

BEE CASTES AND THEIR ROLE IN BEE HIVE

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BSA-11-049

INTRODUCTION

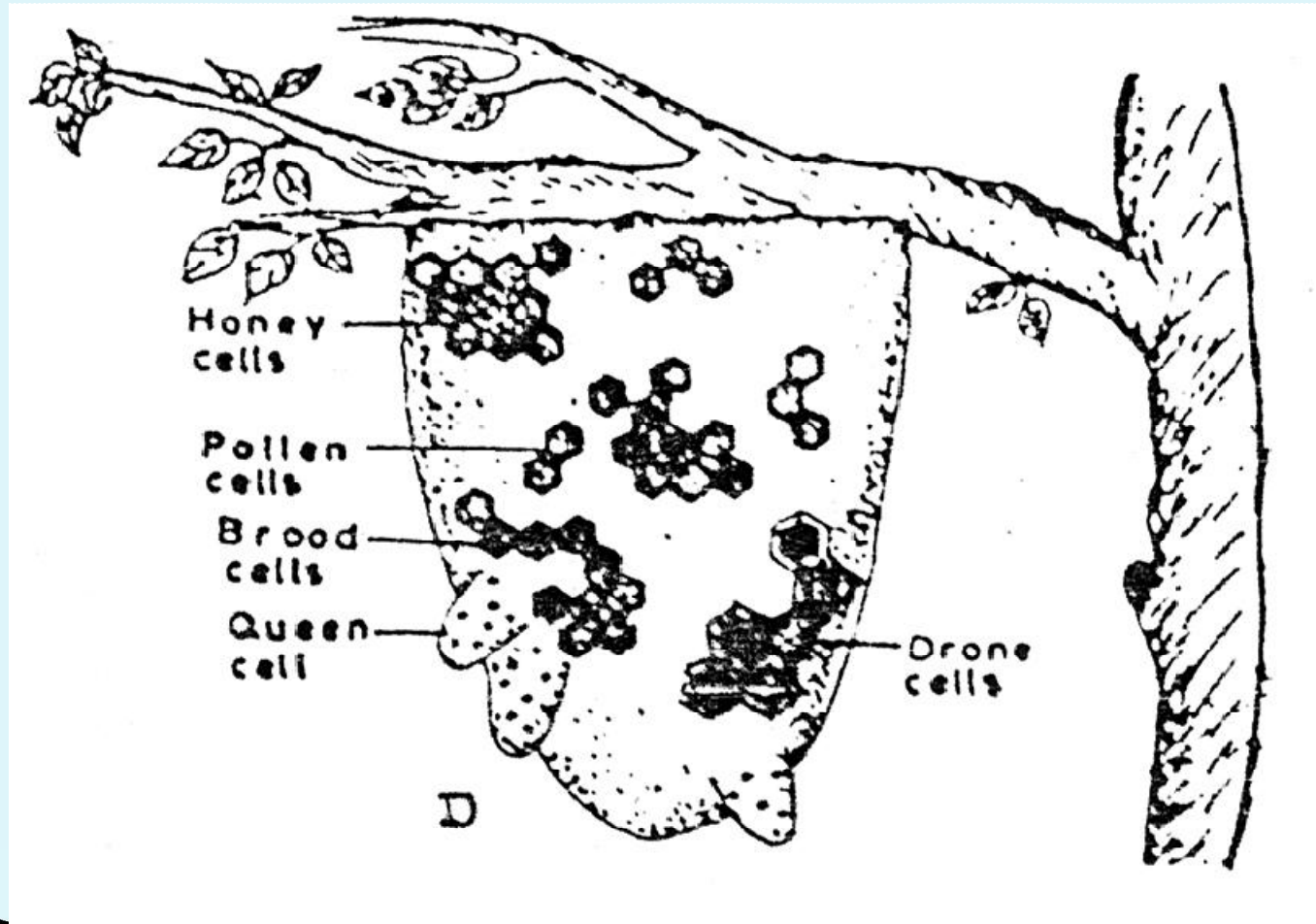
Honey bees enlist a caste system to accomplish the tasks that ensure survival of the colony.

