

# **SWARM CONTROL & PREVENTION**

Brad Sumter  
Omaha Bee Club  
March 2020

## WHAT IS A SWARM?

- Natural way strong hives reproduce ensuring survivability and diversifying genetics
  - The queen and ~50-70% of the workers depart in search for a new home
  - New queens emerge from queen cells and either swarm or re-establish the colony
- Pros
  - Results in two (or more) honey bee colonies
  - Creates a brood break (results in natural reduction in Varroa mites)
  - Diversifies genetics as new queen mates with drones from other colonies
- Cons
  - For the beekeeper, a loss of bees and honey production or pollination services
  - Swarms can be a nuisance to nearby neighbors



Source(s):

DeBerry, Sara, Crowley, John, and Ellis, James D. "Swarm Control for Managed Beehives", University of Florida Institute of Food and Agricultural Sciences, July 2019.

## WHEN DOES A HIVE SWARM?

- Spring – just before & during honey flow; occasionally in Fall
- Under what conditions
  - Congestion (no room to expand); includes crowding due to bad weather
  - Lack of open cells for the queen to lay eggs
  - Increased availability of nectar and pollen
  - Lengthening daylight
  - Dilution of queen pheromones (difficulty detecting the queen mandibular pheromone)
  - Queen age
- Symptom/sign: When eggs are laid in queen cups and the cells are capped (swarm cells)

**Crowded conditions are a stronger driver than population size**

Source(s):

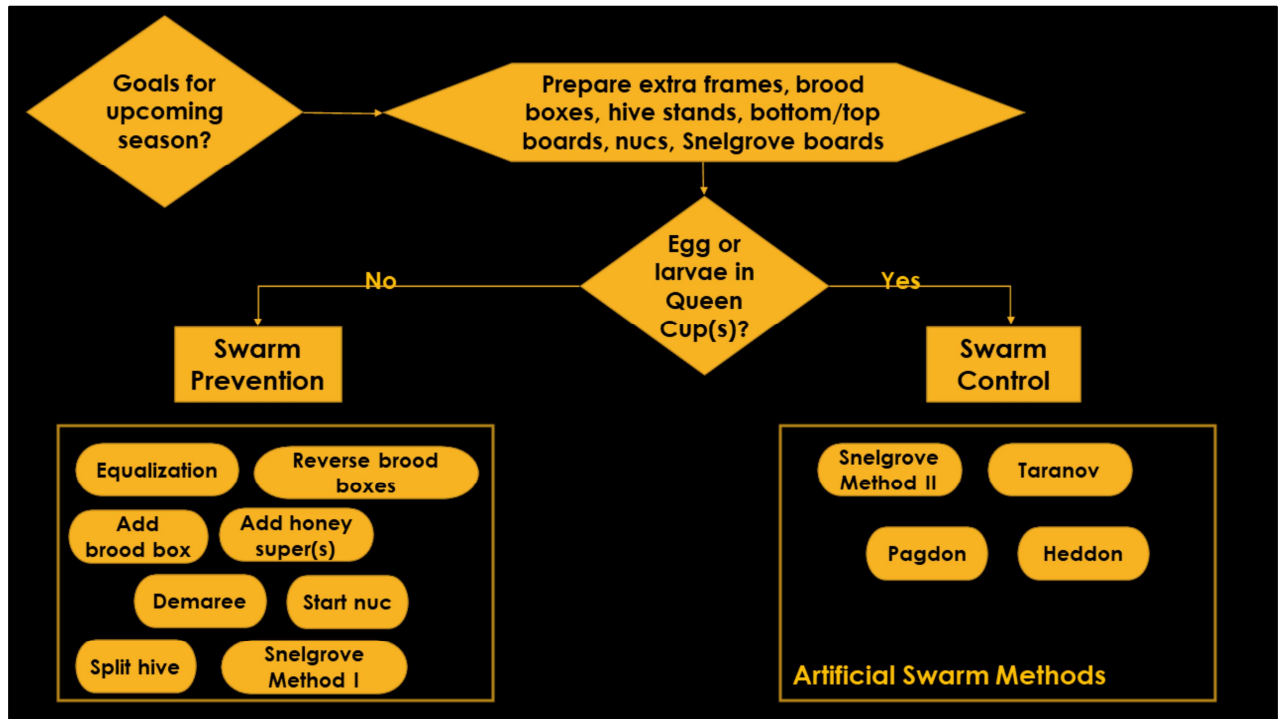
- DeBerry, Sara, Crowley, John, and Ellis, James D. "Swarm Control for Managed Beehives", University of Florida Institute of Food and Agricultural Sciences, July 2019. Available online at <https://edis.ifas.ufl.edu/pdffiles/IN/IN97000.pdf>.

