

# ***Swarm Prevention and Splitting Colonies***



By Ken Reid

# A Swarm is.....

- Reproductive goal of every overwintered colony
- A great sign of biological fitness (usually)
- Wonderful, awesome, beautiful
- Inconvenient for Beekeeper
  - lowered surplus honey crop
  - “swarms out” (not the goal)
  - pissed neighbors
  - loss of free bees



# Swarming Process

## **Overwintered Colony:**

- Rears LOTS of brood
- Rears drones
- Backfills activebrood nest with Spring nectar
- Rears new queens
- Casts Prime Swarm
  - Reproduction! YES!
- Casts Afterswarms
  - More Reproduction! More YES!

NY study in 1970 (pre-varroa) = ~25% of natural colonies survive their 1<sup>st</sup> year





# Swarm Types

(Overcrowding and Reproductive)

## Overcrowding Swarm

- When?
  - Outside of main nectar flows; after “Reproductive Cutoff”
  - Late Summer: July, August, September in PNW
- Signs
  - Bees boiling over (not talking about runny bees here)
  - Excessive bearding
- Causes and Cures
  - Too Little Nectar Storage Space
    - Provide Space
      - » add supers
      - » open up brood nest – move/insert frames
  - Too Many Bees in Too Little Space
    - Ventilate/Cluster Space
      - » slatted racks
      - » open up brood nest
      - » top entrance or mid-hive entrance
      - » follower boards

# Reproductive Swarm

- Cause?
  - The Need to Breed
- Pre-swarm Signs
  - Drones, drones, and more drones
  - Backfilling of the ACTIVE brood nest
- Swarm Sign
  - Populated queen cells in open spaces
    - lower parts of frames/gaps in comb
    - Not queen cups, queen cells
    - Main queen cell location:
      - » 2<sup>nd</sup> Box – bottom of frame & open pockets
- When will the swarm?
  - During the main nectar flows
  - Break in the weather
- Cures?
  - There is no “cure”...and shouldn't be

# No Backfilling = Good





# Winter Backfilling = Good



# Ineffective Swarm Control

- Nothing (bee-having, not beekeeping)
- Pinching Swarm Cells
- Queen Wing Clipping

So, either:

- Slow them down

or

- Split them up

# Slowing a Colony Down

## Retaining Full Colony Size

- Queen Confinement
- Hive Body Reversal
- Checkerboarding
- Brood Nest Expansion

# Queen Confinement

- Press-in cage placed around queen over wax comb
- No more egg laying
- Workers dig her out in about a week (or less)

## **The Good**

- Full colony retention
- No increase in hive count

## **The Bad**

- No increase in hive count
- Temporary at best
- Colony might swarm anyway if done too late in swarm prep cycle
- Short brood break

# Hive Body Reversal

- Colony moved up during winter
- Rotate top box(es) to bottom
- Claims
  - Brood nest expansion primarily in top box and the colony wont move down fast enough and swarm prep starts in the top box. So, rotate brood boxes to provide brood space.
  - Conversely, some beekeepers also claim that it can speed the colony up.

## **The Good**

- Full colony retention
- May provide addition brood rearing space

## **The Bad**

- Short term effectiveness (future actions still required)
- Eliminates honey arch (issue for main nectar flow)
- Highly disruptive (set back for colony organization)
- Due to flow timing, appears unnecessary in W. WA
- No brood break

# Checkerboarding

(aka Nectar Management)

Originator: Walter Wright

- Colony Survival Objectives
  - Parent colony survival is first, reproductive swarm second
- Backfilling is symptom, not cause
- Backfilling Impulse Utilization
  - Spring backfilling behavior
- Checkerboard capped honey in super above active broodnest
  - C,U,C,U,C,U,C,U,C,U (C=capped frame, U=uncapped drawn frame)
  - Tricks bees into thinking that they don't have enough stores to swarm

## **The Good**

- Full colony retention
- Common supersedure post-flow
- Single spring manipulation
- Broodnest not disrupted.

## **The Bad**

- Capped honey retention
- Process needs modifying for W. WA (spring nest location)
- Not well known
- No brood break

# Brood Nest Expansion

Backfilling brood nest observed?

- Insert empty frames in center of brood nest to occupy the young bees drawing comb and expanding the brood nest
- Pattern: BeBBeBBBeBB
  - (insert max of 3 F-Less frames at a time)
  - (only insert if there are enough bees to fill the space)
- Move side frames up
- Stop inserting frames ~2 weeks before the main flow

## **The Good**

- Full colony retention
- A colony expanding the brood nest will not swarm!
- **Process will STOP brood nest backfilling!**

## **The Bad**

- Foundationless occupies more young bees
- Foundationless Frame = new comb is usually drone comb in spring
- Foundationless require a level colony
- Requires one frame size
- No brood break

# Splitting Colonies

## Why?

- Expand your apiary or “Make Increase”
- Swarm Control
  - Make happy neighbors
- Save/make money
- Pathogen Control via Brood break (some splitting methods are better than others)



