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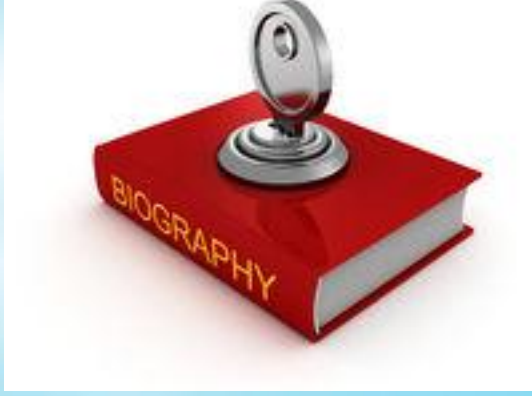
Entomology, Ornithology & Herpetology: Current Research

Biography



Dr. Calatayud is a Senior Research Scientist of Research Institute for Development (IRD), a French Institute. A native of France, he has experienced field and laboratory studies in South America at CIAT (Colombia) and Africa at ICIPE (Kenya). Dr. Calatayud is an entomologist with experience in insect-plant interactions (including the third trophic level, the parasitoids) ; insect behaviour and insect/plant chemistry (including volatiles). He has published more than 60 papers in refereed journals, written 4 books and 9 book chapters. His professional services include: referee of several international journals (e.g. Bulletin of Entomological Research, Crop Protection, Entomological Experimentalis et Applicata, European Journal of Entomology, Florida Entomologist, Journal of Agriculture and Food Chemistry, Journal of Applied Entomology, Journal of Insect Behavior, Physiological Entomology); Member, Editorial board of ISRN Entomology and International Journal of Insect Science, Science Advisory Panel, International Foundation for Science (IFS, Sweden).

Research Interest

- ✓ Plant physiology linked to insect resistance
- ✓ Insect-plant interactions study
- ✓ Insect behaviour and insect physiology
- ✓ Host selection and acceptance by Lepidoptera and parasitoids

INSECT BEHAVIOR

Communication

- Pheromone, light, & sound
- **Pheromone**- chemical released by an animals that affects the behavior or development of other members of the same species through the sense of smell or taste

Example: ant trails- following a pheromone.

- Sound- chirping of insects
- Attract mates & warn other males away from territories

Example: crickets use sound by rubbing a scraper located on one forewing against a vein on the other forewing

Example: mosquitoes use for mate

Communication

- Pheromones are also used as identification of an animal or home
- Pheromones can attract a mate

Behavior in Honeybees

Social insects- some individuals gather food, others protect the colony, and other reproduce. Social insects allow for more independence and dividing work in each colony

Honeybees have **innate behavior-** genetically determined behavior

Three types of honeybees: worker bees, queen bee, and drones

Worker bees- non-reproductive females that make up the vast majority of the hive population

Workers perform all duties except reproduction.

Queen bee- only reproductive female in the hive, and her only function is to reproduce

Drones- males that develop from unfertilized eggs, and their only function is to deliver sperm to the queen

Behavior in Honeybees

- Worker bees must feed the drones because their mouth parts are too small to obtain nectar from flowers