- Shaw, Wally. "An Apiary Guide to Swarm Control", Welsh Beekeepers' Association. Available online at <http://www.wbka.com/wp-content/uploads/2015/02/Swarm-Control-Wally-Shaw.pdf>.

# SWARM CELLS

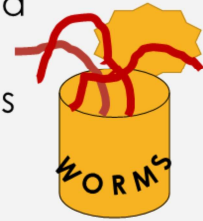


Photo Credit: Skagit Valley Beekeepers



## BEE BEHAVIOR

- Flying bees tend to return to location from which they are accustomed to flying
- Bee clusters (brood nests) in managed hives tend to move upward
- Swarms tend to take the queen and young bees to form the new colony. Older bees and some nurse bees are left in the original colony to tend the queen cells are re-establish the colony.
- Bees lacking queen pheromones will attempt to rear queens.



There are a number of bee behaviors the swarm prevention and control methods seek to take advantage of or otherwise address.

The “Can of Worms” symbol is used to represent ideas that may be open to debate among beekeepers, or that could require a length explanation if not accepted at face value as a fact.

# SWARM PREVENTION

Options prior to discovery of capped swarm cells

- Equalization
- Reversing brood boxes
- Add space
  - Add brood box
  - Add honey super(s)
- Demaree method
- Divide the hive
  - Build a “nuc” or split
- Snelgrove Method I – Modified

# SWARM PREVENTION

## Equalization

**Retards hives that are more advanced and more likely to swarm & provides room to grow**

- 1) Assess hives in an apiary
- 2) Move resources from stronger hives to weaker hives
  - Capped brood
  - Pollen
  - Honey
- 3) Move empty or weak frames and/or foundation to stronger hives

- See Bob Binney video on Equalization - [https://youtu.be/oAJ928fr\\_EM](https://youtu.be/oAJ928fr_EM)

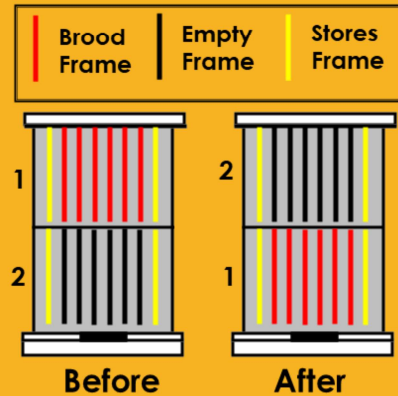


# SWARM PREVENTION

Reversing brood boxes

## Provides room for the brood nest to expand

- 1) When using multiple brood boxes determine if the the upper box is congested
- 2) If the top box is congested then move this box towards the bottom and move a box with open space above it



Diagrams stylized after "A Comparison of Honey Bee Swarm Techniques" by Atlantic Tech Transfer Team for Apiculture/Perennia and "An Apiary Guide to Swarm Control" by Wally Shaw

Source(s):

- Burlew, Rusty, "Reversing Brood Boxes: When and Why", HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/reversing-brood-boxes-when-and-why/>.
- Burlew, Rusty, "Reversing Brood Boxes: Is it Necessary?", HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/reversing-brood-boxes-is-it-necessary/>.
- Wally Shaw does a good job of explaining when to reverse brood boxes and when not to in "An Apiary Guide to Swarm Control" at <http://www.wbka.com/wp-content/uploads/2015/02/Swarm-Control-Wally-Shaw.pdf>

# SWARM PREVENTION

Reversing brood boxes

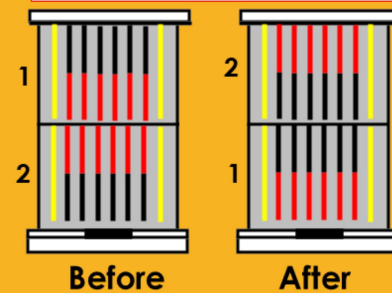


## Debate among beekeepers on where is the best place for the expansion space.

- Space below the cluster is never used for “permanent” storage
- Natural hives must eventually use the space below the cluster
  - How does this impact swarming?
- Goal of **management** is to avoid swarming behavior



