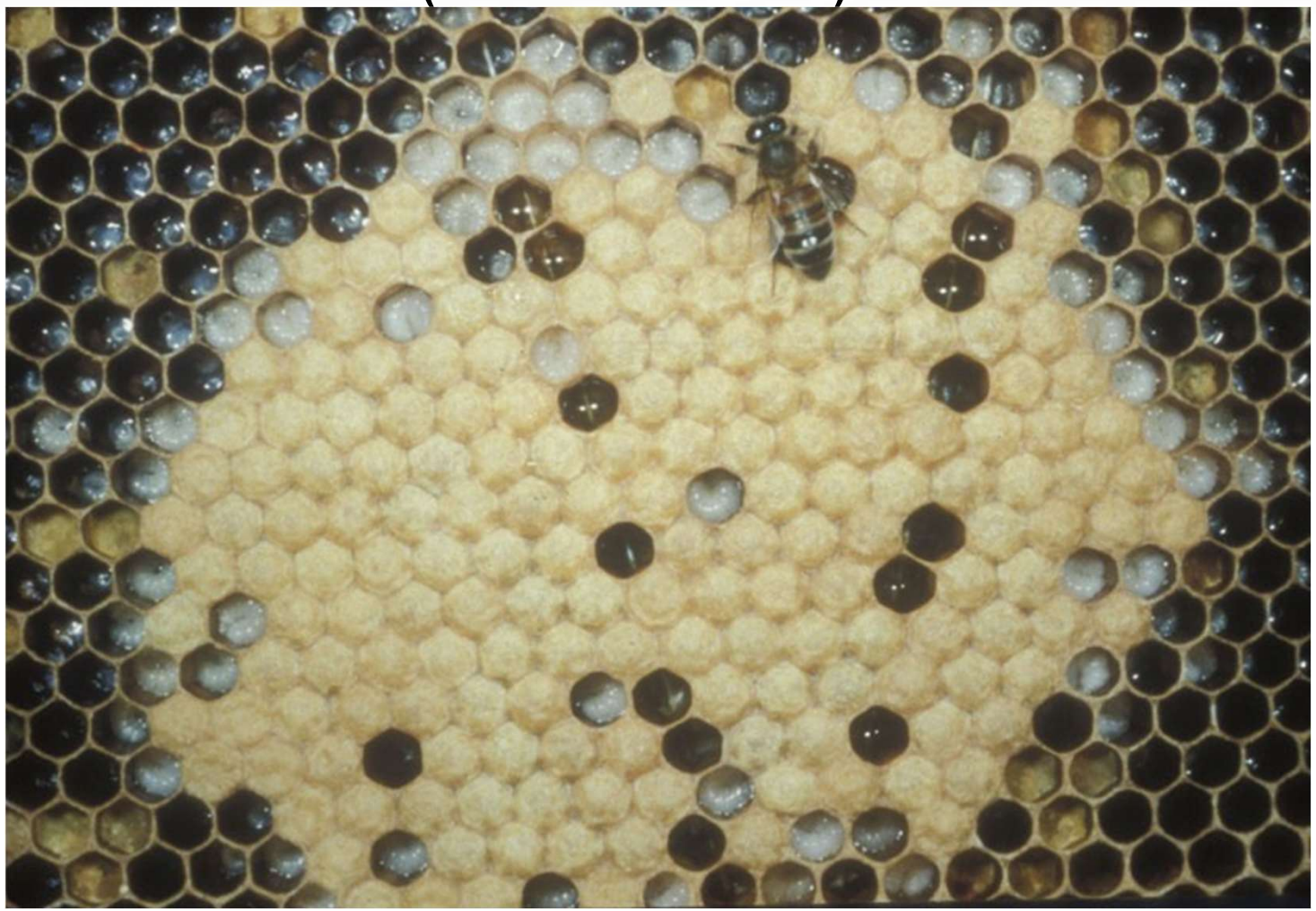
3 Brood Diseases

Brood Diseases

- A number of brood diseases exist, most caused by fungus or bacteria
- Identifiable by their effect on the brood itself
- Don't lose sleep over these. The most important thing is to know what healthy brood looks like so you can identify unhealthy brood.

Healthy Brood

Healthy Brood: Convex, dry caps, shiny white larvae (darker wax is fine)



Unhealthy Brood

Diseased Brood: Concave, wet caps, many with holes

Unhealthy Brood

American Foulbrood

Again, don't lose sleep over this disease, but this must be reported to the PA Department of Agriculture as soon as you suspect its presence.