Every honey bee colony comprises of a single queen, a few hundred drones and several thousand worker castes of honey bees.

Each member of the community fulfils a need that serves the group.

Responsibility for feeding, cleaning, nursing, and defending the group.

CELLS IN A COMB

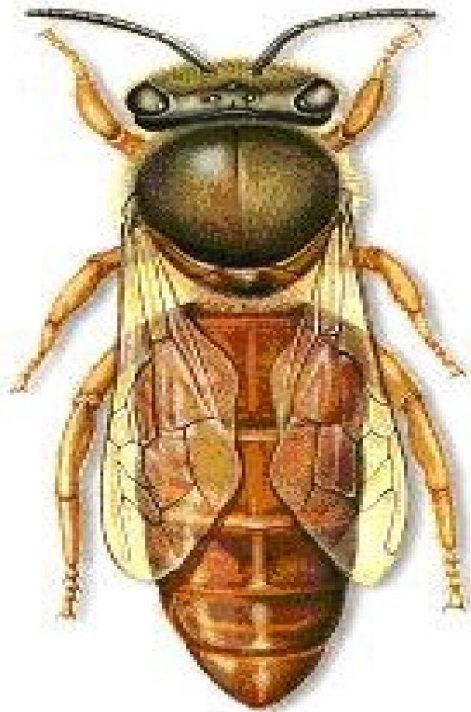


SEX DIFFERENTIATION IN BEES

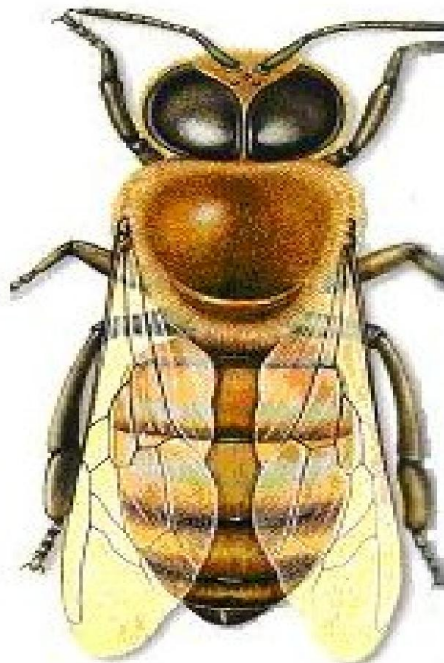
Queen and worker develop from fertilized egg while drone develops from unfertilized egg.

Further differentiation of queen and worker depends on the quality and quantity of food that is fed to the queen or worker larvae.

