Nucs and Splits

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What is a Split? What is a Nuc?

- A split is any size division of a full size hive. It may or may not start out queenright, but is intended to eventually be queenright.
- A nuc is a small split, usually less than ten frames.
- Splits can be made for increasing colony numbers, for swarm control, for sale, or as a reservoir of resources.

Types of Splits

- There are many different techniques for splitting hives, and some of them have fancy names or techniques. The biggest differences are:
  - Are you splitting the colony resources into two approximately equal halves or are you making multiple smaller splits (nucs)?
  - Are you giving the queenless divisions a new mated queen or are you letting the bees raise their own queen(s)?

Walk-Away Splits

- This is the simplest of splits. Just divide the colony resources in two so each half has about the same amount of brood, honey, and pollen.
- You can then just “walk away,” leaving both splits in the same yard to sort themselves out.
  - Queenless half will make a new queen. Check for eggs in a month.
  - Foragers will return to split that stays on the original hive stand.
- A better way is to find the queen and take the queenright half to another yard so they retain the foragers.
  - This is a simulated swarm. The queenless half raises a new queen and is unlikely to swarm.

Splitting a Colony with Swarm Cells

- If you have a hive with capped queen cells, you're ahead of the game because swarm cells make excellent queens.
- Take the split with the queen to another yard.
- Remove all but two large queen cells from the queenless half.
- Check for eggs in 2-3 weeks.

You've just stopped that colony from doing this!

You Can Use Swarm Cells to Requeen Other Hives or Make Nucs

- Queen cells produced under the swarming impulse are usually of excellent quality because they receive the best nutrition.
- You can use them to replace aging queens or make nucs.
- Be very careful handling cells! Wing buds develop Day 13-15. Jostle the cell then and the queen will never fly!

Queen cell protectors make it easy to use swarm cells. If you don't have any, be sure to dig out a good bit of wax with the cell so you don't damage the young queen. *Or, just take the whole frame!*

General Guidelines for Making Splits

- Only split strong colonies and don't make the splits too weak.
- Arrange resources in a split in the same way the bees do in nature: honey in the outer frames, pollen further in, brood next to pollen.
- Be aware of the foragers. If you don't take the split to another location, the foragers will return to the original hive.
- The best, most successful splits are made during the prime nectar flows.

My Favorite type of Splits: Nucs

Most Serious Beekeepers keep 10-20% of their Colonies as Nucs

Nucs are the Basis of a Sustainable Apiary

- Raising your own nucs, using either your own queens or queens sourced locally, means that you will never need to buy packages or nucs produced in the south.
- Not only will you save money, but your replacement colonies will be perfectly adapted to your area.

Why Raise Your Own Nucs?

- To requeen colonies
- To bolster weak colonies
- For swarm control
- As mating nucs in queen rearing
- To replace winter dead-outs early and cheaply
- To increase your colony numbers
- To sell

A Nuc Produces and Stores

RESOURCES

- Queens
- Brood
- Nurse bees
- Honey
- Pollen
- **THESE ARE ALL RESOURCES THAT CAN BE USED WHENEVER AND WHEREVER YOU NEED THEM.**

Requeen with a Nuc

- Use a nuc to replace a bad queen or fix a hive that is queenless (but not hopelessly* so) by putting the entire nuc, frame-by-frame, into the brood nest of the problem hive. If you have a good nectar flow, there is no need to cage the queen.
- This is by far the most reliable way to requeen.
- As most colonies with queen problems are weak, it also serves to bring the colony's strength back up to par.

* Hopelessly queenless is a term that refers to a colony with laying workers.

Make a Weak Colony into a Honey Producer

- Use your nucs as a bee production factories, harvesting frames of bees and brood to bolster production colonies during the honey flow.

Swarm Control Nucs

- Use your nucs in swarm management EARLY in the season by taking brood and bees from very large colonies to make up your store of nucs for the season. This reduces congestion and the likelihood of swarms.

Mating Nucs

- Use queenless nucs as mating nucs in your own queen rearing operation.
- You know you want to do this!
- Graft from your own best colonies and raise queens perfectly adapted to your area.
- Or, harvest swarm cells and let them hatch in a nuc.

Using Nucs to Make Nucs

- You can create queenless mating nucs from your supply of queenright nucs by adding a box early, letting the bees populate the second box, and pulling that box (without the queen) to use as a mating nuc.
- This method will *not* decrease your honey production, which could happen if making nucs from production hives.