American Foul Brood

- AFB is highly contagious among bees
- The spores can live for decades in old equipment
- This is why it is ill-advised to buy used equipment unless you *KNOW* that healthy bees were kept in it very recently.
- The hives in the neighbor's grandfather's barn may be cheap, but you may be buying a serious problem.

Hive Pests

NOD Varroa Video
https://www.youtube.com/watch?v=wj-h5VJqaoI
* This video is trying to sell a product. While many members use this product, LCBS is not promoting it in any way. The informational part of the video is very good.

4 Mites, Enemy #1

Varroa Mites

Mites on larva

Close up of mite

Quick Varroa Facts

Rule #1: Your hives *WILL* have varroa mites

Rule #2: You cannot change rule #1.

Your main concern is how many mites

aka infestation level

Mites...

- Reproduce inside capped brood cells
- Immature mites feed on developing brood
- Are rarely visible
- Are highly attracted to drone larvae

You almost certainly won't see them

Can you see them now?

Imagine if this bee was alive and walking

Monitoring Your Mite Load

- Alcohol Wash
  - Swirl known amount of bees in a jar of alcohol
  - Mites will sink to the bottom of the jar and can be counted
  - Kills the bees, but is the most accurate
  - Think of this like a biopsy
- Known amount of bees:
  - ½ Cup, approximately 300 bees
- More than 3-5 mites for 300 bees (>=1%) is where most experts recommend treatment be considered

Alcohol Wash

Gauging the Infestation Level

University of Guelph Honey Bee Research Centre

https://www.youtube.com/watch?v=k95CrnTSTCY

Unmanaged Mites Will Likely Kill Your Bees

- Remember, they're rarely visible
- *"I don't see any"* is not a valid reason not to monitor
- By the time you see them on a worker bee during an inspection, the infestation is likely so bad that the colony is doomed.
- Dr. Jamie Ellis, Gahan Endowed Professor of Entomology, University of Florida
  https://www.youtube.com/watch?v=9cOZpEr4NHc

How To Treat...

- Synthetic Chemicals
  - CheckMite/Apistan
  - Apivar
- Naturally Occurring Chemicals Made Into Products
  - Apiguard & Apilife Var
  - Formic Pro
  - Oxalic Acid
- Mechanical Intervention
  - Culling Drone Brood
  - Forced Brood Breaks

How To Treat...

- **A Guide on Our Website**

  http://bit.ly/4auQKN6

- **Another Excellent Resource/Guide**

  https://honeybeehealthcoalition.org/resources/varroa-management

Treating For Mites

- You are treating for a pest, therefore any product you use is considered a pesticide
- Even the products containing naturally occurring substances can be dangerous if misused
- ALWAYS read and follow the label, including required protective gear...it's the law.

Treatment Free?

- “Can I Be Treatment Free?”
  - You can try, but you need to go in with your eyes wide open.
  - Ignoring mites means a higher chance a colony will die
  - Those who are successfully treatment free usually
    - Are very remote/rural
    - Have a lot of hives

Treatment Free?

- “Can I Be Treatment Free?”
  - Having a lot of hives means you’re far less likely to become “beeless”.
  - It is very difficult to be treatment free with 1-2 hives. At some point, you will be beeless and feel like you’re starting over.

