LANGUAGE OF THE BEES

ZLATA, YASMINE, INIGO

PLAN

- Introduction to bees
- Pheromones
- Dance communication
- Color memory
- Conclusion

Introduction to bees

- Bees are small insects related to wasps or ants.
- Crucial for our environment, as they pollinate plants and produce honey.
- Why did we chose this subject ?

BEES IN BRIEF

- 20,000 known species of bees in seven recognized biological families.

Best-known : Honey bees.

- Found on every continent. Adapt to the condition of their location. Prefer temperate climates (Europe)
- Live in colonies.
- Compound eyes cover most of the surface of the head. Between & above are 3 small simple eyes (ocelli) - provide information for the bee on light intensity.
- Organization of the society : queen and her working bees
- Bees cannot live isolated = need communication

PHEROMONES

- Pheromones are a secreted or excreted chemical factor that triggers a response from certain members of species.
- Honey bees have one of the most complex pheromonal communication systems, possessing 15 known glands that produce an array of compounds.
- There are many types of pheromones as alarm pheromone, drone pheromone, egg marking pheromone, footprint pheromone, brood recognition pheromone, forager pheromone, Nasanov pheromone queen mandibular pheromone, queen retinue pheromone.
- We will talk about a few of them.

QUEEN MANDIBULAR PHEROMONE

- The Queen Mandibular Pheromone is emitted by the queen and is one of the most important sets of pheromones in the beehive.
- Affects social behavior, maintenance of the hive, swarming, mating behavior, and inhibition of ovary development in worker bees.
- This pheromone has been found important to keep the attraction between drones and the queen.

ALARM PHEROMONE

- Two main alarm pheromones in honeybee workers.
- One is released by the Koschevnikov gland.
- Alarm pheromones are released when a bee stings an animal, attracting other bees to the location.
- The other bees come for help and sting/charge
- . The alarm pheromone emitted when a bee stings another animal smells like bananas (odor recognition). Smoke can mask the bees' alarm pheromone.

BROOD RECOGNITION PHEROMONE

- Responsible for preventing worker bees from bearing offspring in a colony that still has developing young.
- Both larvae and pupae emit a "brood recognition" pheromone.
- Helps nurse bees distinguish worker larvae from drone larvae and pupae.
- The components of brood pheromone vary with the age of the developing bee.

DUFOUR'S GLAND PHEROMONE

- The Dufour's gland opens into the dorsal vaginal wall.
- We don't know that much about this pheromone.
- The pheromone is said to be laid with the eggs the queen lays.
- This secretion allows bees to distinguish between the queen's and the workers eggs.

FOOTPRINT PHEROMONE

- Left by bees when they walk and is useful in enhancing Nasonov pheromones in searching for nectar.
- In the queen, it is an oily secretion of the queen's tarsal glands that is deposited on the comb as she walks across it.
- Its production diminishes as the queen ages.

FORAGER PHEROMONE

- Ethyl oleate is released by older forager bees to slow the maturing of nurse bees.
- Acts as a distributed regulator to keep the ratio of nurse bees to forager bees in the balance that is most beneficial to the hive.

DANCE

- Bees communicate with other bees to recruit more of their friend to investigate floral odours. We aren't sure just yet why some plants are considered better than other but the amount of pollen and nectar are possibly a big influence
- There are two main hypotheses ”waggle dance” or ”dance language” theory and the "odor plume" theory.
- The dance language is the most known one. So we will focus on this one.
- The length of the dance matters a lot.
- We think it's important since all species of honeybees do it.
- Bees are extremely smart when it comes to understanding the waggle dance. (https://www.youtube.com/watch?v=-7ijI-g4jHg)

COLOR MEMORY

- Menzel studied the color memory in bees. He wanted to know how many tries were necessary for a bee to choose a colour that gave the bee a reward over one that wouldn’t.
- He made two different tests.
- After these two experiments Menzel concluded that bees had a really strong colour memory.

Conclusion

To conclude everything. We have to protect bees. Nowadays a lot of species of bees already disappeared and our goal to protect these little handsome insects.

Thank you for attention