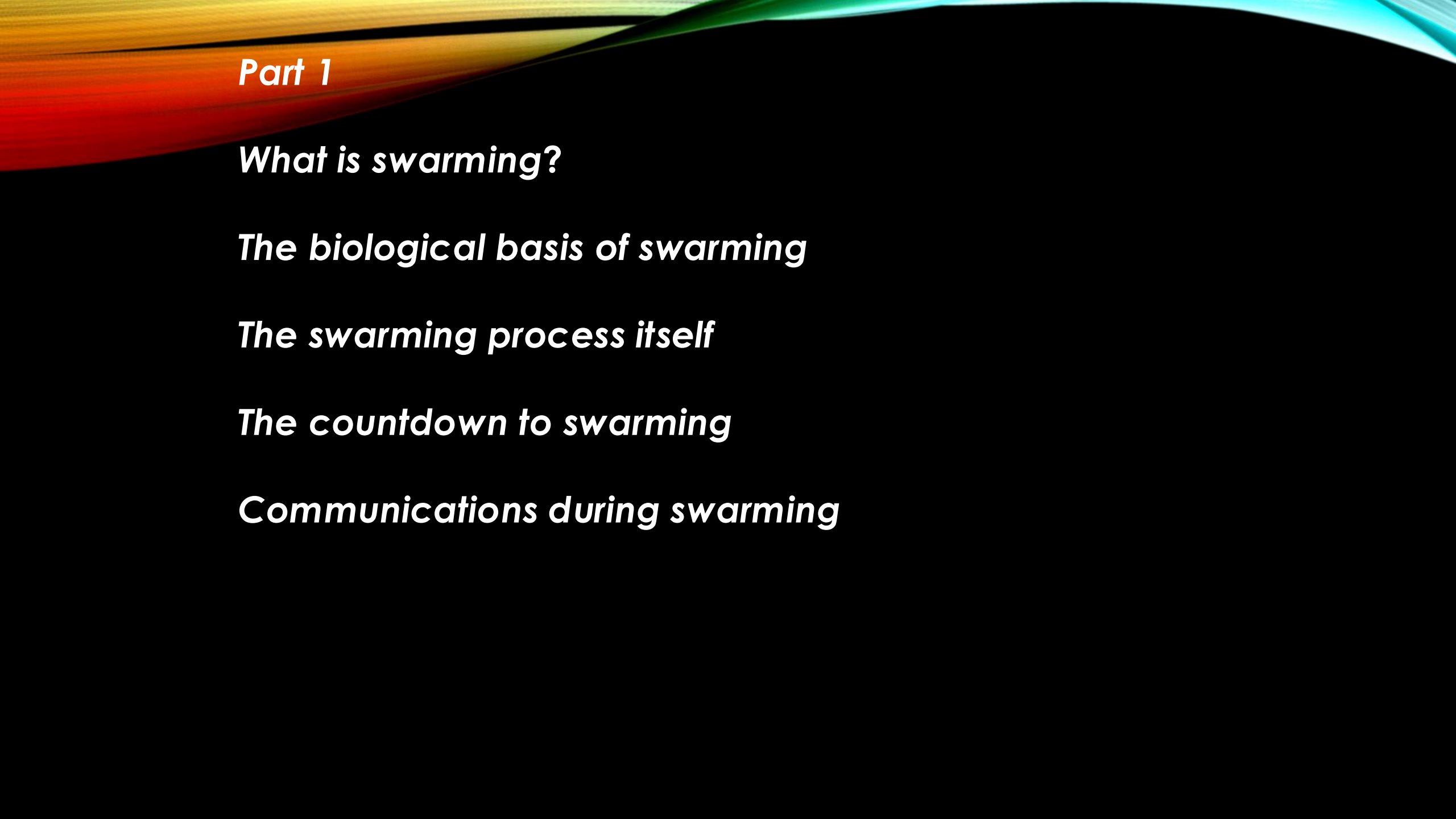


SWARM PREVENTION AND SWARM CONTROL



Alan Baxter



Part 1

What is swarming?