**Avoid this scenario.**



Diagrams stylized after “A Comparison of Honey Bee Swarm Techniques” by Atlantic Tech Transfer Team for Apiculture/Perennia and “An Apiary Guide to Swarm Control” by Wally Shaw

Source(s):

- Burlew, Rusty, “Reversing Brood Boxes: When and Why”, HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/reversing-brood-boxes-when-and-why/>.
- Burlew, Rusty, “Reversing Brood Boxes: Is it Necessary?”, HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/reversing-brood-boxes-is-it-necessary/>.
- Wally Shaw does a good job of explaining when to reverse brood boxes and when not to in “An Apiary Guide to Swarm Control” at <http://www.wbka.com/wp-content/uploads/2015/02/Swarm-Control-Wally-Shaw.pdf>

The “Can of Worms” symbol is used to represent ideas that may be open to debate among beekeepers, or that could require a length explanation if not accepted at face value as a fact.

# SWARM PREVENTION

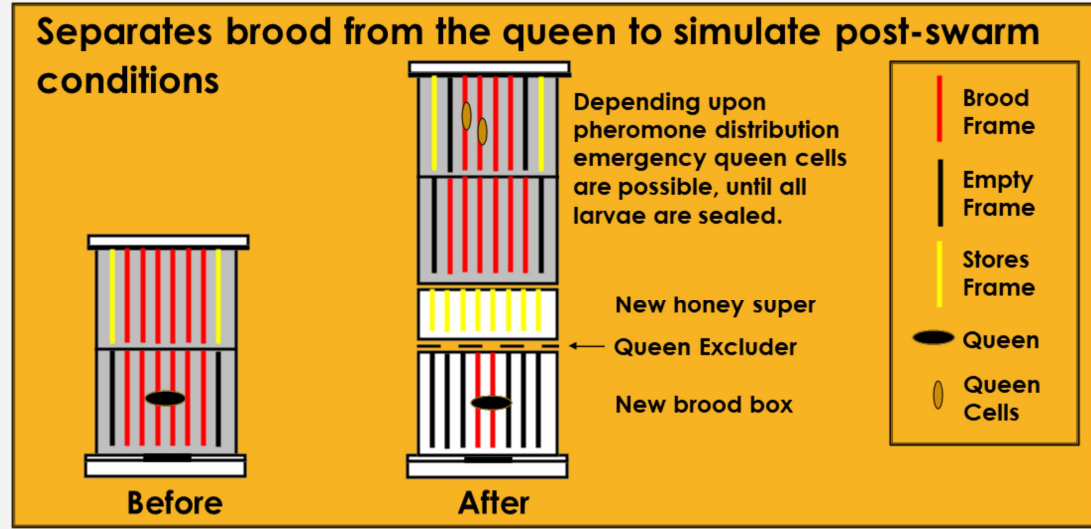
Add space (add brood box and/or honey super(s))

**Provides additional space to expand & develop hive; keeps bees focused on other activities**

- 1) If brood box(es) are crowded, adding another brood box provides more space for the queen to lay
- 2) If the hive is honey bound, adding a honey super provides additional storage space
  - Nectar processing requires extra space (honey is only a fraction of the nectar brought into the hive)

# SWARM PREVENTION

Demaree method



Diagrams stylized after "A Comparison of Honey Bee Swarm Techniques" by Atlantic Tech Transfer Team for Apiculture/Perennia and "An Apiary Guide to Swarm Control" by Wally

Source(s):

- Shaw, Wally, "An Apiary Guide to Swarm Control", Welsh Beekeeping Association.

Available online at <http://www.wbka.com/wp-content/uploads/2015/02/Swarm-Control-Wally-Shaw.pdf>.

# SWARM PREVENTION

## Demaree method

- Brood at the top of the hive attracts nurse bees and relieves congestion in the bottom box and reduces the impulse to swarm
- As brood emerges from frames at the top box, exchange these frames with new brood frames from the bottom box to create a frame circulation system
- Frames left at the top for too long may be filled with nectar and later capped honey; this may cause a problem during honey harvest



Diagrams stylized after “A Comparison of Honey Bee Swarm Techniques” by Atlantic Tech Transfer Team for Apiculture/Perennia and “An Apiary Guide to Swarm Control” by Wally Shaw

### Source(s):

- Shaw, Wally, "An Apiary Guide to Swarm Control", Welsh Beekeeping Association. Available online at <http://www.wbka.com/wp-content/uploads/2015/02/Swarm-Control-Wally-Shaw.pdf>.