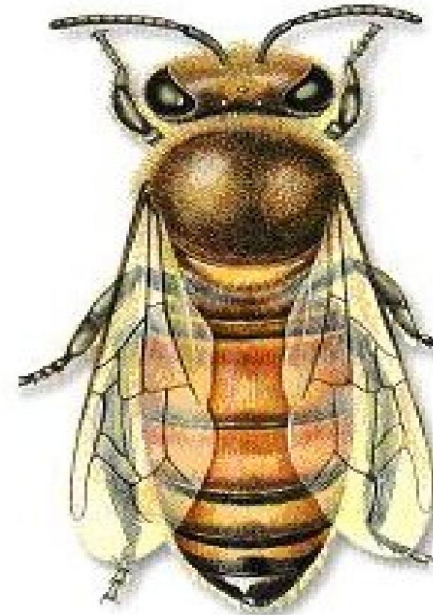
CASTES OF HONEY BEES



QUEEN



DRONE

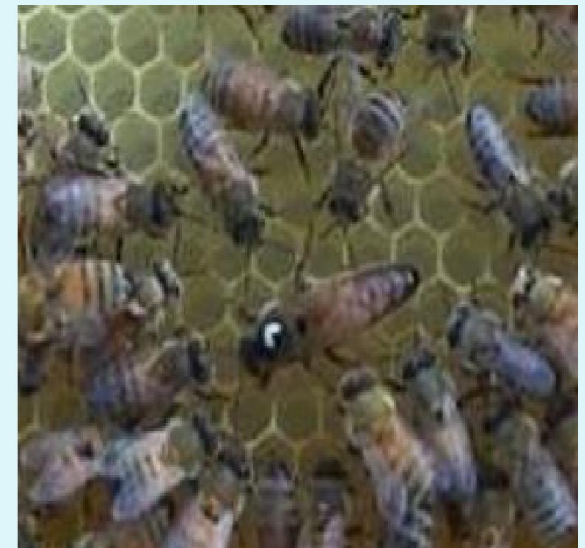
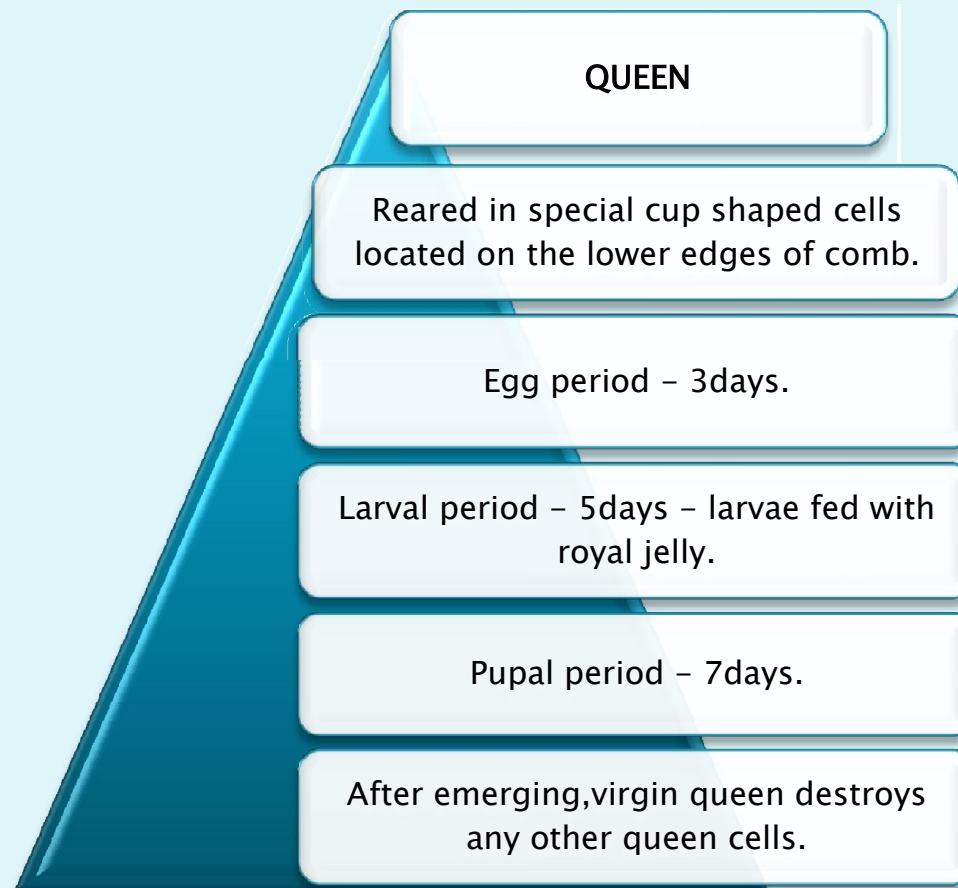