Replace Winter Losses with your own Nucs

- Keep the nuc with its young vigorous queen, give them a second story, and let them build up their numbers and food stores. Winter them and use them to replace winter losses the following spring.

Components of a Five Frame Nuc

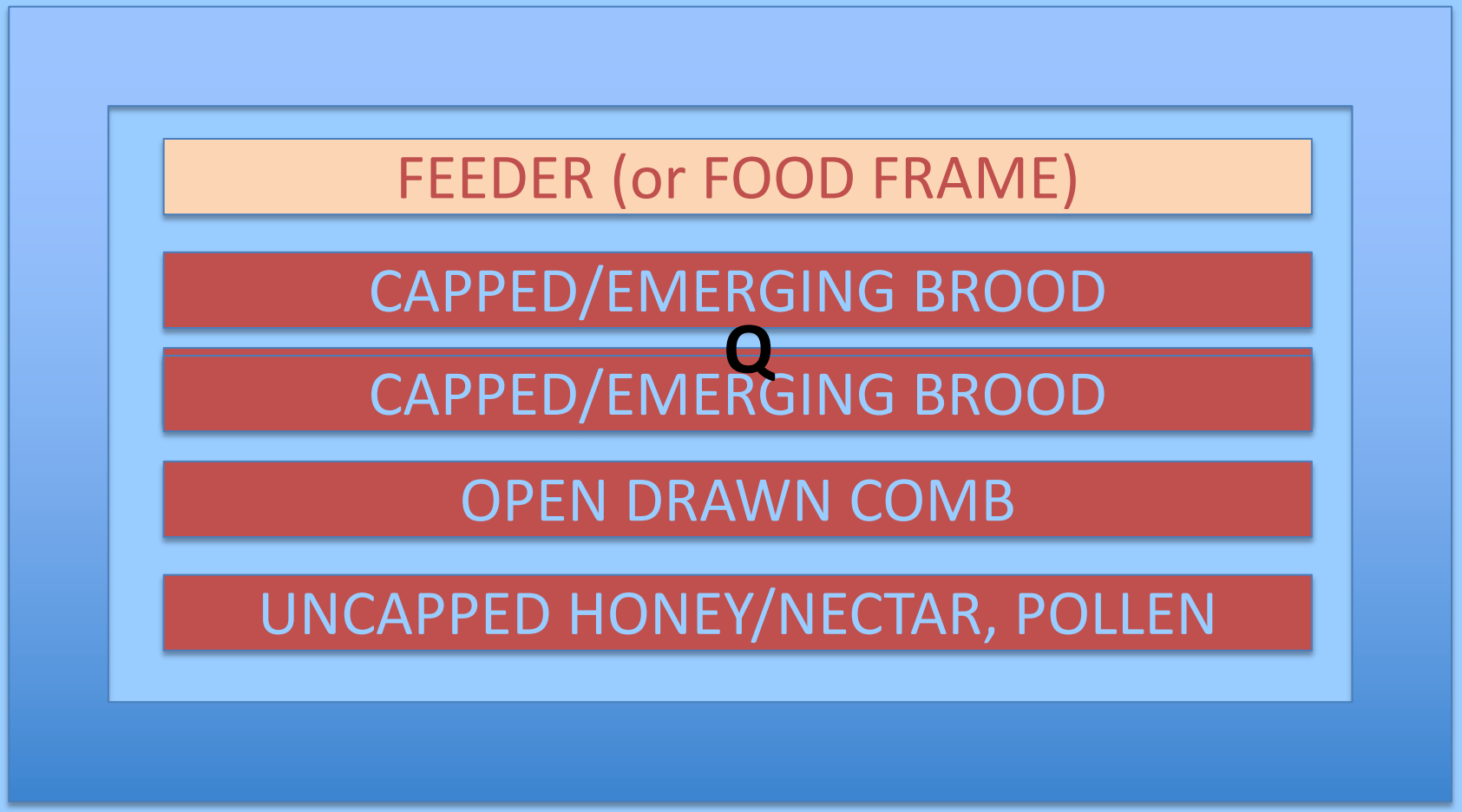
- Capped and emerging brood with young nurse bees:
  - *Two to three frames*
- Eggs and very young “milk” brood with nurse bees:
  - *None to one frame*.
- Food: Nectar/uncapped honey and pollen:
  - *One to two frames*
- Drawn mostly empty comb
  - *None to one frame*
- Frame (division board) feeder or an additional frame of food
  - *None to one frame*

When to Make Nucs?