The “Can of Worms” symbol is used to represent ideas that may be open to debate among beekeepers, or that could require a length explanation if not accepted at face value as a fact.

# SWARM PREVENTION

Build a “nuc” or a split

## **Remove frames from main hive to relieve congestion**

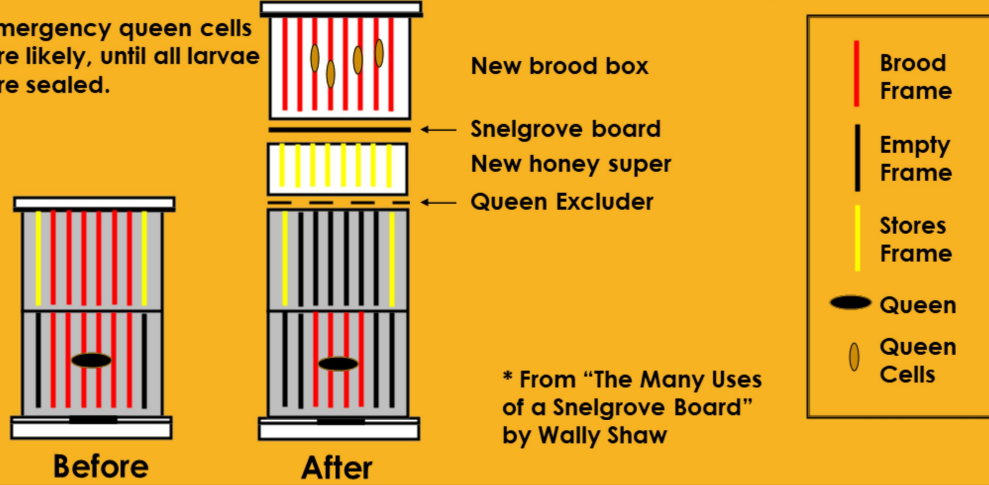
- 1) Transfer frames from hive(s) to nucleus box/hive body
  - Use brood (include eggs & larvae for emergency queens) and resource (pollen & nectar) frames
  - Add feeders, drawn comb, and/or foundation to complete
- 2) Replace the removed frames with drawn comb or foundation (diverts bees' attention to wax making)
- 3) Select queening method for the new division
  - Allow the bees to build an emergency queen
  - Insert a swarm cell
  - Install a mated queen

# SWARM PREVENTION

Build a split – Snelgrove Method I (Modified)\*

## Remove frames from main hive to relieve congestion

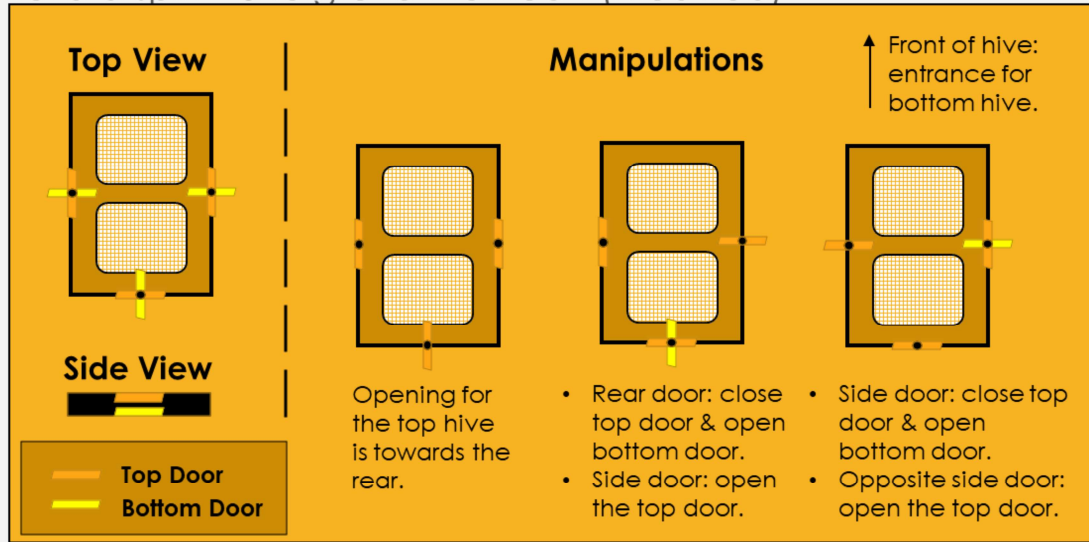
Emergency queen cells are likely, until all larvae are sealed.