The biological basis of swarming

The swarming process itself

The countdown to swarming

Communications during swarming



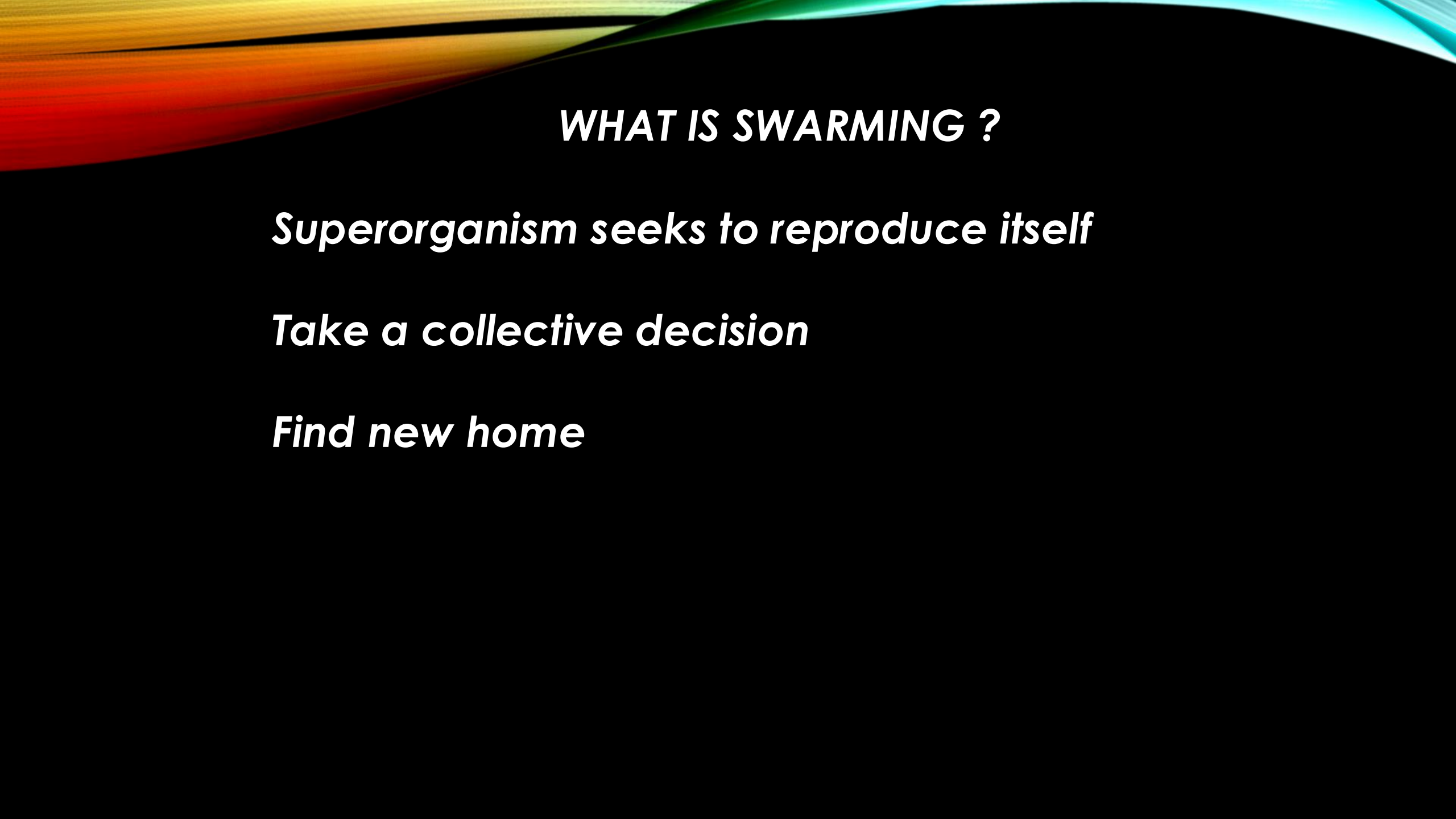
Part II

Practical steps for the beekeeper

Simple way of swarm prevention making increase

Without increasing number of colonies

Questions and discussion



WHAT IS SWARMING ?

Superorganism seeks to reproduce itself

Take a collective decision

Find new home

Queen + 50-70% of the adult bees of mixed ages leave the nest

Remainder raise a new queen

Primary Swarm has about 23% chance of survival¹

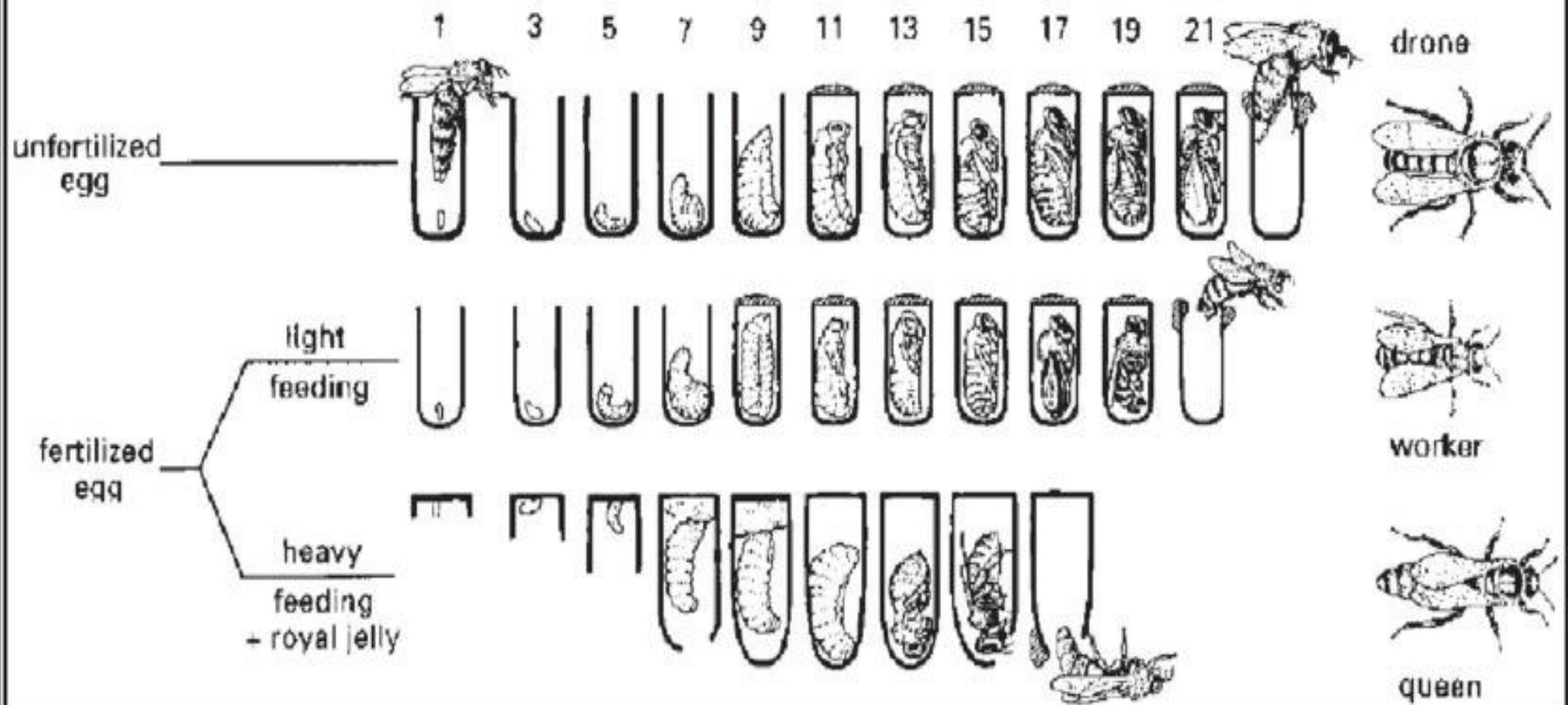
Cast or secondary swarm about 12%

Remainder weakened and might struggle to forage enough food to see them through the next winter

Natural selection - survival of the fittest

1. Seeley T The Lives of Bees Free living colonies in the Arnot Forrest.

AGE IN DAYS	GLANDS MATURE	FUNTION
0-3	Hypopharyngeal Mandibular	House cleaning
3-6	“	Feeding older larvae
6-9	“	Feeding young larvae
9-18	Wax glands	Comb building Nectar processing Undertaking Ventilating Etc....
18-21	Sting glands	Guard bees
21-42		Foragers



'Queen substance'

