

Cuckoo Bees: Nature's Clever Nest Invaders

Mounika Jarpla¹, Mamta Patange^{2*} and Pundlik Waghmare³

¹Ph. D scholar, Department of Entomology, Navsari Agricultural University, Navsari, Gujarat

^{2,3}Assistant professor, department of Agronomy, VNMKV, Parbhani, Maharashtra

*Corresponding Author: patangemj456@gmail.com

Cuckoo bees, also known as cleptoparasitic bees, that exhibit a unique and intriguing behavior within the world of bees. Unlike typical bees they construct and provision their own nests and take a different approach by parasitizing the nests of other bee species. They are part of the subfamily Nomadinae, within the family Apidae which includes several genera of cuckoo bees. These Cleptoparasitic bees exhibit distinct morphological features, characterized by the absence of structures for pollen collection, as they neither construct nests nor gather pollen for nesting purposes. Their morphology typically includes fewer hairs and a more robust exoskeleton, serving as protective armor during nest invasions. This adaptation helps safeguard cleptoparasitic bees as they infiltrate the nests of other bees, reflecting their specialized lifestyle and unique strategies for survival.

Parasitic Behavior

Cuckoo bees do not build their own nests or collect food for their larvae. Instead, they lay their eggs in the nests of other bees. The cuckoo bee female locates the nest of a host bee species and waits for an opportunity to enter the nest when the host bee is away.

Host Species

Cuckoo bees typically target solitary bee species, such as mining bees or mason bees, as hosts. They are often adapted to the specific host species they parasitize, ensuring that their eggs are laid in a suitable environment for the development of their larvae.

Egg-Laying

After entering inside the host nest, the cuckoo bee female lays her eggs in the cells where the host bee has laid its eggs. The cuckoo bee eggs usually hatch earlier than the host bee eggs, and the cuckoo bee larvae consume the provisions left by the host bee for their own development.

Ecological Significance

The cuckoo bee's parasitic behavior plays a crucial role in the ecosystem by influencing the dynamics of host bee populations. This interaction between cuckoo bees and their hosts contributes to the balance of bee communities, shaping the distribution and abundance of various species.

Mimicry

Some cuckoo bee species exhibit mimicry, resembling the appearance of their host species. This mimicry can help them infiltrate host nests more effectively.

Short Adult Lifespan

Adult cuckoo bees typically have a shorter lifespan compared to other bee species, as they do not engage in foraging activities.

Life cycle

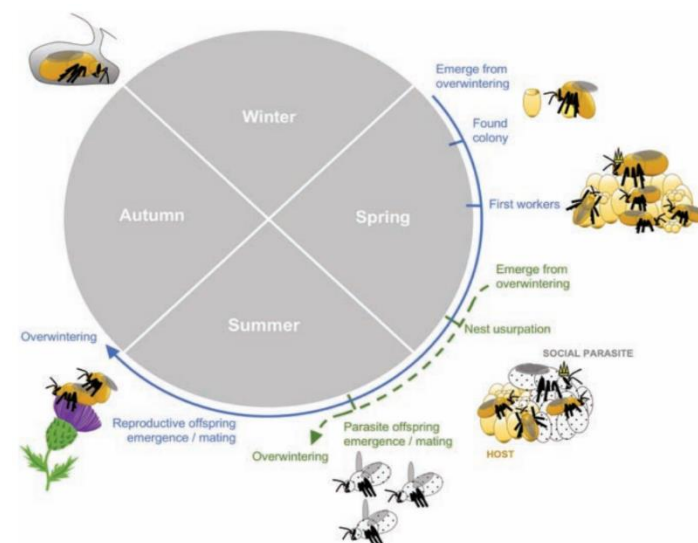


Fig 1: The life cycle of social (solid line) and cuckoo bees (dashed line)

Social bee queens undergo a solitary phase, emerging alone from hibernation in early spring. Upon finding a nest, they provision their initial worker brood. Once these workers emerge in mid- or late spring, they assume the responsibilities of nursing and foraging for subsequent worker generations. By the end of summer, the colonies shift focus to producing reproductive males and females (gynes). These solitary gynes leave the nest, mate, and enter

hibernation in early autumn. Cuckoo bumble bee females have a later spring emergence and typically take over nests once the first batch of host workers is produced. Their life cycle is considerably shorter, primarily involving the production of reproductive males and females from early to mid-summer. Similar to their host counterparts, these solitary gynes leave the nest, mate, and hibernate.

Conclusion

Cuckoo bees play a unique role in the ecosystem by taking advantage of the nesting efforts of other bee species. While they may seem parasitic, they are an interesting aspect of the diverse strategies employed by different bee species for reproduction and survival.

* * * * *