Diagrams stylized after "A Comparison of Honey Bee Swarm Techniques" by Atlantic Tech Transfer Team for Apiculture/Perennia and "An Apiary Guide to Swarm Control" by Wally Shaw

# SWARM PREVENTION

Build a split – Snelgrove Method I (Modified)\*





# RECOMBINES

- If increase is not desired, hives can be recombined
  - At the end of the honey flow
  - Create a super colony with lots of foragers for the honey flow
- Provides an opportunity to re-queen by replacing older/weaker queens
- Newspaper Method
  - Stack one colony above the other
  - Separate the colonies with newspaper
- Snelgrove Board Method
  - Stack one colony above the other
  - Separate the colonies with the Snelgrove Board (if not already done)
  - Shared scent allows the hive to be directly combined when ready

## **OTHER SWARM PREVENTION IDEAS (NOT PREFERRED)**

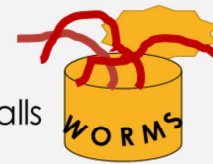
Other Ideas:

- Re-queening
  - May solve problems related to pheromone dilution as young queens may produce more pheromone
  - May be difficult early in the season if local queens are not available (otherwise it can be expensive)
- Swap colony positions with the apiary
  - Moving a weak hive to the location of a strong hive will cause foraging bees from the strong hive to return to the newly placed weak hive and enter there

## OTHER SWARM PREVENTION IDEAS (NOT PREFERRED)

Other Ideas:

- Checkerboarding
  - Alternating empty brood frames in the honey stores above the cluster
  - Providing nectar storage here relieves storage space pressure on the brood nest
- Clipping a queen wing
  - Does NOT reduce impulse to swarm
  - May result in loss of queen that exits hive and falls to the ground unable to fly or return



Checkerboarding –

Source(s):

- Wright, Walt, “Swarm Preventative Alternative – Checkerboarding: Results and Conclusions”, American Bee Journal, November 1996. Available online at <https://beesource.com/point-of-view/walt-wright/swarm-prevention-alternative-checkerboarding-results-and-conclusions/>.
- Burlew, Rusty, “How to Checkerboard a Hive”, HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/how-to-checkerboard-a-hive/>.

The “Can of Worms” symbol is used to represent ideas that may be open to debate among beekeepers, or that could require a length explanation if not accepted at face value as a fact.

## SWARM CONTROL

Aggressive actions required after discovery of swarm cells

- It is difficult to stop a hive from swarming once swarm cells have been completed
  - Destroying these queen cells will only delay the swarm
  - Additionally, it can be very difficult to find **ALL** the cells
- Artificial swarm methods attempt to convince the colony that it has already swarmed
- Snelgrove and Taranov methods are described here
  - Other methods such as the Pagdon and Heddon methods are not described here as they are not as successful in preventing swarming

# **SWARM CONTROL**

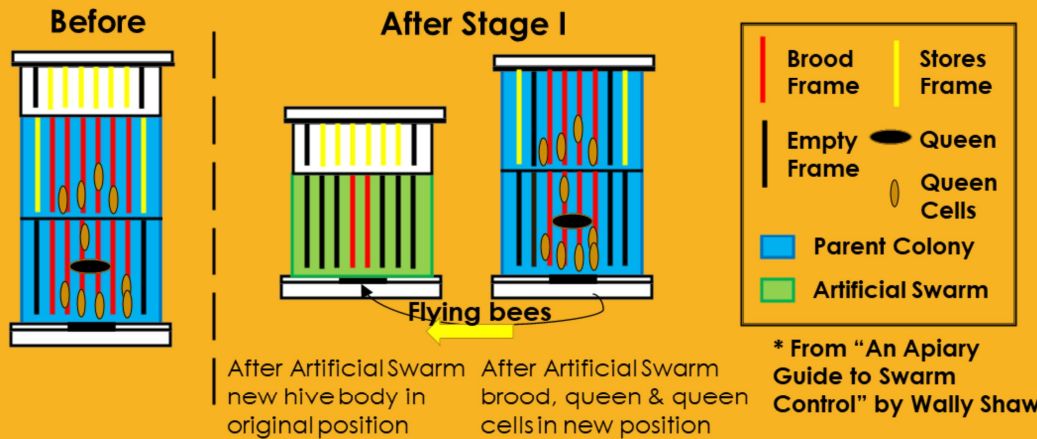
Options prior to discovery of capped swarm cells