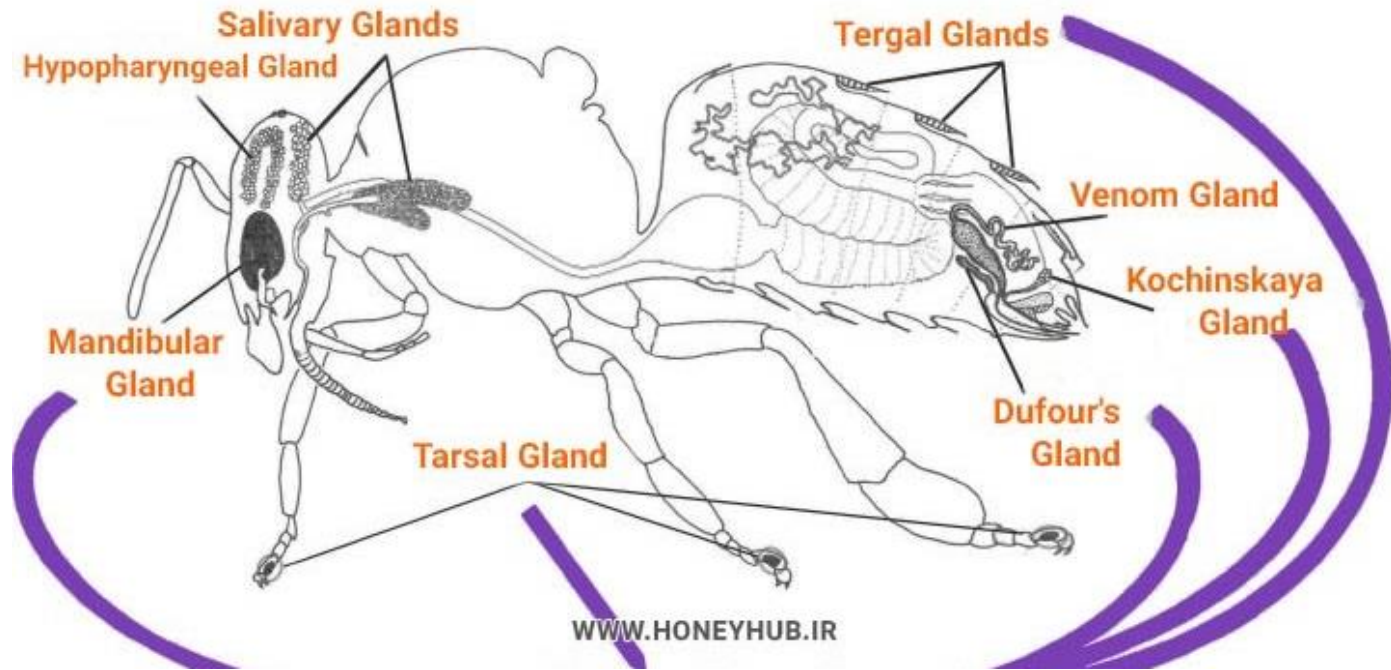
**Queen Mandibular
Pheromone (QMP)**

**9-Oxodecenoic acid
(9-ODA)**

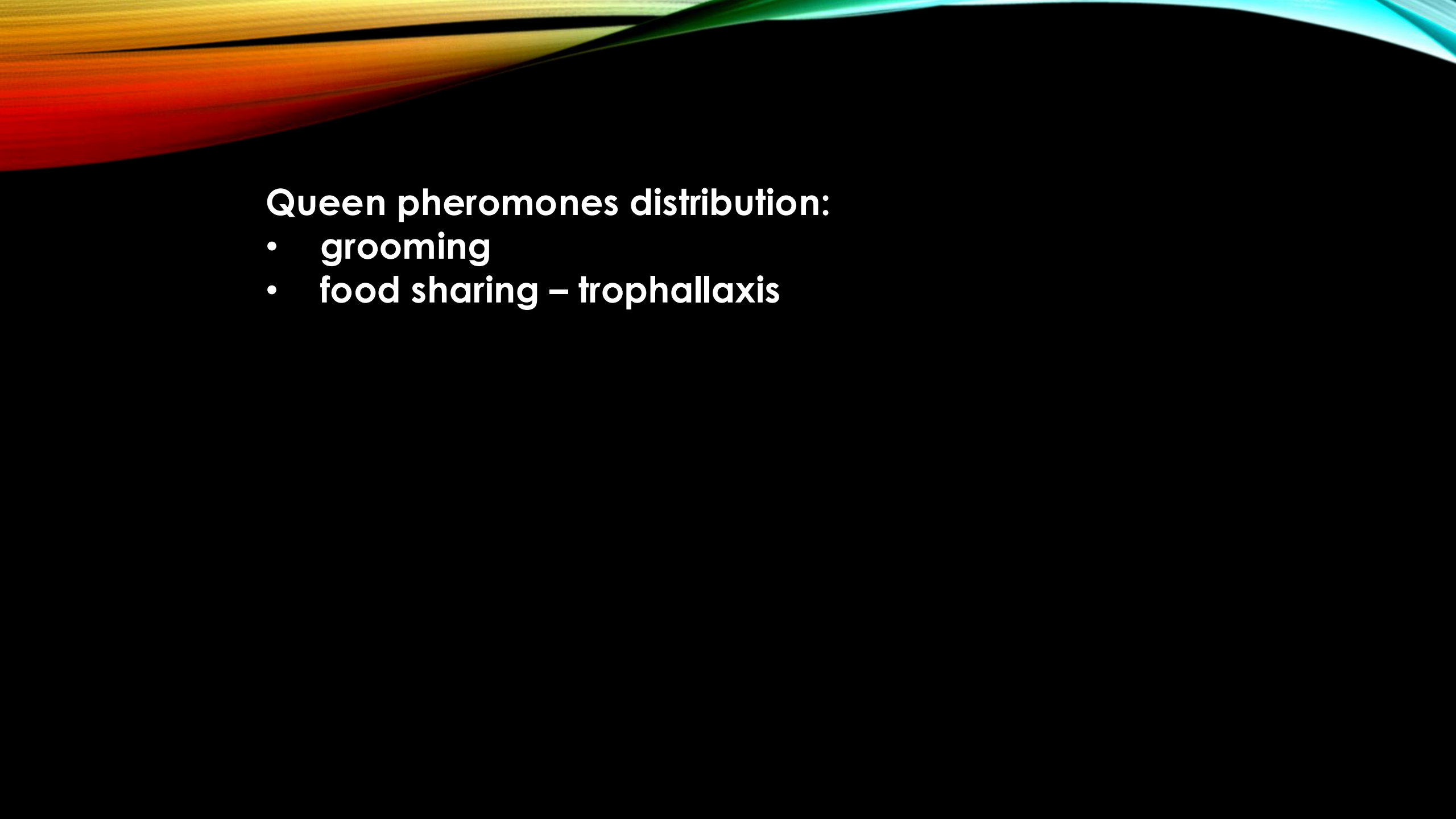
**Inhibits building
queen cells**

**Stops development
of worker ovaries**

Colony cohesion



Footprint pheromone



Queen pheromones distribution:

- grooming
- food sharing – trophallaxis

Grooming behaviour





Trophallaxis

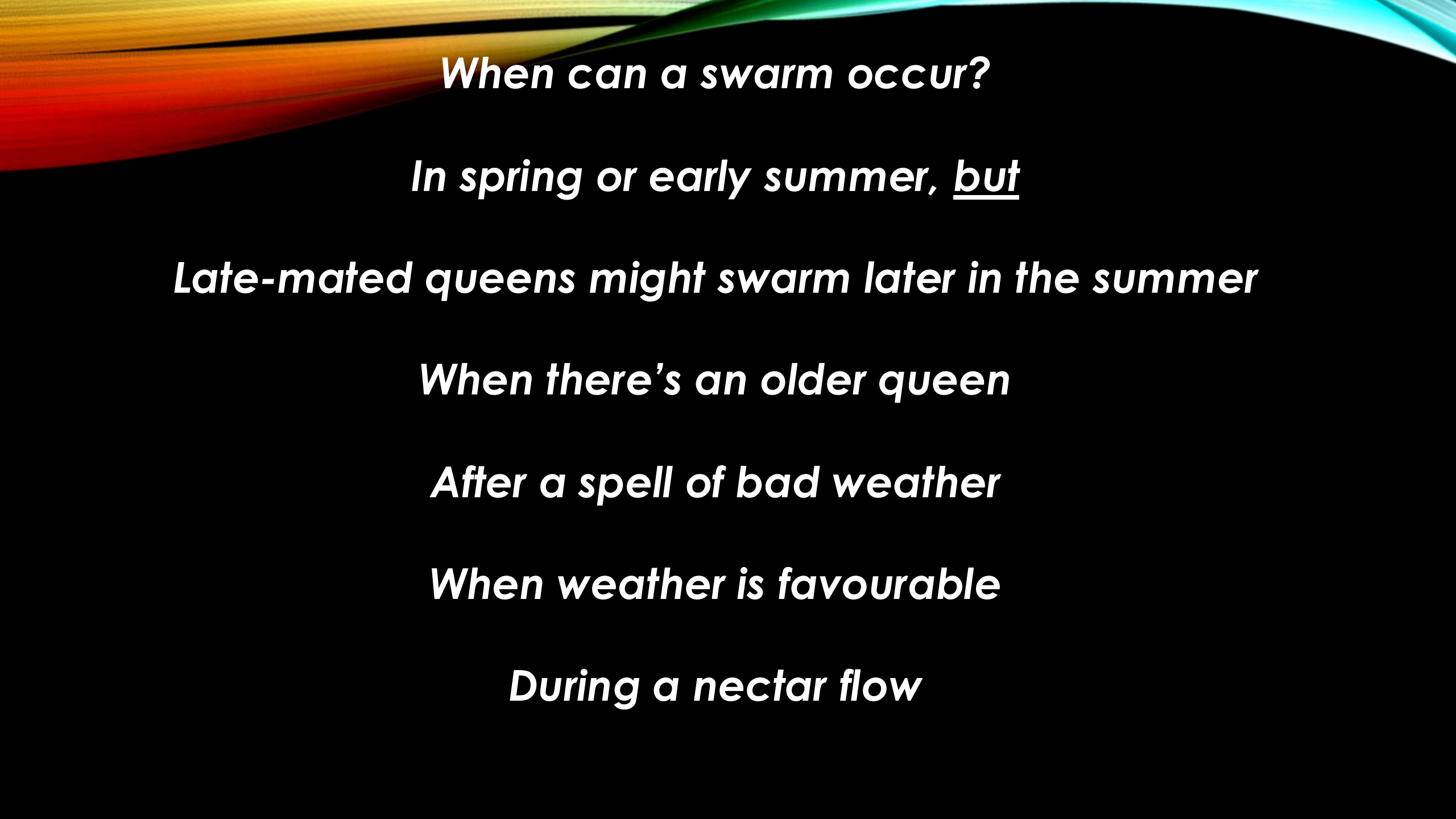


Overcrowding

Lack of space for

- queen to lay
- workers to process and store food
- somewhere to go at night
- young worker population
- good weather
- nectar flow

SWARMING IMPULSE



When can a swarm occur?

In spring or early summer, but

Late-mated queens might swarm later in the summer

When there's an older queen

After a spell of bad weather

When weather is favourable

During a nectar flow



**NB Young, well-mated queens are less likely
to swarm in their first full season**

COUNTDOWN TO SWARMING

PREVENTION PHASE

**COLONY BUILDING UP
INCREASED POPULATION OF BROOD AND ADULTS**

D MINUS 28-14

DRONE CELLS BUILT ROUND EDGES OF COMB

INCREASING NUMBERS OF QUEEN CUPS

CONGESTION IN BROOD NEST. LARGE SLABS OF SEALED BROOD



**PREVENTION MEASURES NEEDED
NOW!**



COUNTDOWN TO SWARMING

CONTROL PHASE

START BUILDING QUEEN CELLS

EGG LAID IN QUEEN CELL

D - 9

QUEEN FED LESS.
LITTLE SPACE FOR HER TO LAY.
BEES KEEP HER MOVING

D - 7

BEES GORGE ON HONEY & WAIT QUIETLY IN
THE HIVE

D - 5

SCOUTING BEGINS

D - 3

**FIRST QUEEN CELL SEALED. CONDITIONS
FAVOURABLE**

D-DAY

**BUZZ RUNS TO ACTIVATE THE BEES. GREAT
COMMOTION**

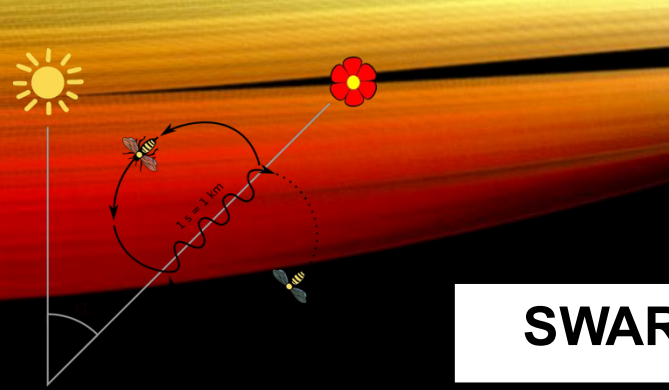
AND THEY'RE OFF !!!