A Hive That Didn't Make It

A Hive That Didn't Make It

A Closer Look

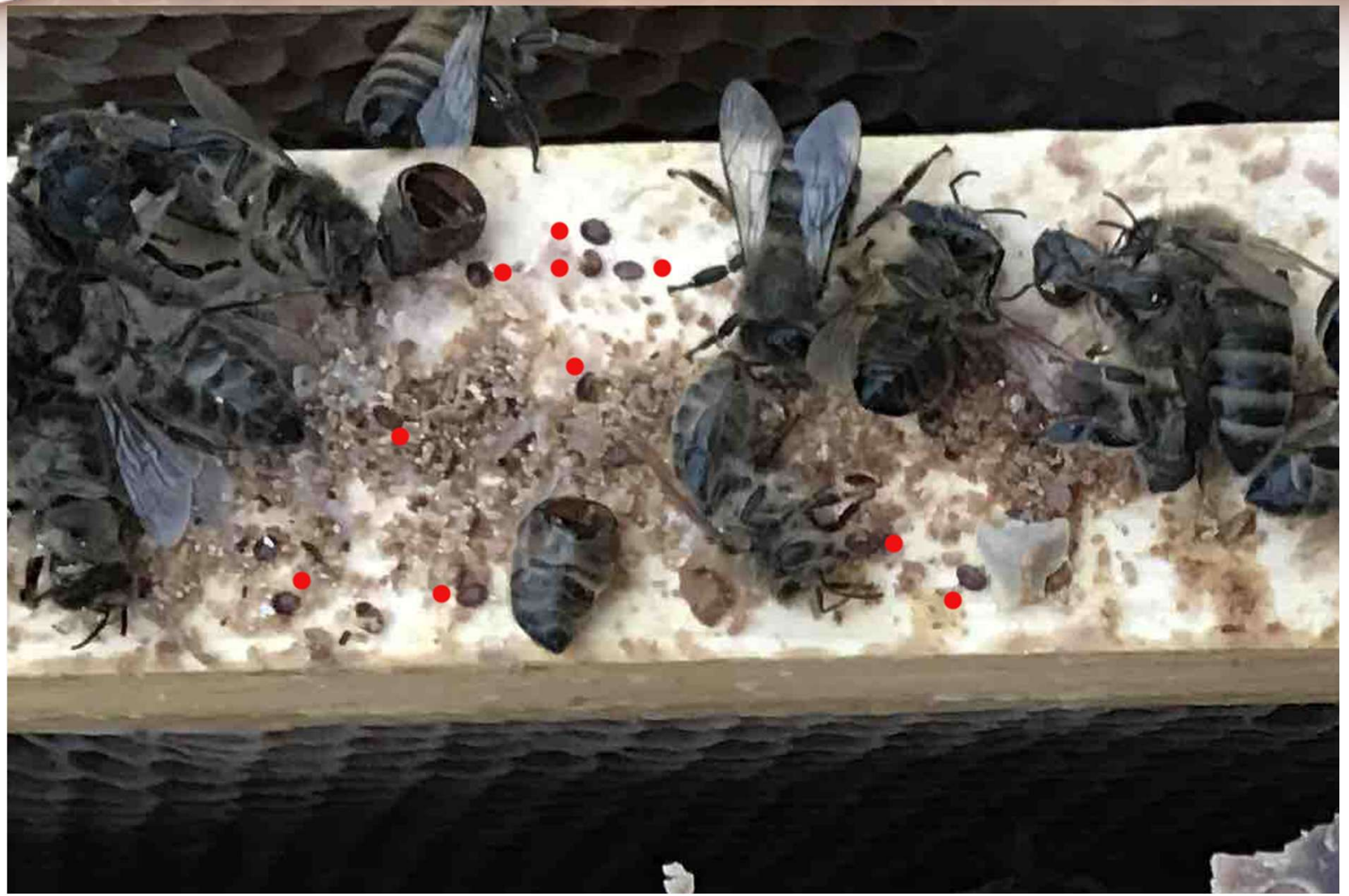


Table Talk

Chat at your table for 10 minutes about this latest topic

First Year In The Apiary

Part I

Denny Gorman
President

Matt Libhart
Executive Director

January and February

- Gold star for attending the workshop
- Read a Bee book
- Subscribe to American Bee Journal or Bee Culture
- Order bees and equipment
- Assemble and paint equipment
- You have decisions to make
  - Number of hives (recommend 2)
  - 8 frame or 10 frame, 2 deeps or 3 mediums
  - Plastic or wood frames, plastic or wax foundation
  - Your apiary's location

Your Bees Arrive

- Have your hive assembled and at its location before your bees arrive.
- Choose the very best location you can offer your bees.
- Install your package as soon as feasible, the day they arrive if possible, preferably late afternoon.
- Have 1:1 syrup ready to go before beginning installation
- Plan on feeding your bees for several weeks, possibly longer.

Queen Cage

Your First Visit

- About the third day after you install the package, you'll want to ensure your queen has been released.
- Disturb the hive as little as possible. Lift the frame with the queen cage. Remove the cage and look to see if the queen is in the cage.
- If she is released (not in the cage), lower the frame and close the hive.
- If she is still in the cage, remove the cork from the non-candy end and put the cage back between the frames. The queen will come out and the cage can be removed the next time you open the hive.

Your First Inspection

- On or about day 7, one week after you install your package, perform your first inspection.
- You're looking for properly drawn comb and eggs.
- If you see a queen cell along with eggs, destroy the queen cell. This is the only time (immediately after a package is installed) that this is recommended.

Properly Drawn Comb

Crooked Comb Must Be Removed

Your Second Week

- Inspect 7 days later (about 14 days after install).
- Again look for eggs
- This time you should see larvae, these were eggs on your first inspection.
- More comb should have been drawn, expanding the brood area to the next frames
- You should also see nectar/syrup and some pollen in cells, some may be capped.
- Continue to feed 1/1 syrup, bees may take a quart or more a day
- You have no new bees yet.