- Snelgrove Method II – Modified
- Taranov Method
- Heddon & Pagdon methods are not covered here

# SWARM CONTROL

Snelgrove Method II (Modified)\*

- Two stage process (with or without a division board)



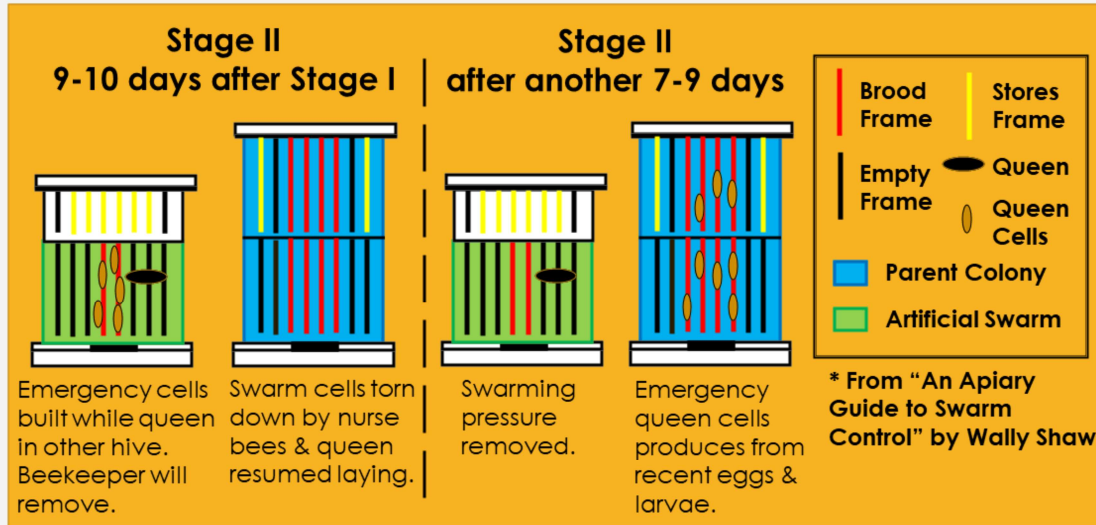
Diagrams stylized after "A Comparison of Honey Bee Swarm Techniques" by Atlantic Tech Transfer Team for Apiculture/Perennia and "An Apiary Guide to Swarm Control" by Wally Shaw

Source(s):

- Wally Shaw does a good job of explaining when to reverse brood boxes and when not to in "An Apiary Guide to Swarm Control" at <http://www.wbka.com/wp-content/uploads/2015/02/Swarm-Control-Wally-Shaw.pdf>

# SWARM CONTROL

Snelgrove Method II (Modified)\*



Diagrams stylized after "A Comparison of Honey Bee Swarm Techniques" by Atlantic Tech Transfer Team for Apiculture/Perennia and "An Apiary Guide to Swarm Control" by Wally Shaw

Source(s):

- Wally Shaw does a good job of explaining when to reverse brood boxes and when not to in "An Apiary Guide to Swarm Control" at <http://www.wbka.com/wp-content/uploads/2015/02/Swarm-Control-Wally-Shaw.pdf>

# SWARM CONTROL

## Taranov Method

- 1) Place a ramp over an empty hive body containing drawn comb and/or foundation
- 2) Place a large piece of fabric over the ramp
- 3) The ramp should face the sun and the empty hive body should be in the shade of the ramp
- 4) Shake or brush the bees from all of the combs onto the fabric and place the cleared frames back into boxes in the original hive location
  - The field bee return to the original location with the swarm cells
  - The queen and nurse bees end up in the new box