SWARM CLUSTERS NEARBY

SOME RETURNERS

SCOUT BEES SEARCH FOR FINAL NEST SITE





**SCOUT BEES DO WAGGLE DANCES ON
SURFACE OF CLUSTER**



SWARM DECIDES BY QUORUM WHICH SITE TO CHOOSE



SCOUT BEES DO PIPING RUNS TO EXCITE THE CLUSTER



BEES WARM FLIGHT MUSCLES TO 35°C



QUEEN & SWARM FLY TO NEW NEST SITE



COMB BUILDING BEGINS

D + 9



BACK AT THE RANCH



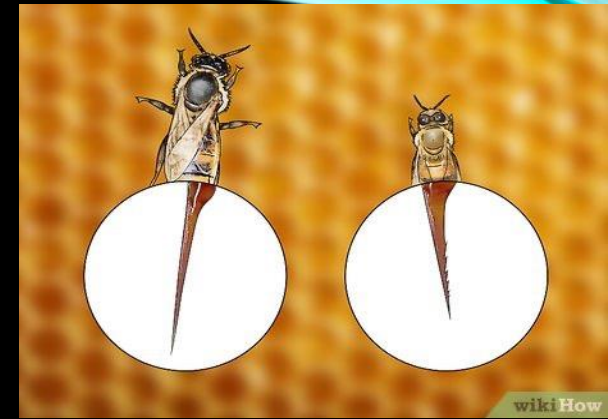
FIRST VIRGIN QUEEN EMERGES



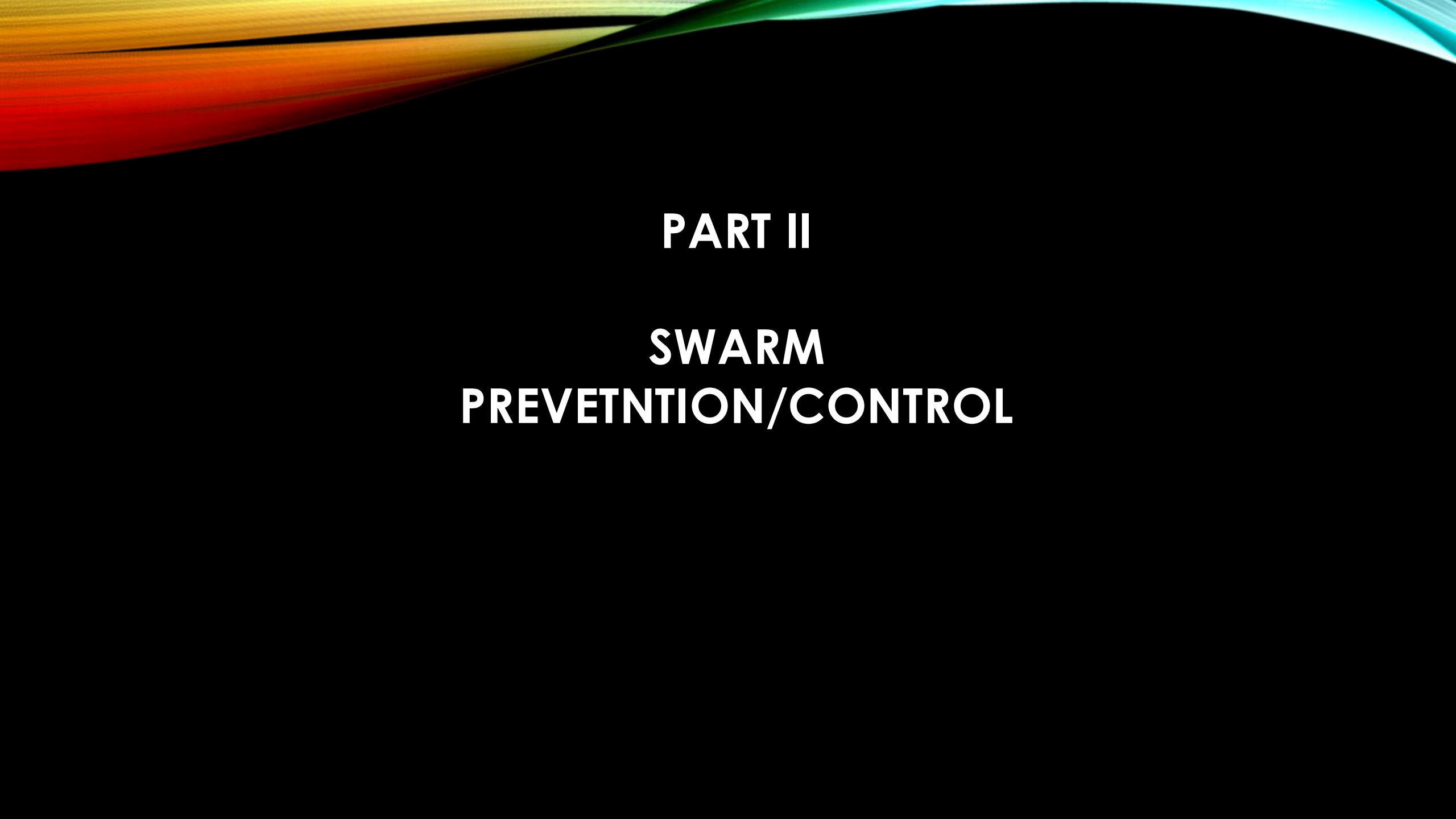
KILLS OTHER QUEEN CELLS OR FIGHTS OTHER QUEENS



SECONDARY OR CAST SWARM ?



