

# Pacific Northwest Beekeeping Conference

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Olympia, WA

October 7-8, 2023

# Hairless Bees

( Color on bees is only in the hair!)



1. Hair can be rubbed off on robbers
2. Viruses (Kashmir or Chronic Bee Paralysis)



# NATURE-BASED BEEKEEPING

Dr. Thomas Seeley

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Study area for bees in the wild: 5000 ACRES near Cornell University

Varroa arrived in 1994.

1978 2.5 colonies per square mile;                      2002      2.5 colonies

1. Colonies are genetically adapted to their location; live widely spaced out
2. Nest in small cavities; swarm often
3. Walls are thick (4") coated with propolis; entrance is up high
4. Have diverse pollen sources; not treated

## Guidelines for Nature Based Beekeeping (when profit isn't the goal)

1. Graft from untreated colonies
2. House colonies in small hives (1 deep and 1 super above an excluder)
3. Space your hives as far apart as possible
4. Line hives with propolis screen or rough lumber
5. Promote 15 to 20% drones (to enhance genetic diversity)
6. Keep frames intact (i.e. don't move them around)
7. Small entrance at bottom of hive; no top opening (condensation in winter is a water source)

In nature:

survival in summer is 97%. (Summer losses are queen issues.)

survival in winter is 84%. (Winter losses are mite issues.)

BUT you will have no honey

Replace losses with swarms and splits.

To learn more, book by Seeley: The Lives of Bees

## Dealing with Deadouts – What to do with the comb

Dr. Meghan Milbrath (Michigan State)

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- 1. Scrape bottom board into something and throw away
  - 2. Dead bees are not a big pathogen risk.
  - 3. Scorch bottom board. (How long does it stay sterile? Zero hours)
  - 4. Throw away excess foods
  - 5. Keep honey from deadouts in same apiary
  - 6. Check brood frames for AFB scales and EFB



## Deadouts (continued)

- 7. Black light shows fungal spores. They fluoresce.
- 8. Check for varroa poop on dead brood frames
- 9. Cull old frames. COMB=RISK. (Remove 10 to 20% of frames yearly)  
Better outcomes with new wax. Pathogens 4X more likely in old wax;  
Increased chance of nosema and EFB  
Prioritize culling: frames from others go first (i.e. purchased nucs)  
Mouse poop, bee feces;  
Pollen frames are high risk: curved pollen cells not good  
Dead brood frames = high risk

Questionable frames may be okay in spring but not in fall

## Deadouts (continued)

- 10. EFB - bacteria is in honey, foundation, wood, hive tool, cloth  
Experiment conducted culturing bacteria, Checked after 2 weeks, 6 weeks and 1 yr. On equipment after one year! Freezing works

What to do with old comb? (Exposure is in brood and pollen frames)

Melt wax and remove, Bleach foundation, Scorch wood,  
Make fire starts with wooden frames



## Measuring the Costs & Benefits of Keeping vs Replacing Year Old Queens

Dr. Katie Lee (Univ of Minnesota)

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Compared honey production in year-old colonies to those with new queens

Conclusion: No difference

Notes: **To increase queen acceptance, feed while introducing queen**

7% to 20% of new queens are not accepted; 43% of the second queens introduced are not accepted

Used 180 queens from three different sources. Success varied significantly by source. Checked sperm quantity and “viability”. Temperature affects things.



Costs and benefits of replacing queens (continued)

**Keep the old queen in case the new queen is not accepted**

## **Producing Queens for Growing Operations in the Pacific Northwest**

Seth Smith (Skagit Valley Beekeeper)

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(Skagit club has new apiary this year.)

Excellent info for queen rearing team.

Raises his own queens to support his colonies which go to the almonds.

Starts queen rearing in April because the colonies coming back from the almonds have drones in them.



# Honey Bee & Pollinator Grad Students

## Washington State University

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Testing efficacy, toxicity and residue of oxalic acid

Egg mortality is high with OA (???)

EFB – bacteria is in soil in blueberry fields

## **The Life and Times of Drones**

Dr. Tim Lawrence (Washington State University)

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Drones take 24 days to emerge; another 12 before mating

live 14 to 33 days. Queen mates with 15 to 20 drones.

Orientation flights (play flights) at 6 to 7 days of age

Queen expels 90% of semen to allow more drone diversity.

DCA - 10,000 to 30,000 drones; same place year after year. 30 to 130' high.

flies 4.5 miles an hour; doesn't fly if winds  $> 15$  mph.



# **Vitellogenin and Honey Bee Life Span**

Dawn Beck (Pres. Puget Sound Beekeepers Assoc.)

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Vitellogenin regulates how long bees live. Fat bodies are organs that store protein, not fat. The larger the fat body the longer the bee lives.

Provides immunity, filters toxins, feeds other bees, creates hormones, helps sense heat and cold, and lots more.

Broodfood is 65% vitellogenin

## Vitellogenin (continued)

### Age of bees

day 1 – 3 small fat bodies

day 3 – 12 fully developed fat bodies on day 5

day 12 – 20 food stores used to feed colony

foragers have no vitellogenin

If September bees are nursing other bees they don't get to be winter bees.  
Winter bees don't age. They can do any house job.

**Must be mite free by August 31 to raise healthy winter bees.**