Timing is Critical!

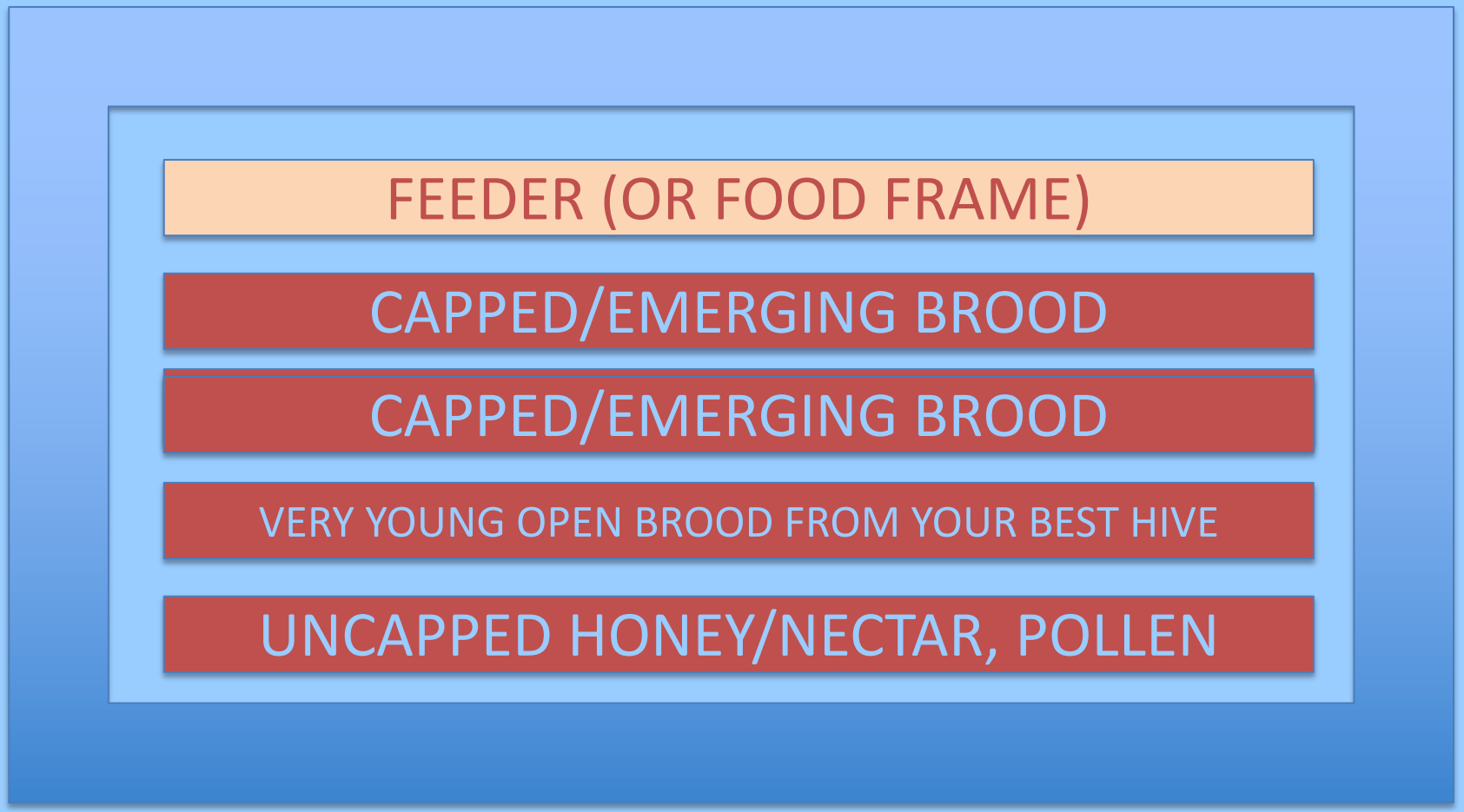
- For colony build-up/winter loss replacement:
  - Near the end of the major nectar flows to overwinter and use the following spring (less impact on honey production)
- For swarm control
  - 3 to 4 weeks before the major nectar flows and again during the flows
- For queen production or storage of replacement queens
  - During the major nectar flows and into early summer

Positioning of Frames: Nuc with Caged Queen or Queen Cell



Add pollen patty (if needed) to nuc and relocate to another apiary at least a mile away. Why?