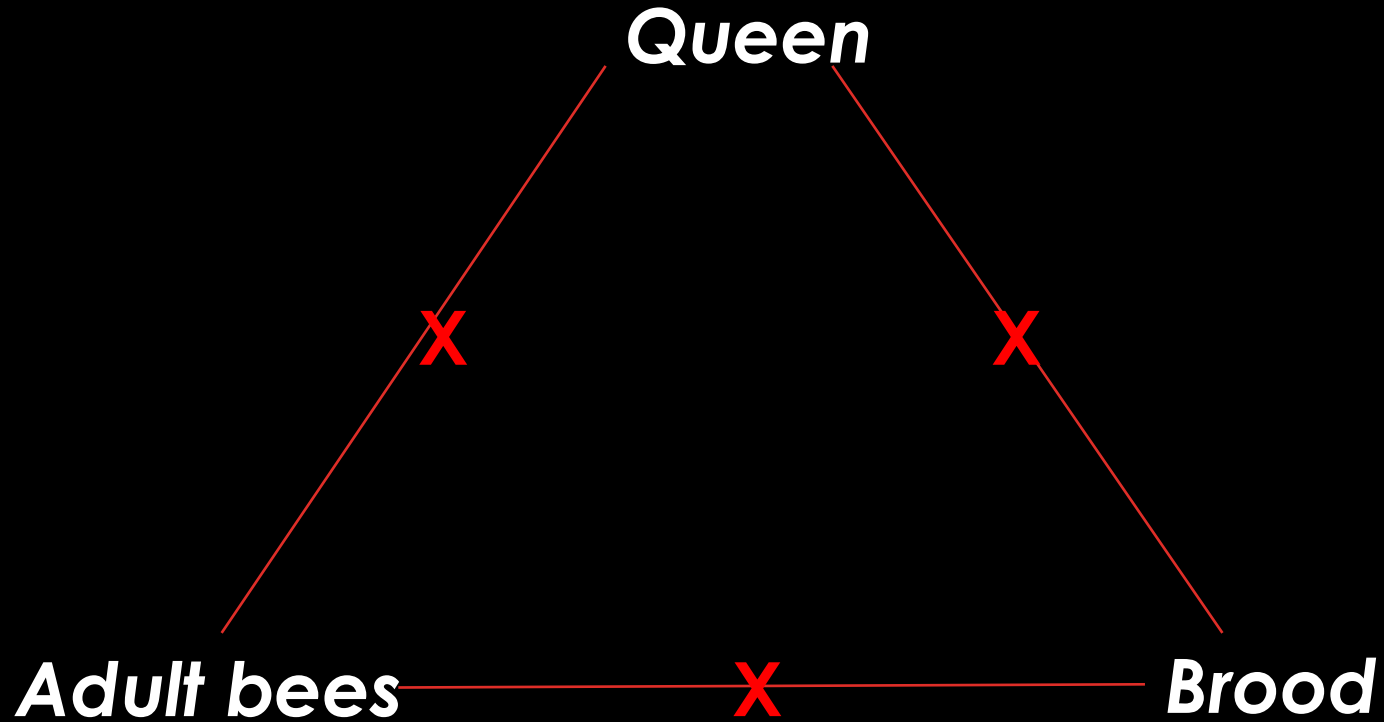
FIGHTING MACHINE



PART II

**SWARM
PREVENTION/CONTROL**

The Swarm Triangle



Break the swarm triangle and the colony won't swarm

Actions by the beekeeper

Weekly inspections

Young, marked (clipped) queens

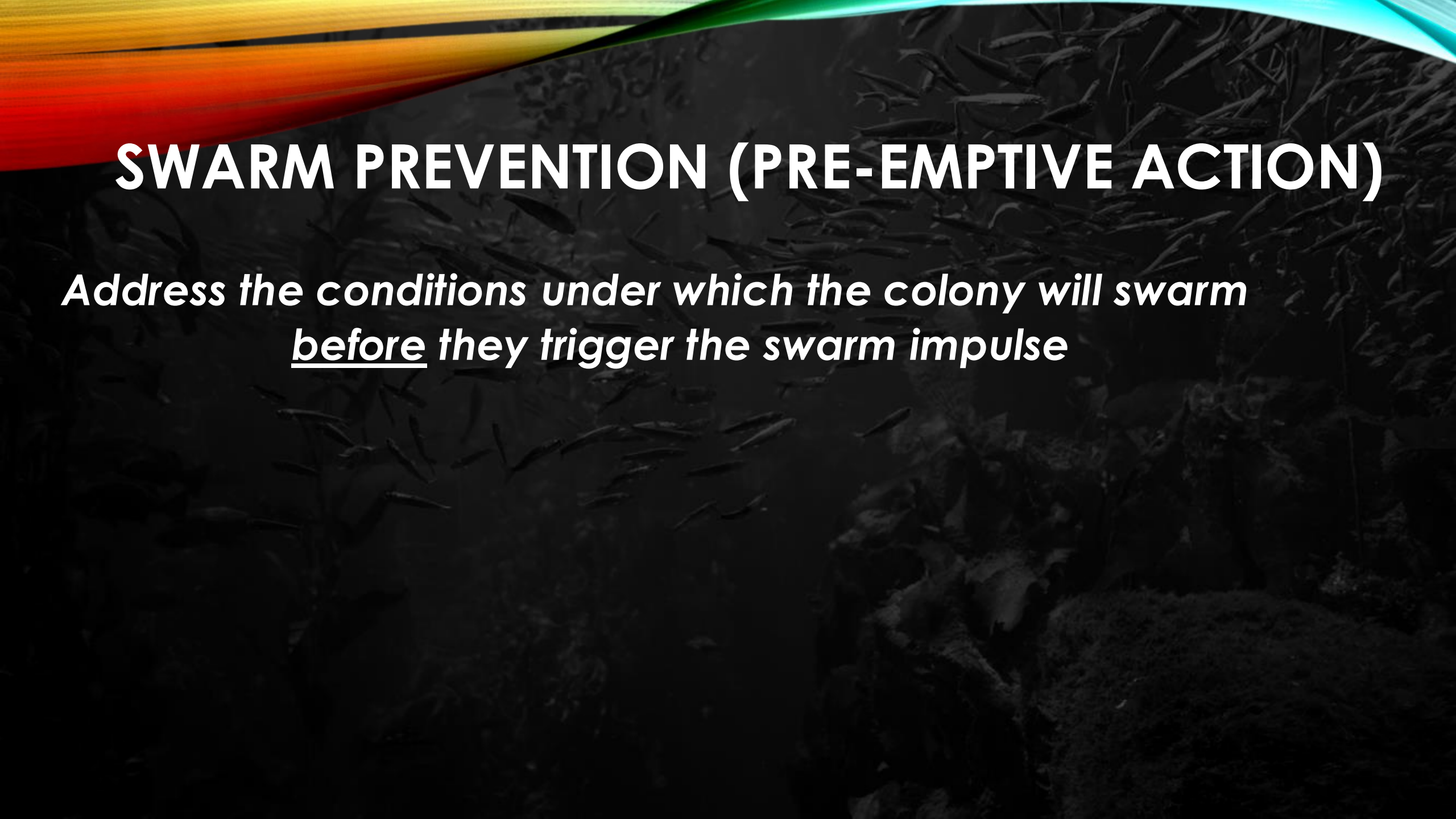
Comb management

Box management

Space

Prevention (Pre-emptive)

Control (Re-active)



SWARM PREVENTION (PRE-EMPTIVE ACTION)

*Address the conditions under which the colony will swarm
before they trigger the swarm impulse*

PREVENTION (PRE-EMPTIVE ACTION)