# When to Split?

- Spring Swarm Control
  - before the colony commits to swarming
  - year-to-year timing variability based on weather/nectar flows
- Interrupt a Committed Colony
  - when you find queen cells (not queen cups)
- After Honey Production Season
  - usually by the end of June (flow dependent) after the main flow
- Prophylactically
  - by mid-July at the latest to allow for colony recovery
  - to cause a brood break
- First Indications of Brood Disease
  - chalk brood
  - v. mite overload
  - k-wing or deformed Wing Virus

# Requirements for a Split

## 1. Shelter

- nucleus hive (nuc), standard gear, queen castle

## 2. Queen

- or the eggs/very young larvae to make a queen

## 3. Bees

- feeding queen larvae and thermal control
- manage bee drift or move new colony 2 miles for at least 3 days of good flying weather
- induce reorientation w/ obstructions (grass, branches)

## 4. Food

- nectar/sugar syrup and pollen

## 5. Mating Weather

- usually mid-may through 1<sup>st</sup> week of July

# Queen Rearing Timeline

- Day 1-3: An egg is an egg for 3 days
- Day 4: Eggs/young larvae selected for queenhood
- Day 4-9: Queen cells flooded with royal jelly
- Day 7-9: Queen cells capped. SWARM!
- Day 14-16: Virgin queen emergence. AFTER SWARMS!
- Day 21: Queen hardened off and first mating flight
- Day 25: First eggs?
- Day 42: Good broodnest development

# Basic Split Types

## Found the Queen?

### 50/50 Even Split

- Old queen and half of everything moved to new location
- 1 frame of eggs and the other half of everything stays with parent colony
- Additional box and frames on both colonies
- Feed as necessary

### 75/25 Nuc Split (queen moved or introduced)

- Old queen, 2 frames of food, 2 frames of capped brood, 1 empty frame (for the queen to lay up), sake in 2 frames of nurse bees
- Timing is Critical = swarm risk only slightly reduced or even increased in parent colony if done at the wrong time
- Feed as necessary

# Basic Split Types

(continued)

## Didn't Find the Queen?

### Walk-Away 50/50 Split

- Half of everything
- Be sure that there are eggs in both colonies
- Consider options for equalizing bee drift
- Check in ~5 days to see which boxes are making new queens. Risk of breaking queen cells at 7 days.

# Swarm Splitting

## Yes, I Found the Queen!

### 75/25 Nuc Split (queen moved)

- 25%
  - Old queen, 2 resource frames, 2 brood frames, 1 empty frame in nuc and shake in another 4 frames of bees in a new location (or apiary)
- 75%
  - 3 queen cells (max) and everything else left in parent colony

### Shook Swarm Split (queen moved)

- Capture old queen in queen clip and place on empty frames at new location
- Shake 50% to 75% of the bees into the nuc (because the foragers will fly back to the old location)
- Feed split (because of reduced foragers)

# Swarm Splitting (continued)

## No, I Didn't Find the Queen

### 50/25/25 Multi Nuc Split

- 25%x2 (all frames with queen cells)
  - 1 frame w/queen cells, honey/pollen, empty frames in nuc (or queen castle) and shake in 2 or 3 frames of bees
- 50% (parent colony)
  - Everything else + eggs and an empty box on top

Check in ~5 days to see which boxes are making new queens.

Risk that still might swarm.

Risk of breaking queen cells at 7 days.

# Flyback Split

## Mimicking a Swarm

- Timing: right before or when you find colony looking to swarm. Late morning on a flying day

## Parent Colony

- Move old hive somewhere else in the same apiary
- Return old queen and 2 frames of open brood & adhering new box with 8 undrawn frames and feed

## New Queenless Split

- Young bees, eggs, emerging brood
- No drifting problems
- Let them rear a queen, requeen, or provide a queen cell
- Feed



# Shook Swarm Split



Late in the  
afternoon



# Advanced Split Types

## **Cutdown Split**

Concept: Separate most of the bees from the open brood so they are freed from caring for brood and focus on foraging. If the timing is right, significantly more honey is produced, the parent colony gets a brood break and is requeened, and you get a second colony.

How and when?

- Strong hives only and single age brood frames.
- Timing is critical – ~2 weeks before nectar flow.
- Remove open brood, queen, honey, and pollen from parent colony and place in new location.
- Leave all the capped brood, a couple of frames of honey, and one frame with eggs at the old location.
- Ideally, the hive at the old location will have fewer brood boxes and more supers.

# Cutdown Split/Combine

Concept: Similar a standard Cutdown Split, but uses two colonies to combine forager forces.

How and when?

- Just after the main nectar flow (not late)
- Slide two colonies next to each other
- Follow Cutdown Split procedure for brood frame separation.
- Newspaper combine the parent colonies.
- Combining not recommended after August (queen rejection).
- Not recommended with committed to swarm colony as it will just swarm anyway (swarm impulse triggered).