Remember…

- If you see eggs, you don't *have* to find your queen

  But

- If the weather is nice, spend time with your bees and practice finding her. Your colony will almost never be smaller, so finding her should never be easier.
- Finding your queen is a necessary part of beekeeping

Your Third Week

- Inspect 7 days later (21 days after install)
- Again look for eggs, practice your queen spotting
- You should see larvae of all ages
- This time you'll see capped brood
- More comb should have been drawn. Remove comb not drawn properly
- Pollen and nectar may be seen in the comb around the brood
- Do they need more room? Probably not, you still have no new bees

Notice The Blooms

As a beekeeper, you should be in tune with what's blooming and available for your bees.

March/April

- Henbit, deadnettle, red maple, early apples, peaches

May

- Apples, dandelions, strawberries, **black locust**

June

- Raspberries and blackberries bloom early, tulip poplar, clovers later

The months are just a guide. As is true with most agriculture, this is all dependent on the weather.

Week Four

- Inspect 7 days later (28 days after install).
- As always, look for eggs.
- You should see eggs, larvae and capped brood.
- You may see emerging bees. Look on that middle frame.
- Comb should continue to be drawn.
- More pollen and nectar may be seen in the comb.
- Do they need more room?
- You're finally starting to get new bees.

Do Your Bees Need More Room?

- You should add another box onto your hive when the bees are just beginning to draw out the outer two frames of the last box you gave them
- Bees often ignore a box that's nothing but foundation
- Lure the bees into the new box by moving the two second-to-most-outer frames from each side of the current box up to the center of the new box, and move empty frames down in their place.

Week 4 Into August

- Feed until they don't take the syrup or your full-time hive bodies are drawn…it may take 8 gallons of 1:1 syrup to get your hive fully drawn
  - That's 2 deeps OR 3 mediums
- Inspect every 7-10 days.
  - Look for eggs to ensure the queen is alive and well.
  - Practice queen spotting
  - Once eggs and healthy brood are spotted, no further inspection is necessary.
- Heft the hive on each inspection to get an idea of the increasing weight.

Subsequent Inspections

40, 50, 60 degree rule

Have a specific goal, purpose

Every two weeks, 15 minutes

Keep records, date, time, blooms, weather

Exterior Inspection

- Bees at entrance
  - Bringing in pollen, nectar?
  - Orientation flights
  - Bearding
  - Robbing
  - Pest activity
  - Hornets, Yellow jackets
  - Waste spots

Routine Hive Inspections

Bees, Brood, Queen, Food

- BEES: sufficient number of bees, seasonally based
  - Deep frame=~ 1215 bees per side,
  - Medium= ~1000 per side
    - A strong hive in Spring will have 8 to 10 frames of bees
    - Medium 5 to 7 frames
    - Weak , less than 5 frames
  - Drones, Queen present?
- Temperament:
  - Calm, Agitated, Defensive, Aggressive
- Appearance:
  - Healthy, Active

Routine Hive Inspections

Bees, *Brood*, Queen, Food

- *Brood*: Sufficient Brood, seasonally based
  - A standard deep has 3500 cells per side, 7,000 total.
  - A standard medium has 2250 cells per side, 4500 total
  - 1 square inch of frame contains 25 cells.
  - Today's sealed brood will be foragers in about 6 weeks
  - Does the brood look healthy?
  - Is drone brood present?
  - Are Queen cups, cells present?

Routine Hive Inspections

Bees, *Brood*, Queen, Food

- **Brood quality**
  - Capped Brood:
    - Evidence of disease? Sunken caps, chewed or perforated caps, Shiny, wet looking caps.
  - Healthy Open Brood:
    - Progressive stages, egg to larva, to prepupa, shiny, white, sufficient royal jelly.
  - Diseased Larva?
    - Discolored larva, scale, white crystals, mummies, hive beetles, wax moths.
  - COMB:
    - Drone comb? Queen cups, Queen cells, Supersedure cells, Charged?

Routine Hive Inspections

Bees, **Brood**, *Queen*, Food

- *Queen*:
  - Can you find her?
  - Marked?
  - Are there eggs present?

Routine Hive Inspections

Bees, Brood, Queen, *Food*

- *Food*:
  - Is there sufficient amount of
    - Nectar
    - Pollen
    - Capped honey (count using brood method)
    - Do you need to feed?