Space management

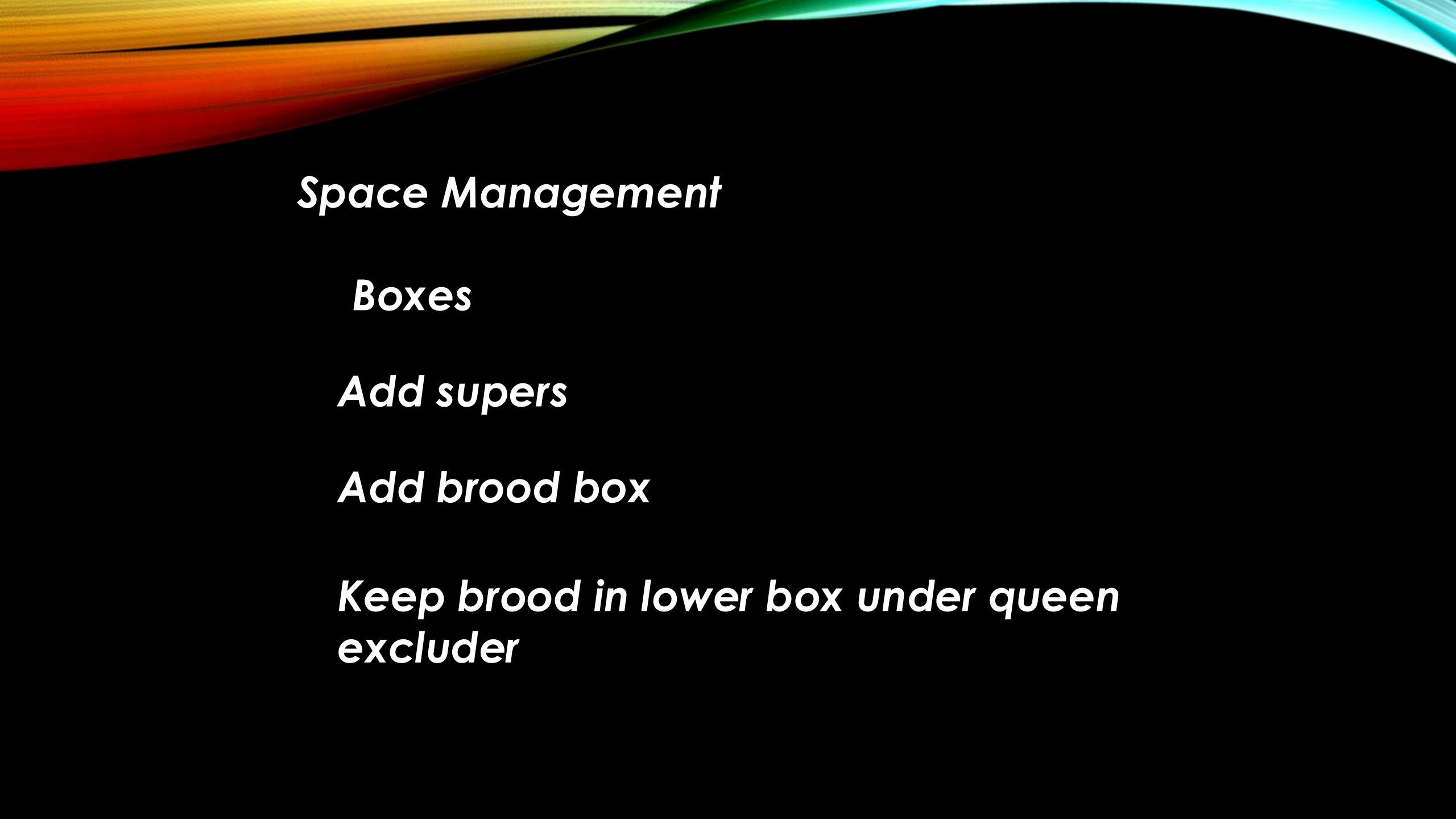
Comb

Rearrange existing comb

Remove and replace old or damaged comb

Remove frames of capped stores

Add foundation next to brood nest



Space Management

Boxes

Add supers

Add brood box

***Keep brood in lower box under queen
excluder***

SPLITS WITH QUEEN INTO A NUC

Parent

Stuff entrance with grass

Inspect every frame

Frame with queen and brood

Destroy all queen cells except one with very small larva and royal jelly

Shake 2 frames of nurse bees into box

Mark the frame

Frame of stores

Fill up with foundation

Frame of drawn comb

Feeder with syrup (no foragers yet)

Fill up with foundation

Leave 3 weeks

Feeder with intermediate strength syrup (1kg:1L)

NO QUEEN CELLS on any of the frames

Move away from parent colony

Check nurse bees after 2 days

SPLITS INTO A NUC WITHOUT FINDING THE QUEEN

Move parent away

Frame of brood in all stages

Frame of nurse bees and brood

Shake in 2 frames of young bees

Frame of liquid stores

Frame of pollen

Flying bees will join the nuc

**3 days destroy QCs except one open
charged with larva and r.j.**

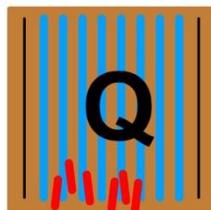
Leave for 3 weeks

Parent colony

Check for queen cells and destroy

Replace missing frames with foundation

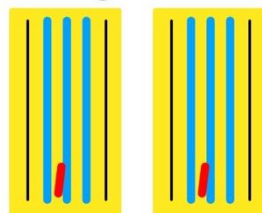
Feed with intermediate strength syrup



Two nuc swarm control

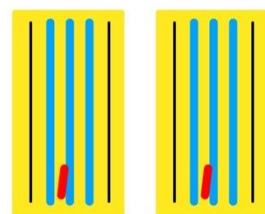
Move parent colony with queen cells to another part of the apiary.

Original site



Leave **ONE** queen cell in each nuc, then remove all queen cells from parent colony.

Add frames of emerging brood, food and foundation to nucs.



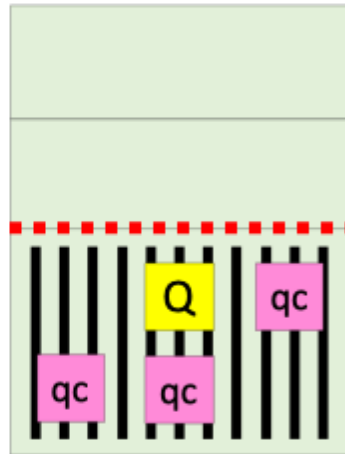
Watch for an even split of flying bees to each nuc.

Allow queens to mate and settle before moving nucs.

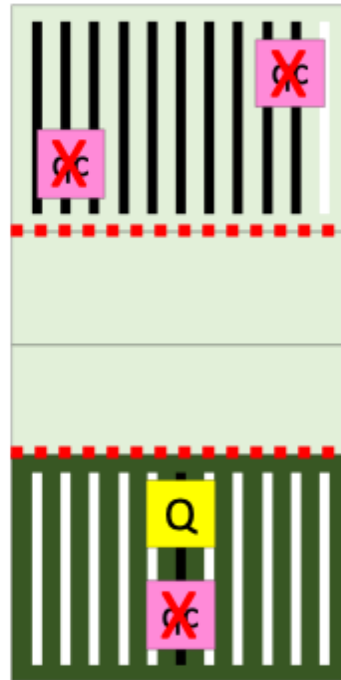


Demaree swarm control

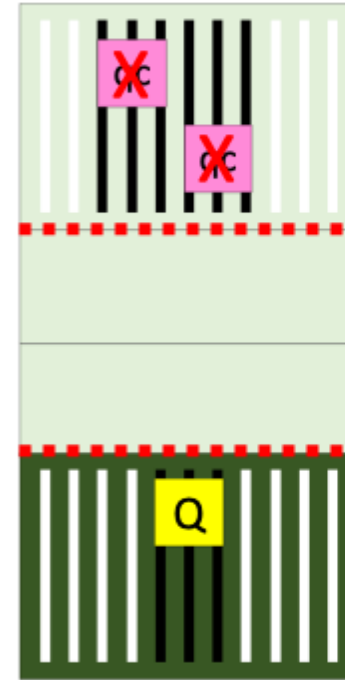
- Original supers and brood box
- New brood box
- Queen excluder
- Q Queen
- qc Queen cell (X indicates destroyed)



Inspection



Hive rearrangement



One week later

The Demaree method is in fact a vertical split.

