

Improving Survival Success Rates with Honeybee Colonies through Supportive Cohorts

Meeting #18 Why Colonies Abscond ~ with CiCi Sweeney

Project Leader: Tiffany Ayres, CEO Keys to Bees, Master Beekeeper
 Project Consultant: Marty Jones, PhD
 Project Partner: Kim Patten, Manager Diakon Wilderness Greenhouse
 Project Partner: Lindsey Lyons, Director of Sustainability Learning Dickinson College



This material is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, through the Northeast Sustainable Agriculture Research and Education program under subaward number PG24-021.

1

Improving Survival Success Rates with Honeybee Colonies through Supportive Cohorts

Meeting #18 Why Colonies Abscond ~ with CiCi Sweeney

Project Leader: Tiffany Ayres, CEO Keys to Bees, Master Beekeeper
 Project Consultant: Marty Jones, PhD
 Project Partner: Kim Patten, Manager Diakon Wilderness Greenhouse
 Project Partner: Lindsey Lyons, Director of Sustainability Learning Dickinson College



This material is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, through the Northeast Sustainable Agriculture Research and Education program under subaward number PG24-021.

2



Sustainable Agriculture Research & Education

SARE made funding possible.

SARE is a branch of the United States Department of Agriculture with funding through the National Institute of Food and Agriculture (NIFA).

The NIFA fund research and education projects to support sustainable agriculture; funding projects that help farmers, ranchers, and educators develop new ideas and strategies.

This material is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, through the Northeast Sustainable Agriculture Research and Education program under subaward number PG24-021.

"Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture."

3

SARE SOCIAL

DATE: 3/14/26

PLACE: 693 Burnt House Road,
Carlisle, PA 17015

CONTACT: (412) 638-1145
(717) 968-9359

TIME: 11:30am - ?

Sign-Up Genius: coming next month



4

CiCi Sweeny

Certified Master Beekeeper with the
Eastern Apicultural Society
Educational Specialist with Penn State
Extension
Past President of the Northwestern PA
Beekeepers Association
40 colonies – Northern Survivor Queens
& Nucs
Alumni of educational programs run by
Dr. Robyn Underwood focused on
superior queen and drone production:
EPIQ and DUDE



5

Honey Bee Absconding

CiCi Sweeny
EAS Master Beekeeper
Penn State Extension Educator

6

Honey Bee Absconding:

Stressors, Triggers, and Management Strategies

“Absconding is often a process, not a single event”

7

Absconding Definition

Absconding occurs when *the entire colony* abandons the hive, including the queen & most workers, leaving developing brood

- Commonly associated with **chronic stress**
- Most often seen after a **trigger** event or prolonged unfavorable conditions
- Happens abruptly

8

8

Absconding Definition

Absconding occurs when *the entire colony* abandons the hive, including the queen & most workers, leaving developing brood

So, what is the difference between:

Absconding, Swarming, Colony Collapse

9

9

Abscending Definition

Comparison Chart

Behavior	Bees Leave?	Queen Leaves?	Queen Cells?
Abscending	Most/All (some emerging brood)	Yes	No (Emergency cells afterwards)
Swarming	Half to 2/3rds	Old queen	Yes (before departure)
Collapse	Gradual loss	No	No

10

10

Why Do Bees Abscond?

From the Bees' Perspective:

- Nest suitability is central to colony survival
- Bees assess odor, structure, safety, & brood success
- Departure occurs when costs outweigh benefits



11

11

Why Do Bees Abscond?

Bees abscond when the hive is no longer perceived as:

- Clean
- Stable
- Defensible
- Safe



12

12

Stress Pathways to Absconding

- Physical Disturbance
- Pest Pressure
- Odor Disruption
- Disease Pressure

13

13

Stress Pathways to Absconding

- Physical Disturbance
 - Examples:**
 - Repeated vibration (bridge rumble, heavy equipment, traffic)
 - Frequent or rough inspections
 - Poorly supported hive stands
 - Hive knocked over by wind, animals, or falling trees

14

14

Stress Pathways to Absconding

- Physical Disturbance
 - Why bees respond:**
 - Repeated disturbance elevates colony alarm pheromones
 - Structural instability damages comb and brood
 - Vibration mimics predator or environmental threat

15

15

Stress Pathways to Absconding

- Physical Disturbance

Management:

- Avoid placing hives near vibration sources
- Stabilize hive stands
- Minimize unnecessary inspections

16

16

Stress Pathways to Absconding

- Pest Pressure

Examples:

- Mice: nesting, urine, comb destruction
- Skunks, raccoons: nightly harassment at entrance
- Small hive beetles: slime, fermented honey
- Wax moths: webbing, comb destruction
- Varroa mites: stress load and virus transmission

17

17

Stress Pathways to Absconding

- Pest Pressure

Why Bees Respond:

- Constant defense drains worker energy
- Brood damage weakens future population
- Colonies abandon hives they cannot defend effectively

18

18

Stress Pathways to Absconding

- Pest Pressure

- Management:

- Maintain strong colonies
 - Use physical barriers and traps
 - Monitor and manage mites proactively