Table Talk

Chat at your table for 10 minutes about this latest topic

Six Important Behaviors of Beekeepers

John deGroot

Six Important Behaviors

- 1 Continuous Learning
- 2 Be Observant
- 3 Pay Attention to your Behavior
- 4 Be Prepared
- 5 Keep your Neighbors Happy
- 6 Keep Records

1 Continuous Learning

- Use the public library – read a book each month for a year
- Attend meetings of your beekeeper association
- Find a mentor
- Read Bee Culture or American Bee Journal
- Try something new each year

2 Be Observant

- Keep your eyes, ears, and nose open while you approach and work in your apiary.
- Look for symptoms of disease, parasites, and predators.
- Look for preparation to swarm or factors that induce swarming.
- Notice how they move and sound during each visit.

2 Be Observant (more)

- Look for:
  - what is blooming,
  - micro (very local) climate effects,
  - odors,
  - plants,
  - damage to woodenware,
  - tracks in the dirt and local insects
  - everything else

3 Pay Attention to your own Behavior

- Move calmly, deliberately, and gently. It's not necessary to move in 'slow motion', but don't move jerky.
- Don't knock, bump, or drop.
- Always wear a veil - a sting in the eye is serious.
- Always have complete protective gear within reach, even when sure it will be unneeded.
- Always light your smoker.

3 Pay Attention (more)

- Make sure your clothes are clean.
- No alcohol on your breath.
- Don’t visit if you worked up a sweat.
- Have drinking water with you each visit.
- Keep your hive tools in your hand, pocket, or tool caddy - you DO NOT want to find a hive tool with the lawn mower.
- Lift with your back straight.
- If supers are heavy then move one frame at a time.

4 Be Prepared

- Plan each beekeeping year in January.
- Order packages, equipment, and medication in advance of need.
- Have more woodenware on hand than you expect to need.
- Building frames or supers at 11 pm the night before your packages arrive, loses its charm quickly.
- If anaphylactic shock, call 911 immediately

5 Cultivate Good Relations with Neighbors

- Give honey to your apiary's immediate neighbors each fall.
- Remove yellow jacket nests for your apiary's neighbors.
- Manage your colonies to avoid defensive behavior.

6 Keep Written Records

- A calendar is a good place.
- Note what is blooming.
- Note what the bees are doing.
- Note when you feed, super, harvest, and place or remove medications.
- Use these records to determine what worked well and what did not.
- Use these records to plan for next year.

Table Talk

Chat at your table for 10 minutes about this latest topic

First Year In The Apiary

Part II

Denny Gorman
President

Matt Libhart
Executive Director

Sting Video

Mite Monitoring

- Begin doing mite washes
  - 3 weeks after installing a nuc
  - 6 weeks after installing a package
  - At least once a month thereafter
  - Always immediately after a treatment

Harvesting Honey

- You're looking for capped honey, not the sugar syrup you have been feeding them.
- Most honey in the Lancaster County area will be capped and ready to harvest about mid July.
- Expect no honey your first year
  - You may be able to get a frame or two if you've stopped feeding and the bees have capped honey in a super
- Removing bees from supers
  - Research this as homework.
  - Feathers, branches, fume boards…

July – August - September

- Mite Treatments
  - Generally need to be done toward the end of July
  - Multi-week or a “one-shot” depending on your chosen treatment
  - Continue mite monitoring, a late fall treatment may be needed
- Begin feeding light hives in the middle of September
  - 2:1 (thick) syrup
  - A total hive weight of 100lbs is a good goal
  - Try to be finished feeding the first week of October
  - This gives the hive time to dry and cap the syrup just as they would honey

Ordering Wax Foundation

- Order next year's wax foundation in late summer to early fall
  - Supply companies will not ship wax during cold months
  - There WILL be a spring rush on equipment

September & October

- Continue inspecting as temperatures allow
- You may not see eggs at this time as the queen may have stopped laying
- Moving frames always involves risk of harming the queen.
  - This is not the time to “practice” finding the queen.
  - Find her if you must, but if you see eggs or young larvae, you’re done.

Goals For Late Inspections

1. Remove empty frames, ensure all boxes are full of fully drawn comb
2. Identify pest/disease issues
3. Evaluate the colony's population.
4. Remove unused boxes from hive
   - Better to have two full medium boxes than 3 or 4 with a lot of empty frames
   - If you remove empty drawn comb, be sure to protect it from pests like wax moths.