Equipment needed:

- Clean brood box
- 11 frames of drawn comb or foundation
- 2 x supers
- 2 x Queen excluders
- 1 x dummy board

Day 1

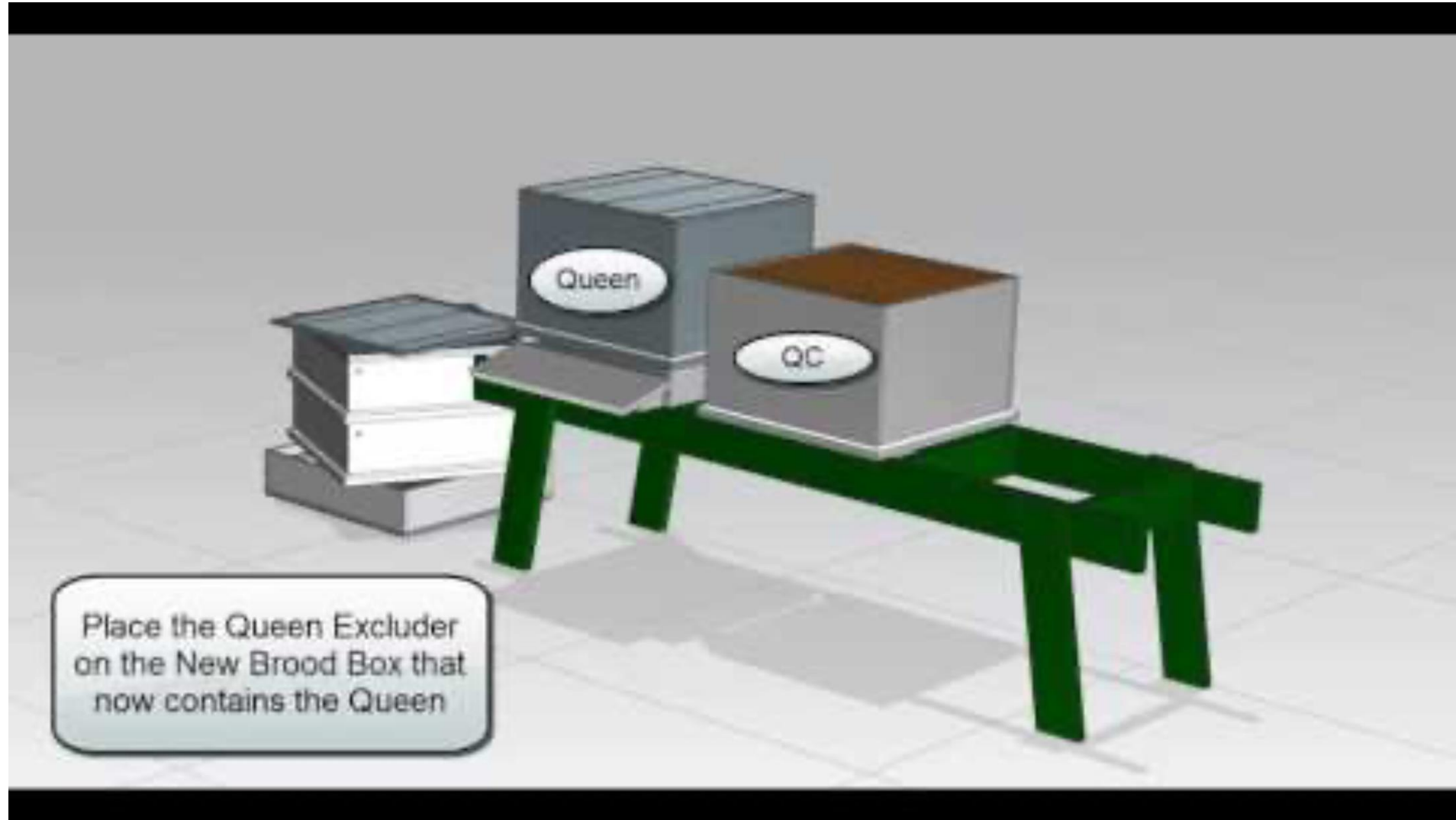
- Move the brood box to one side
- Place the new brood box on the original floor
- Add 9 frames of drawn comb or foundation leaving a gap in the middle
- Go through the original box and find the frame containing the queen
- This frame must have no queen cells
- Put this frame in the middle of the new box
- Add the extra frame and dummy board
- Add a queen excluder
- Put on 2 supers above the QE
- Add the second QE
- Put the original brood box with the brood on top
- Go through the original brood box, shake off every frame and destroy any queen cells
- Add a frame to replace the one with the queen.
- Put on crown board and roof
- Leave for a week

Day 8

- Inspect the top box and remove any queen cells
- Close the hive and wait for all the brood in the top box to emerge
- Leave for about 3 weeks

Day 25

- All the brood has emerged
- Remove upper brood box and reassemble the hive.



BAIT HIVE

40 litre capacity

Small, low entrance

Facing south/south-east

Frame of old comb

Empty frames



Photo David Evans

SUMMARY

Swarming is a natural instinct for colony reproduction

Losing a swarm does not make you a bad beekeeper

Understanding the process helps with prevention or control

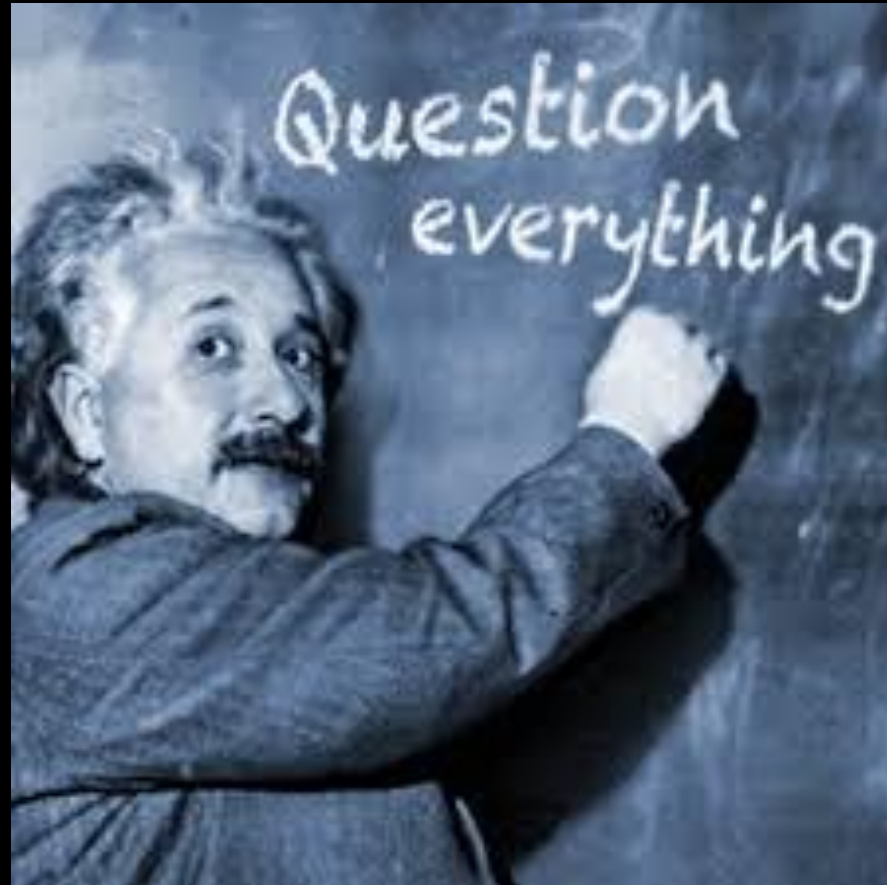
Breaking the swarm triangle is the basis of all manipulations

Simple splits are a cheap and easy method of prevention and control

Demaree is useful for a number of purposes

Bait boxes help to recover any swarms you lose

Thank you for listening



ANY QUESTIONS?