



The Role of Drones and Its Congregation Areas

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Description

Drones don't engage in regular worker bee behaviours like collecting nectar and pollen, nursing, or building hives. Drones cannot sting, but if they are handled, they may swish their tails to scare the intruder away. If the nest is disturbed, certain species of drones may buzz around intruders in an effort to confuse them. In the early afternoon, there are a lot of drones flying around, and they are known to gather in places far from the hive.

The drone endophallus is made to move spermatozoa and seminal fluid around with a lot of force and speed. The drone houses the endophallus inside. The organ gets everted (turned inside out) into the queen during mating. By contracting the abdominal muscles, which raises hemolymph pressure and "inflates", the endophallus is everted [1, 2]. The queen is held in place by cornua claspers at the base of the endophallus. Less than 5 seconds pass during the mating process between a single drone and the queen, and it is frequently finished in 1-2 seconds. Mid-flight, at a height of 10–40 m (33–131 ft), is where mating takes place. Each drone must make the most of his one shot because the queen mates with 5-to-19 drones and drones die after mating. The drone approaches the queen from above, thorax over abdomen, straddling her. When her sting chamber is open, the drone grabs the queen by all six legs and everts the endophallus inside [3, 4].

Drone congregation areas

Designated zones, referred to as "congregation areas," are where drones wait for the arrival of queens. A congregation space can have a circumference of 30–200 m and is normally 10–40 m (33–131 ft) above ground (98–656 ft). A congregation area has clearly defined boundaries, and drones tend to overlook queens flying

a few metres beyond of those limits [5, 6]. Congregation places are frequently used annually, with some locations changing little over a 12-year period. Inexperienced drones must discover these assembly locations anew because over the winter, drones are evicted from a colony, and new drones are raised each spring. This implies some ecological [7].

Congregation areas are often found above flat terrain, away from hills or trees, when flight is partially shielded from the wind (calm winds may be helpful during mating flight). However, many congregational places, such as those over water or in the forest canopy, lack these qualities. Since the belly of drones older than six days contains cells that are rich in magnetite, several researchers have hypothesised that magnetic orientation may be involved.

In the life time of a single drone, it travels various congregation locations, frequently making many journeys in a single afternoon [8, 9]. An average mating flight lasts 20 to 25 minutes before the drone needs to return to the colony to get more honey to refuel. The drones wait for a queen to arrive at the location while they passively fly around. The drones identify the queen by visual and smell clues when she enters the congregation area. It is now a race to mate with the virgin queen in order to have a genetic representation in the freshly established colony.

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