October Winter Prep

- Moisture Management Options
  - Inner cover notch down
  - Homasote moisture board
  - Insulated covers
- Mouse Guards
  - Install during the day when bees are flying
- Other Considerations
  - Wind break
  - Wrapping hives
- Good wintering document, written by one of our members, is on our website in “Brooke’s Binder
  - http://www.lancasterbeekeepers.org/useful-info/

Winter

- Overwinter feeding is plan B
  - If the hive is a good weight, feeding will be unnecessary
  - Fondant, sugar blocks, etc, are all emergency feed
  - Gently tilting hives from the back can be done anytime to check weight
- Bees will fly if temperatures get toward 40°-50°F
  - This is a good way to check your hive is still alive in the winter.

Winter Tasks

- Purchase new equipment
- Assemble/paint new equipment
- Repair/repaint old equipment
- Order bees
- Review your previous year. Plan new year.
- Read, Read, Read

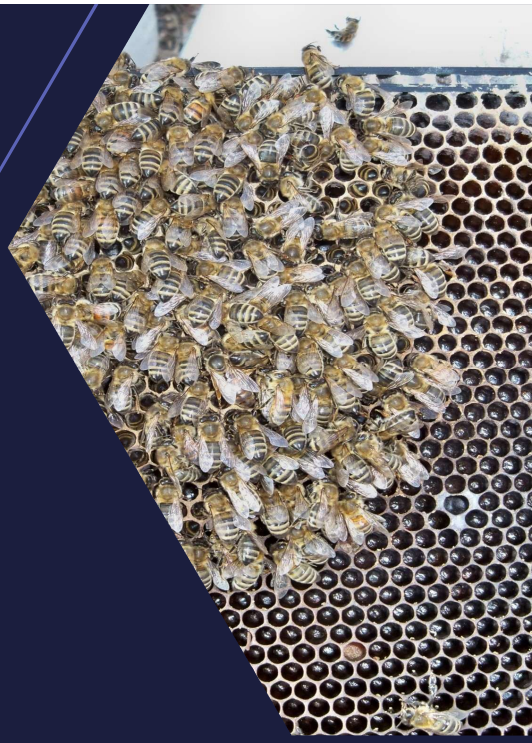
Spring Comes Early

- Spring buildup begins in mid-February
- If emergency feeding, you must continue until blooms arrive
- Once temperatures allow, you can inspect for eggs and overall colony health
- Swarm prevention
  - You did read over the winter, right? ☺

Not Every Hive Survives

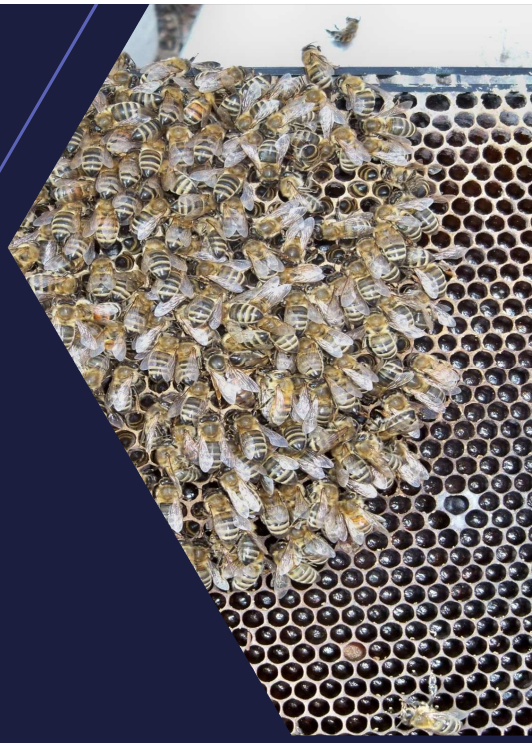
Survival

- Statewide losses are 40-50%
- Replacing hives is expensive
- Consider…



Survival

- Statewide losses are 40-50%
- Replacing hives is expensive
- Consider
  - Splitting Hives
  - Keeping and wintering nucs
  - Keeping more hives



Constant Learning

Be a beekeeper, not a bee-haver

Thank You

Table Talk

Chat at your table for 10 minutes about this latest topic

EST 1876

LANCASTER COUNTY BEEKEEPERS SOCIETY

New Beekeeper Workshop
January 31,2026

HONEY HARVESTING & EXTRACTION

Denny Gorman
Certified Master Beekeeper (Cornell)
President LCBS

HARVESTING HONEY a simple 5 Step Process

- ***1. HARVEST*** *(Pull) SUPERS, clear bees*
- ***2. UNCAP FRAMES****, save comb and cappings*
- ***3. EXTRACT*** *honey*
- ***4. STRAIN*** *out wax and particulates*
- ***5. BOTTLE*** *and label*