Positioning of frames: Nuc without Queen OR Queen Cell



Add pollen patty (if needed) to nuc and relocate to another apiary at least a mile away. Constant good nutrition is critical! Shake extra nurse bees in if possible.

Move Newly Pulled Nucs to a Different Apiary or all your Bees will Leave!

It is unnecessary to close up nucs when moving them. The bees in the small colonies will stay in the box.

Nucs Raising a Queen

- Good nutrition is critical for first rate queens:
  - A large supply of very young, very well-fed nurse bees
  - A constant source of food, especially a *variety* of natural pollen or a good pollen substitute
- In commercial queen production, queen cells are created by very large, well-fed colonies and not transferred to nucs to mate until the queens are within a day or two of emerging.
- BUT, under ideal conditions during peak flows, a strong nuc can make its own good queen.

Nuc Raising a Queen

- Beekeeper must make up for the nuc's inherent deficiencies by:
  - Shaking in several frames of young bees from frames of open and newly capped brood
  - Making sure the nuc never runs out of food and, especially, pollen or pollen substitute. Adding a second box of nectar and pollen frames is good insurance. Feeding sugar syrup in dearth is essential.
- Best success occurs during peak nectar flows when weather and food are optimal.

When Do You Check the Nuc?

- Caged Queen:
  - 3 to 5 days
- Mature Queen cell:
  - 2 weeks
- Raising their own Queen:
  - 3 weeks should have virgin, may have mated queen
  - 4 weeks should have mated queen

Wintering Nucs

Building Up the Nucs

- Add a second story early on – during the nectar flow, if possible. Foundation is okay as long as they have enough time to draw it out and fill it with honey.
- If you must feed nucs during a dearth, try to keep them all in a yard separate from your production colonies. Barrel feeding in dearth is best, but ONLY if you have a suitable location.
- You want at least 7 to 8 medium frames covered in bees plus good stores in a 2 story nuc to winter successfully. The top box should be all honey.

Nucs in Summer

Wrapping Nucs for Winter

These are three story nucs, but you can also winter two story nucs.

Wrapping Nucs for Winter

- Wrap two nucs together.
- Entrances should face in opposite directions.
- Butt the supers right up against each other.
- The bees will cluster against the shared double wall, so the cluster is effectively twice as big.
- Notice you CANNOT use telescoping outer covers.

Wrapping Nucs for Winter

- New and wonderful uses for bubble wrap!

Wrapping Nucs for Winter

- Bottom nuc box is bees, brood, and food
- Top nuc box is capped honey.
- Cloth inner cover (burlap feed bags work or painters canvas cloth) has hole in middle AND hole for upper entrance
- Bilt-Rite or homasote moisture board above inner cover with hole for winter upper entrance/exit.
- Prop up outer cover with a small stick or rock. Upper surface of moisture board must be exposed for metabolic moisture to evaporate. This also keeps the upper exit clear.

Upper Entrance Very Important

Note hardware cloth mouse guard at lower entrance

Wrapping It All Up

15# roofing paper stapled around bubble wrap and PARTLY over top finishes the package
Winter nucs on pallets or 2 x 4's to keep them elevated off the ground..

Problems with Nucs: Swarming

- You have just given a colony of bees a vigorous young queen and stuffed them into a little tiny box. What do you think is going to happen??!!

Problems with Nucs: Robbing

Robbing

- Robbing can be an extremely serious problem, especially when it is necessary to feed nucs to build them up during a time of dearth.
- Reducing entrances is not always effective because the small colonies do not have enough bees to defend themselves against big, strong production colonies. Even robbing screens may not work.
- Best answer is to isolate nucs to their own yard and barrel feed them from a source at least several hundred feet away. However, this CANNOT be done in populated areas.
- If you can't barrel feed, be sure to feed ALL hives in an apiary, not just those that need it. And don't let the big ones run out of food before the nucs!

Barrel (Open) Feeding

- This is a very effective way to feed bees but can only be done in more rural areas, as there are tens of thousands of bees in the area. Open feeding in urban or suburban locales can cause major problems and is NOT recommended.

Basics of Open Feeding

- MUST have a suitable location, well away from areas trafficked by people.
- Feeding station should be about 100 yards from the beeyard. If there is a physical barrier (trees, building), you can reduce this distance. If it is too close, it can create robbing.
- Bees regard correctly sited feeders as a *nectar source*, and do not rob.
- Open feeders require more sugar as your neighbors' bees, wasps, hornets, and other opportunists will also feed.