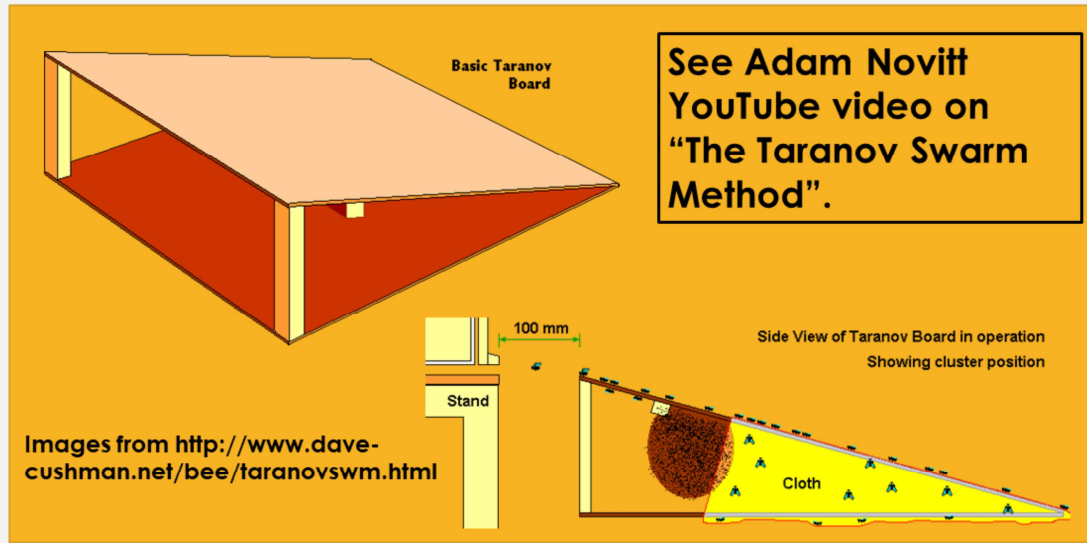
### Sources:

- Novitt, Adam. "The Taranov Swarm Method", Massachusetts Beekeepers Association, 21 June 2014. Available online at <https://www.youtube.com/watch?v=ETgWMMZr4So>.
- Burlew, Rusty. "How to Prevent Swarming with a Taranov board", HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/how-to-prevent-swarming-with-a-taranov-board/>.



# SWARM CONTROL

## Taranov Method



### Sources:

- Novitt, Adam. "The Taranov Swarm Method", Massachusetts Beekeepers Association, 21 June 2014. Available online at <https://www.youtube.com/watch?v=ETgWMMZr4So>.
- Burlew, Rusty. "How to Prevent Swarming with a Taranov board", HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/how-to-prevent-swarming-with-a-taranov-board/>.
- Images from <http://www.dave-cushman.net/bee/taranovswm.html>

## USING QUEEN CELLS

- Several of the described methods may deal with or result in queen cells
- When queen cells are not needed for the present operation extras can be used for many other purposes
  - Add a queen cell to a queenless colony
  - Queen cells or frames with queen cells can be used to start a nucleus box
    - A resulting mated queen can be used to re-queen a colony with an old or failing queen
    - Use the nuc to start a hive
    - Overwinter the nuc

<http://www.dave-cushman.net/bee/emergencycells.html>

# QUEEN CELLS QUALITY

- Swarm Cells

- Built under the best conditions; entire hive is cooperating
  - Workers build queen cups in optimal positions
  - Queen lays egg in the queen cups
  - Workers properly feed future queens from the very beginning
- Swarming is natural, but is swarming behavior being selected?

- Emergency Cells

- Onus on workers to promote the best candidates for queens
- Workers must build out queen cells around larvae previously started in standard comb cells
- Feeding of royal jelly may not be optimal during early stages
- May produce queens with fewer ovarioles or with worker traits



- Patterson, Roger. "Emergency Queen Cells: Are They as Bad as They are Made Out to Be?", Dave Cushman's Beekeeping Website. Available online at <http://www.dave-cushman.net/bee/emergencycells.html>.

The "Can of Worms" symbol is used to represent ideas that may be open to debate among beekeepers, or that could require a length explanation if not accepted at face value as a fact.

# SWARM RECOVERY

## Bait Boxes

- If a swarm is issued, it may be enticed to enter a nearby bait box
- Bait boxes
  - Should be placed near the apiary
  - Be approximately the size of a Langstroth deep (~40L)
  - Be place approximately 15 feet above the ground
  - Entrance area: 1.5-2.5 square inches (10-15 cm<sup>2</sup>)
  - Include frames with starter strips
  - Add a lure of lemon grass oil or commercial product

### Sources:

- Ostrofsky, Morris. "Get Your Bait Hives Ready!", Bee Culture, 16 February 2017. Available online at <https://www.beeeculture.com/get-bait-hives-ready/>.
- Seeley, Thomas D.; Morse, Roger A.; and Nowogrodzki, Richard, "Bait Hives for Honey Bees", Cornell Cooperative Extension Publication, Information Bulletin Number 187, October 1989. Available online at <https://ecommons.cornell.edu/bitstream/handle/1813/2653/Bait%20Hives%20for%20Honey%20Bees.pdf>.