PA Honey Sale and Labeling Act *rev. June 2021*

- Registration unnecessary….If 100% of the regulated product offered for human consumption are produced or processed "on the farm" on which the retail food facility or the food establishment are located.
- If honey producer sells off-site of his or her "farm":
  (Off-site locations include stores, farmers' markets, internet, craft shows, restaurants, ag fairs, etc.)… the honey processor MUST fill out and submit an application to register as either a Limited Food Establishment (if home-based), or a Commercial Food Establishment
- There is an annual fee and your kitchen will be inspected.
- *Jim Pinkerton and I both offer bottling service in a registered facility for a small fee. I offer extraction service also.*

1. PULL SUPERS

- *"Supers," are medium size (6 5/8 inch high boxes placed on top, (superimposed) on the Brood Box, or boxes (deeps).*
- *Often separated with a queen excluder*
- *A full 10 frame medium super can weigh 40 pounds or more*
- *WHEN? In Lancaster County around first or second week of July, after the FLOW.*
- *Do not pull supers until ready to extract (hive beetle and wax moth larva)*

Clear Bees From Supers

- *Bee Brush each frame to remove all bees*
- *Place frames in empty covered super*

Alternative methods to clear supers

Triangular Bee escape board

Fume Board with removal chemical

2. UNCAP FRAMES

PHOTO: Denny Gorman

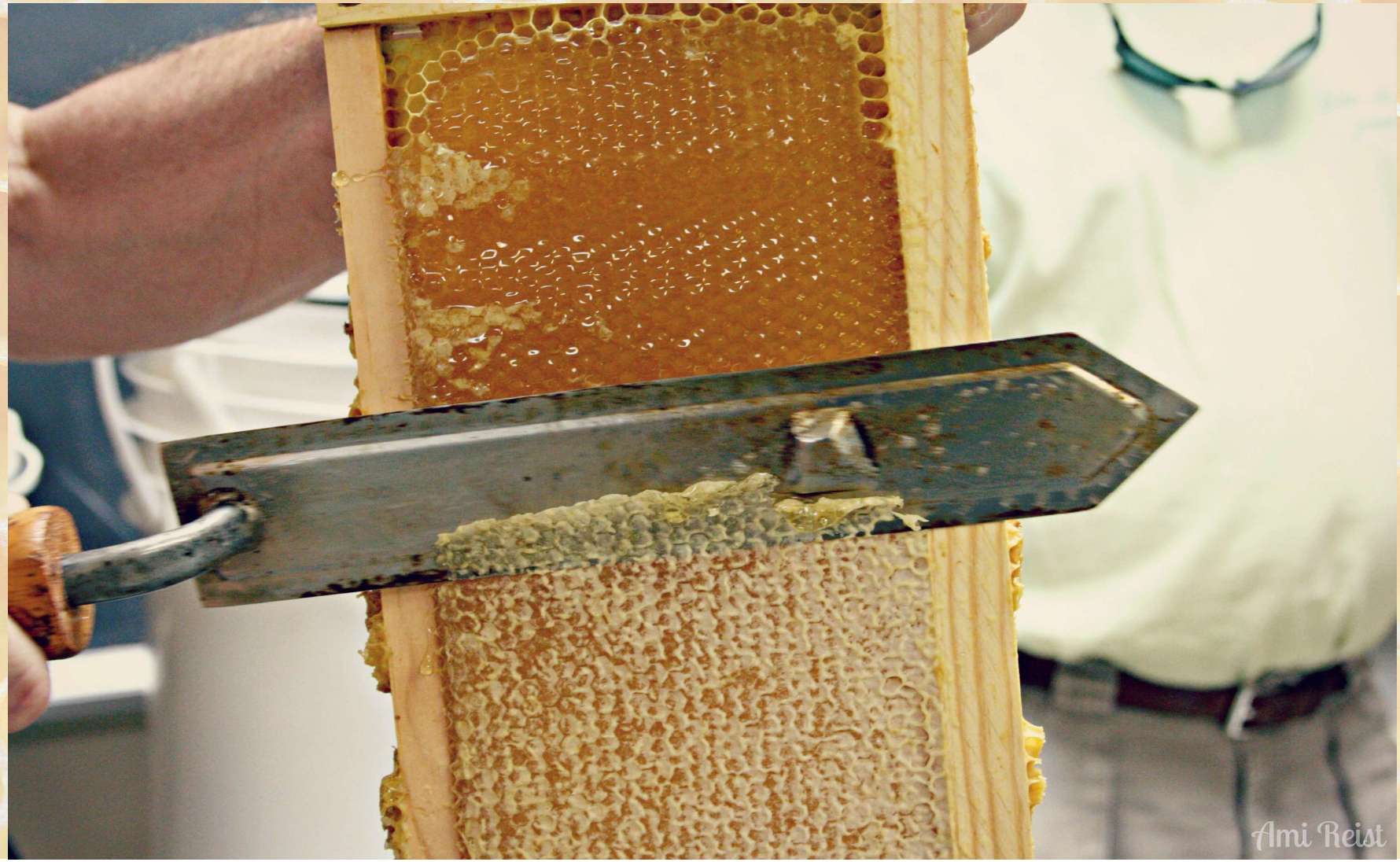
- ***Hot electric knife***
- *Minimize loss of drawn comb*