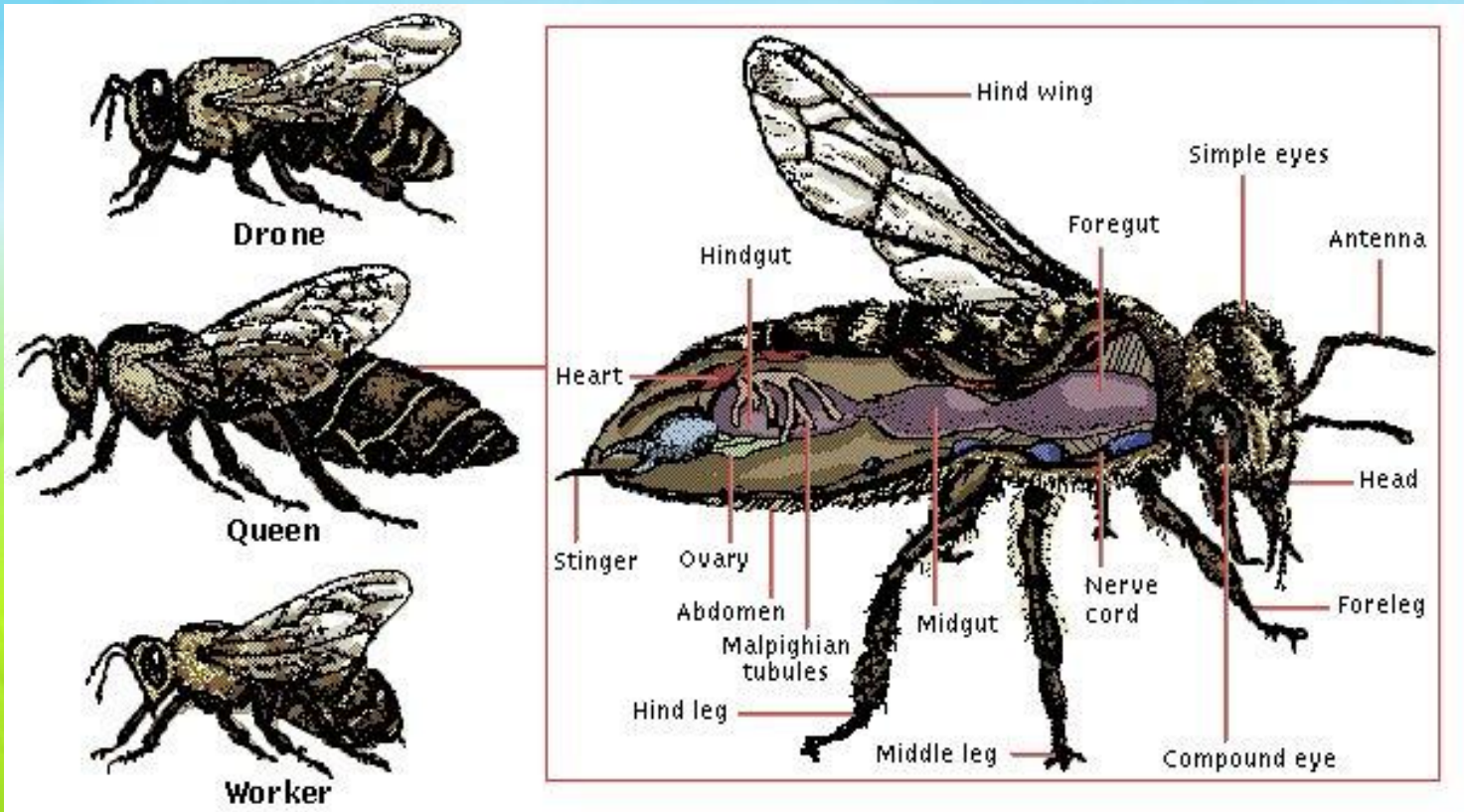
Worker Bees

Lifetime = six weeks

- Workers feed honey and pollen to queen, drones, and larvae- during this stage, they are called: nurse bees
- **Royal jelly-** high-protein substance worker bees feed to the queen and youngest larvae

Worker Bees

When a worker bee stings another animal, it dies a day or two later



The Queen Bee

- Queens develop from larvae that are constantly feed **royal jelly**
- Queens mature and secrete a pheromone called the **queen factor-** prevents other female larvae from developing into queens.
- Queens usually mate once, but lay thousands of eggs
- Queens role is to reproduce.
- Hive becomes over-crowded, and the queen bee will leave taking worker bees with her causing a swarm.
- They search for a new location to build a new hive

The Dances of the Bees

Round dance- food near hive

The Dances of the Bees

- Waggle dance- food far from hive

Altruistic Behavior

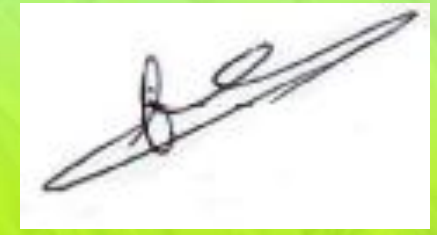
Altruistic behavior- aiding of other individuals at one's own risk or expense

Example: sting and cause death

Kin selection- mechanism of propagating one's own genes by helping a related individual reproduce

Approved By

E-signature:



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