WORKER

INTERNAL DIFFERENCES

Sl.No.	Character	Queen	Worker	Drone
1	Gonads	Ovaries well developed	Ovaries poorly developed	Testes present
2	Spermatheca	Large	Rudimentary	Absent
3	Mandibular glands	Very large, secrete queen substance	Large, soften wax	Absent
4	Pharyngeal glands	Not developed, Secrete bee's milk	Well developed	Not developed
5	Wax glands	Absent	Present	Absent

BIOLOGY/LIFE HISTORY OF HONEYBEES

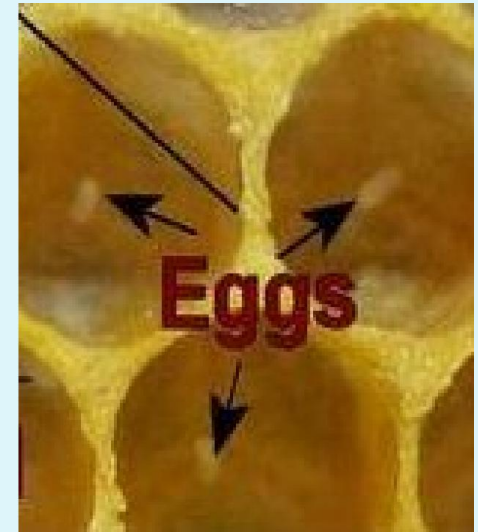


Six weeks after emergence, the queen takes a nuptial flight or mating flight mates with up to 10 or more drones in succession.

Returns to the hive with spermatheca filled with sperm.

Three days after mating, eggs are laid. A good queen lays 2000 eggs/day.

Lays upto 6 lakh eggs during the entire life period of 2-3 years.



Duties



Egg laying. Can lay either fertilized or sterile eggs depending on the requirement.

Maintaining the strong colony

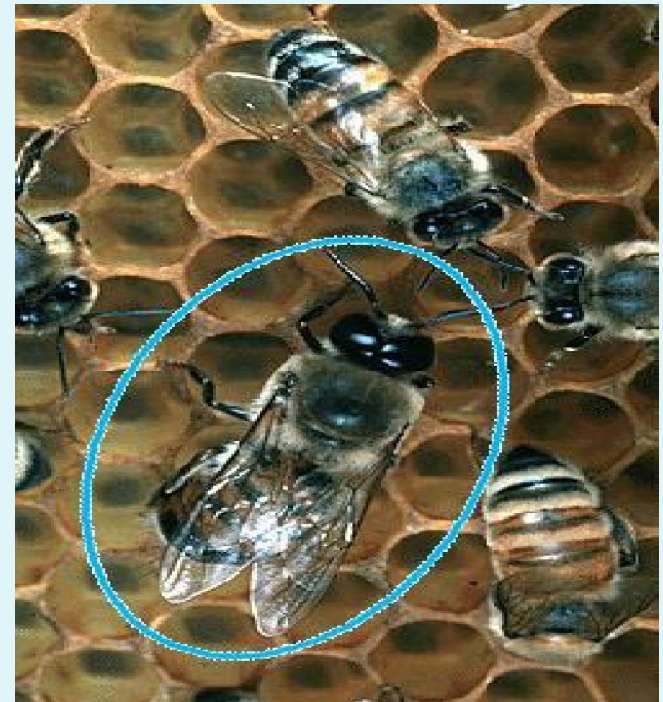
The secretion from mandibular gland of the queen is called queen's substance.

The queen substance if present in sufficient quantity, prevent swarming and absconding of colonies, prevent development of ovary in workers, and maintains colony cohesion.

DRONES

Egg period-3days

Larval period-7days. Fed with royal jelly for three days and with a mixture of royal jelly & bee bread for 4 days.



Pupal period–13 days.
Cells capped with
dome shaped wax cap
with a central hole.

Adult longevity– 60
days.

DUTIES



WORKERS

Egg period-3days

Larval period-4days.
Fed with royal jelly for
2 days and with bee
bread for remaining 2
days.