- *Uncapping Scratchers*
- *Uncapping machines*

Uncapping Tub or Tank

- Put down Newspaper or plastic, EVERYTHING will be sticky!
- *Have a bucket of warm soapy water near by.*
- *Do not harvest outside!*
- *Plastic or Stainless steel tub (food grade) with cross bar frame rest, and screw point.*
- *Strain honey from cappings, clean and harvest the wax*

Use the edges of frame to guide your knife, cut off only cappings




CULINARY
PA
Preferred
CONNECTION

Harvest or not?

Your Bees will often backfill frames of hatched brood with honey

*It is best practice to use **dedicated** frames for honey supers.*

PA LAW

"Honey shall be extracted only from combs that are free from brood of the bees and/or larva of wax moths."

Some of the wax capping has been removed…the darker comb is where there was once brood. As the brood hatched the bees filled it with honey. The honey is the same color, just the cell is darker.

Would you harvest this frame?

- *80% or more capped honey*
- *No Brood in frames*
- *No evidence of SHB or wax Moths*
- *Honey should have a moisture content :15 to 18.5%,*
- *Refractometer*

Simple Harmony Farms Uncapper

3. EXTRACT FRAMES

- *EXTRACTORS*
  - *Radial– Like spokes on a wheel*
  - *Tangential – Must flip frames*
  - *Electric*
  - *Hand Crank*


Thermador
FIRST ST
WALK.
THERMADOR.

4. STRAIN

- *Remove wax, bee parts, particulates*
- *While Extractor is running*
- *Drain through double sieve or cheesecloth filter*
- *Allow to settle for a few days*
- *Skim or use a bottling tank*
- *Return "wet" supers to hives for bees to clean up.*
- *Freeze frames 24hrs and store*

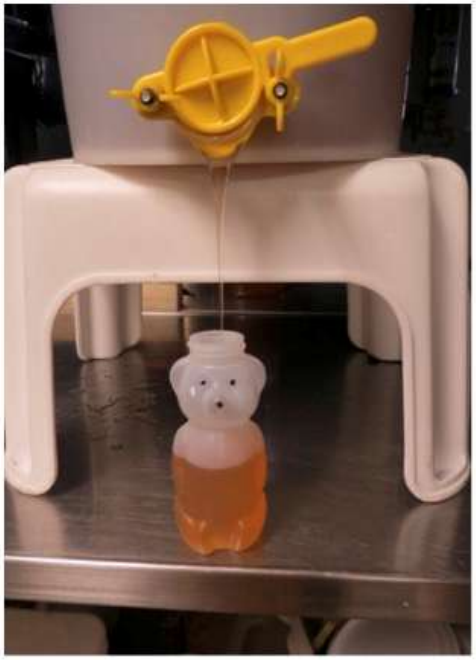
Let the honey settle a day or two

After a week or so what is left on the top is some foam and small bits of wax that made it through the sieve, all have floated to the top. Perfectly eatable, but don't look nice in a jar of honey.

A large spoon is used to skim the foam and wax from the surface.

5. BOTTLE and LABEL

If the honey was in storage buckets, it can be poured into a bottling bucket with a gate. The gate is opened to fill whatever bottles you are using for your honey.



A FEW TIPS TO SAVE SOME HONEY MONEY

- *You may reserve and borrow the CLUB EXTRACTOR.*
- *Food grade buckets, are often available for free at bakeries and some restaurants, buy honey gates on-line and make your own bottling buckets.*
- *Food grade tubs, sieves, trays etc. are available at restaurant supply stores, lower cost than bee catalogs*
- *Refractometers are available at science supply sites and Amazon at lower cost than bee suppliers.*
- *Jim Pinkerton and myself both offer use of PA registered bottling facility and extraction services for a small fee to club members.*


HONEY BEE KNOWLEDGE
silly
honest
kind
PURE HONEY
1LB

THANK YOU

- *Denny Gorman*
- *717 368 2050 call or text*
- *bethdennyllc@yahoo.com*