Apis m. Esoteria 39

Life in the Colony (social not Scientific)

Life in the Honeybee colony may not be organized along the lines that we think of. Check your anatomy class to visually identify the differences between queen, drone, worker

First off, the queen is not in charge. However, no other bee has the nerve to tell her what to do. This causes the beekeeper concerns. We expect her to do things in a certain place in the colony and go inspecting for her and she isn't doing "it", where we think she should be.

Her job is to lay eggs in a nice orderly pattern in large numbers. Her temperament sets the tone for the workers. Are they industrious, do they collect a lot of honey, are they hygienic?

Queen birth life cycle zzzzzzzzzzzzzzzzzzzzz

Day 1 egg (normal female egg)

Day4 after egg laying fed royal jelly (high protein diet) for 11 consecutive days.

Day 11 larva capped

Day 16 emerges as a virgin queen (trumpets inside cell as she eats her way through capping

Day 25 goes on mating flight (had to strengthen muscles, get oriented, and start hormone flow (mating could take 3-5 da depending on weather and number of drones in "drone congregation alley". The queen will fly 3 miles from her colony, the drones only 2 miles. This keeps her from mating with next of kin. She will mate with up to 20 males before returning to hive. Never to fly again until she swarms.

Now the worker bees are all sterile females (as it should bee). They are all industrious if they are not sick with some virous, bacteria, or fungi.

The worker bees change jobs based on their age and additional strength as they mature. They are "in-hive" bees until they are about 12 days old after emerging from capped cell (cocoon). Then they start practicing flying around the hive (getting stronger and oriented).

Day 1 egg lay

Day 4 after egg laying hatch into larvae (fed royal jelly 1 day)

Day 16 larvae capped (fed bee bread since day 2)

Day 21 emerge from cell clean their birth cell (grow more slowly on lower protein bee bread diet)

Day 22-29 house cleaners (as their muscles develop)

Some garbage collectors (someone must collect the broken antennae)

some mortuary bees (Someone must remove the aged out dead foragers and hygienically removed sick larvae)

day 29- 32 nurse bees, feed the larvae and spread the Queen Mandibular Pheromone around the inside of the hive (this keeps the colony "together").

Some of the workers take turns in the queen's "retinue" (feeding her, grooming her, and being pooper scoopers for her)

Da y32-34 Practice flying (strengthening muscles)

Day 35 become dedicated foragers collecting pollen and nectar. When bee returns to the colony with "presents" they are carrying their weight in pollen or nectar, they do not carry both at the same time.

Day 43-??? The forager bee is supposed to live 4-6 weeks after starting to forage. They die from exhaustion and wearing their wings out flying flower to flower. (they can travel a total of xxxxx thousand miles in this period. (do they really live 6 weeks) today probably not! If they are sick with viruses, they will work less each day and not live as long.

Now those dastardly drones! They are only good for one thing: sitting around and looking cute.

Day 1 male egg laid

Day 4 egg hatches, (fed royal jelly)

???Day 16 capped (fed bee bread through larval stage)

Day 26 emerges from capped cell (takes longer for male drone than sterile female worker bee because it must grow larger.) Drone cells are larger diameter than worker cells and slightly longer.

???day 30 start flying

The queen will manage the number of drones in a colony to about 10% of total population. If you see "too" many drones you either have a sterile queen or a laying worker.

Some days the drones will get ambitious and fly out to the “drone congregation alley” and hang out with their buddies chasing the girls. (sound familiar) typical teenagers.

If they get lucky enough to mate with a queen, it will literally kill them. (Oh, what a way to go)

If they are not that lucky, they go home and lay around. They can philander. They are allowed to go into any hive, not just their own. This is one way diseases and mites are transferred around the entire honeybee community.

Drones are so lazy they usually won’t even feed themselves, (even though they cab) Sound familiar.

Well, drone life has its quirky twists. In the fall when they are not needed for mating (this is about the time of baseball finals) and they are laying around the hive watching TV, the girls are feeding them snacks and telling them how cute they are. Sinister Plot: The worker bees are chewing holes in the drones’ wings! When the boys go out on purging flight (they must get rid of all that beer) they crash and can’t get back into the hive. (and subsequently die). This way the colony does not expend valuable food reserves feeding those bums all winter.

The magic of the queen carrying live sperm for up to 5 years at ambient outside temperature and her body temp between 72 and 95 depending on cluster activity in winter.

If she lays a fertilized egg it turns into a female. To differentiate those that become queens (fed high protein royal jelly for larval food) She grows larger, faster and sex glands develop.

If female egg (fertilized) is fed bee bread as a larva it will grow smaller, slower and the sex glands will not fully mature. It is possible for a worker female to lay eggs if properly stimulated by in hive pheromones, but all her offspring will be drones. (not fertilized eggs)

The queen has a special gland (spermatheca) where she carries the sperm from her multi mating virgin flight. There is a valve that allows the queen to decide to lay an unfertilized egg which will turn into a male drone. This is impossible! An unfertilized egg cannot hatch (in any species). All organisms need two sets of Chromosomes, one from the female and one from the male. A drone only has his mother’s chromosomes. This allows the expression of the queen’s pure chromosomes. She was carrying 2 sets but only the dominant ones are expressed in the drone. This makes the drone valuable for scientific breeding as you always see what the queen was carrying without the input from an unknown drone she mated with. Some queen breeders do artificial insemination from known drones to ensure a certain purity in the subsequent offspring.

The activities inside the hive are controlled by the type and intensity of pheromones (perfume smells) emitted by the queen, worker bees, type and age of brood.

Queen mandibular (how is it spread)

Brood (presence, age, sex)

Why queen is larger and fertile and why require larger cells (straight down cells vs. fast replacement cells that are L shaped

Why drones are larger and require larger cells