19

19

Stress Pathways to Absconding

- Odor Disruption

- Examples:

- Mouse urine or droppings
 - Fermented honey odors from pests
 - Strong paint, stain, or preservative smells
 - Fuel, pesticide, or chemical odors

20

20

Stress Pathways to Absconding

- Odor Disruption

- Why Bees Respond:

- Bees rely heavily on chemical cues for nest recognition
 - Strong foreign odors interfere with communication and orientation
 - Persistent odors signal contamination / decay

21

21

Stress Pathways to Absconding

- **Odor Disruption**

- **Management:**

- Allow painted equipment to off-gas
 - Use mouse guards
 - Cull old brood comb regularly

22

22

Stress Pathways to Absconding

- **Disease Pressure**

- **Examples:**

- Virus-associated stress (often linked to high mite loads)
 - Brood diseases disrupting colony continuity
 - Chronic conditions reducing brood viability

23

23

Stress Pathways to Absconding

- **Disease Pressure**

- **Why Bees Respond:**

- Diseased brood weakens colony future
 - Workers sense declining colony health
 - Absconding may occur before collapse if conditions worsen rapidly

24

24

Stress Pathways to Absconding

- **Disease Pressure**

- **Management:**

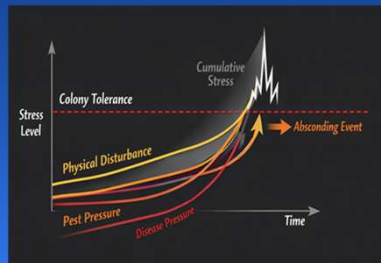
- Requeening with resistant strains (VSH or Hygienic)
 - Monitor and manage mites proactively
 - Cull old brood comb regularly

25

25

Stress Pathways to Absconding

- **Physical Disturbance**
- **Pest Pressure**
- **Odor Disruption**
- **Disease Pressure**



26

26

Avoiding Absconding

Early Warning Signs of Absconding

- Increased agitation
- Reduced brood rearing
- Excessive bearding or wandering bees

These behaviors indicate declining nest suitability and offer a window for intervention

27

27

Why Bees Abscond

Stressors vs Triggers

- **Stressors:**
Chronic pressures that degrade colony health
- **Triggers:**
Short-term events that initiate absconding once tolerance is exceeded

28

28

Threshold Model of Absconding



29

29

Triggers to Absconding

Key Absconding Triggers

- Nutritional stress
- Heat stress
- Blunt physical disturbance
- Additional chemical exposure



30

30

Avoiding Absconding

Managing for Success:

- Absconding is rarely caused by a single factor
- Colonies often endure multiple stressors without leaving
- A *trigger* is the final event that pushes the colony past its tolerance threshold

**Management focuses on
reducing chronic stress
before triggers occur**

31

31

Avoiding Absconding



Managing for Success: Action Steps

- Match hive size to colony size
- Provide extra nutrition/water when necessary
- Protect against pests
- Replace oldest brood combs on a rotation
- Monitor and treat for Varroa mites
- Replace queens as needed

32

32

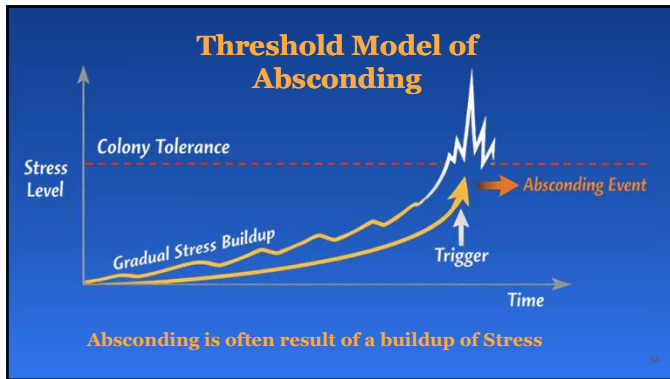
Threshold Model of Absconding



Stressors weaken the system over time
Triggers are the final push that initiates action

33

33



34

Thank You!



CiCi Sweeny
EAS Master Beekeeper

honeybee.pa@aol.com
724-748-5885

35

FUTURE MEETINGS	SOUTH CENTRAL PA LOCAL CLUBS
2/11/26 Virtual Meeting – Dr. Robyn Underwood	YCBA – meets 4 th Tuesday 7:00pm-9:00pm at Aldersgate Church, 397 Tyler Run Rd., York CABA – meets 3 rd Friday 7:00pm-9:00pm at HACC, 1 HACC Dr., Harrisburg LCBS – meets 3 rd Tuesday 6:30pm-8:30pm New Meeting Place in Mt. Joy PCBC – meets 3 rd Sunday 2:00pm at Penn State Ext. Office, 8 S. Carlisle St., New Bloomfield FCBA – meets 3 rd Thursday 6:00pm-8:30pm at locations vary check on website fcbapa.com
3/11/26 ~ Virtual Meeting	
4/8/26 ~ Virtual Meeting	
4/22/26 ~ Final Virtual Meeting	



36