Pupal period-12 days.
Cell cap flat.

Adult longevity-3
months.



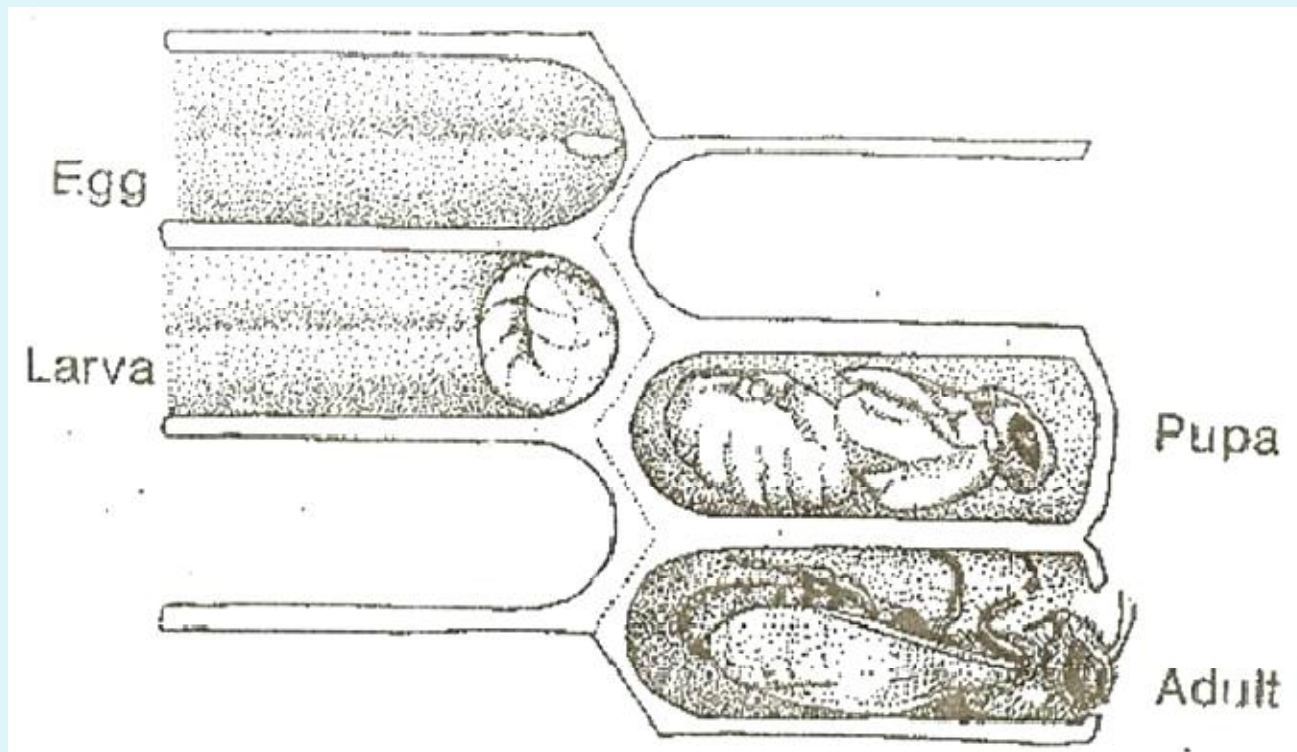
DUTIES

- First 3 weeks confined to the hive called house bees or nurse bees.

First week	Cleaning and incubating(33–36°C)–first 3 days Foster mother–produce mothers milk At the end of first week it makes an orientation flight for 5 mins.–Next 4 days.
Second week	Secreates royal jelly and wax.
Third week	Receives honey, ripen and store it. Pollen digestion, cleaning and defence.
After 3 weeks(foraging bees)	Collect honey dew, pollen, nectar, water and propolis.



DEVELOPMENTAL STAGES OF HONEY BEE



DEVELOPMENTAL DURATION OF CASTES