An Experiment that Didn’t Work: Robber Guards

These devices ended up killing more nucleus colonies than they saved because dead bees blocked the lower entrance and the bees were trapped inside.

Problems with Nucs: Varroa

- Varroa mites have become increasingly virulent.
- Nucs pulled from colonies that have been recently treated for mites probably do not need treating, especially if they raise their own queen or get a queen cell.
- Other nucs should be treated but at a lower dose. A full dose of some miticides can kill a nuc.

Problems with Nucs: SHB

- A nuc is, by definition, a weak colony
- SHB does not seem to be a major problem in the north for nucs that are at least 5 medium frames strong. Weaker nucs such as mini or baby mating nucs are vulnerable to SHB.

Problems with nucs: Thermoregulation

- Mating nucs that receive queen cells must have a certain minimum strength to keep the cells at the right temperature, especially in summer.
- Queen cells are especially vulnerable to overheating.
- Sometimes bees *leave* a nuc to join other nucs or production colonies, abandoning brood and/or caged queens or cells.

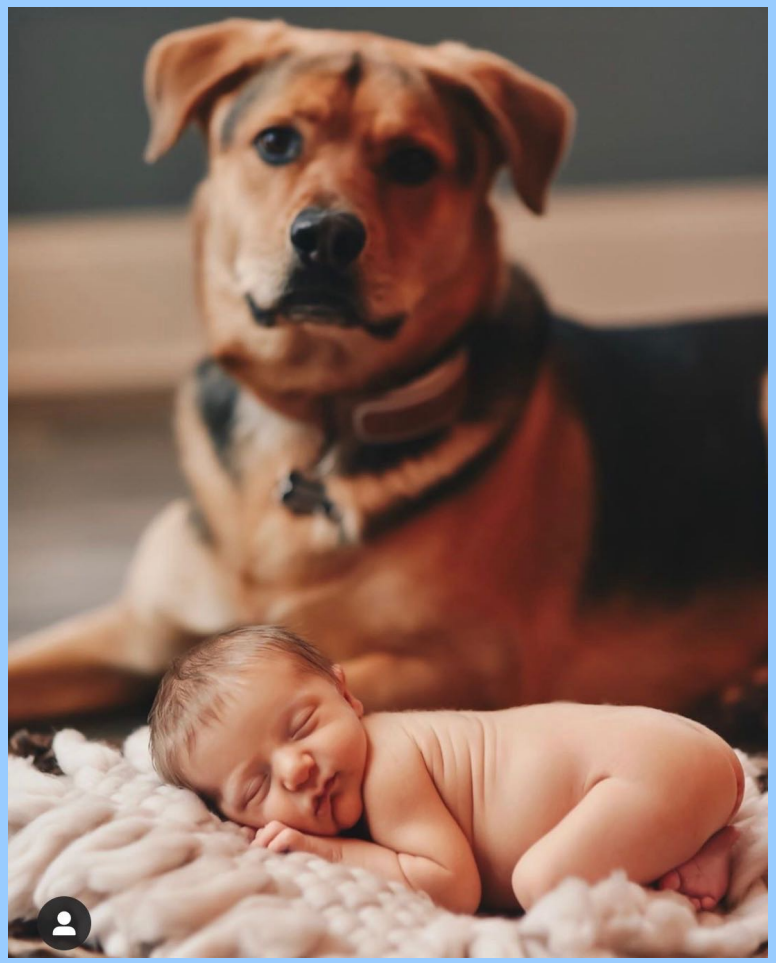
Nuc Problems Tend to be Self-Correcting

- If the nuc has not been made up properly, does not have enough bees, or has a bum for a queen, it will probably die before winter.
- If you cannot feed it enough or make some other mistake, it will not survive the winter.
- Any nuc that makes it to spring is a good nuc!

A Word of Caution

- Even a hobbyist beekeeper with 2 or 3 hives in their backyard can benefit from keeping a nuc in reserve.
- BUT….remember that every frame of bees and brood you take from your full size colonies to make a nuc weakens that colony. More nucs means less honey! Timing is very important.
- Find the right *balance* in your operation between nucs and production colonies.

I’d like to thank my generous assistants for all their help in preparing this talk….



And my son for getting the coolest tattoo ever….