## **OTHER OPINIONS**

**“At Buckfast we endeavour, so far as is possible, to respect the inviolableness of the mainspring of the life of a colony, namely, the brood-nest. The ‘spreading of brood’, the removal of pollen-clogged combs to hasten the spring build-up, stimulative feeding, every unnecessary examination and disturbance are strictly banned and have no place in our management.”**

**- Brother Adam**

**Beekeeping at Buckfast Abbey**

- Brother Adam, “Beekeeping at Buckfast Abbey”, 4th edition, Northern Bee Books, 1987.

## REFERENCES

- "A Comparison of Honey Bee Swarm Prevention Techniques", Atlantic Tech Transfer Team for Apiculture, November 2016. Available online at <https://www.perennia.ca/wp-content/uploads/2018/04/08-swarm-prevention.pdf>.
- Binney, Bob. "Equalizing Honey Bee Colonies for Swarm Control and Increased Honey Production", YouTube video from Bob Binney at Blue Ridge Honey Company, 14 March 2020. Available online at [https://youtu.be/oAJ928fr\\_EM](https://youtu.be/oAJ928fr_EM).
- Brother Adam, "Beekeeping at Buckfast Abbey", 4th edition, Northern Bee Books, 1987.
- Burlew, Rusty, "How to Checkerboard a Hive", HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/how-to-checkerboard-a-hive/>.
- Burlew, Rusty. "How to Prevent Swarming with a Taranov board", HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/how-to-prevent-swarming-with-a-taranov-board/>.

## REFERENCES

- Burlew, Rusty, "Reversing Brood Boxes: When and Why", HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/reversing-brood-boxes-when-and-why/>.
- Burlew, Rusty, "Reversing Brood Boxes: Is it Necessary?", HoneyBeeSuite. Available online at <https://www.honeybeesuite.com/reversing-brood-boxes-is-it-necessary/>.
- DeBerry, Sara, Crowley, John, and Ellis, James D. "Swarm Control for Managed Beehives", University of Florida Institute of Food and Agricultural Sciences, July 2019. Available online at <https://edis.ifas.ufl.edu/pdffiles/IN/IN97000.pdf>.
- Ostrofsky, Morris. "Get Your Bait Hives Ready!", Bee Culture, 16 February 2017. Available online at <https://www.bee-culture.com/get-bait-hives-ready/>.
- Novitt, Adam. "The Taranov Swarm Method", Massachusetts Beekeepers Association, 21 June 2014. Available online at <https://www.youtube.com/watch?v=ETgWMMZr4So>.

## REFERENCES

- Patterson, Roger. "Emergency Queen Cells: Are They as Bad as They are Made Out to Be?", Dave Cushman's Beekeeping Website. Available online at <http://www.dave-cushman.net/bee/emergencycells.html>.
- Seeley, Thomas D.; Morse, Roger A.; and Nowogrodzki, Richard, "Bait Hives for Honey Bees", Cornell Cooperative Extension Publication, Information Bulletin Number 187, October 1989. Available online at <https://ecommons.cornell.edu/bitstream/handle/1813/2653/Bait%20Hives%20for%20Honey%20Bees.pdf>.
- Shaw, Wally. "An Apiary Guide to Swarm Control", Welsh Beekeepers' Association. Available online at <http://www.wbka.com/wp-content/uploads/2015/02/Swarm-Control-Wally-Shaw.pdf>.
- Shaw, Wally. "The Many Uses of a Snelgrove Board", Welsh Beekeepers' Association. Available online at <http://www.wbka.com/wp-content/uploads/2015/02/a018themanylesofasnelgroveboard.pdf>.
- Snelgrove, L.E. Swarming: Its Control and Prevention.



## REFERENCES

- "Swarming – Control", Mid-Atlantic Apicultural Research & Extension Consortium, February 2000. Available online at [https://agdev.anr.udel.edu/maarec/wp-content/uploads/2010/03/Swarm\\_Prev\\_Control\\_PM.pdf](https://agdev.anr.udel.edu/maarec/wp-content/uploads/2010/03/Swarm_Prev_Control_PM.pdf).
- Wright, Walt, "Swarm Preventative Alternative – Checkerboarding: Results and Conclusions", American Bee Journal, November 1996. Available online at <https://beesource.com/point-of-view/walt-wright/swarm-prevention-alternative-checkerboarding-results-and-conclusions/>.