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THE ENIGMATIC CICADAS OF MALENADU

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Abstract

The Malenadu region, nestled in the Western Ghats of Karnataka, is home to a diverse array of cicada species. These insects, known for their distinctive calls, play a crucial role in the local ecosystem. Cicadas in Malenadu exhibit unique life cycles, often emerging after prolonged periods underground. Their development is influenced by the region's climatic conditions, which provide a suitable environment for their growth and reproduction. Cicadas feed on xylem fluid from trees, which is nutritionally poor, leading to their slow development. This prolonged development period allows them to store resources and maximize their reproductive success. The emergence of cicadas is a significant event in Malenadu, contributing to the region's biodiversity and ecological balance. Their presence also indicates the health of the forest ecosystem, as they are sensitive to environmental changes. Understanding the biology and ecology of cicadas in Malenadu can provide insights into the broader environmental health of the Western Ghats. Conservation efforts are essential to protect these insects and their habitats, ensuring the sustainability of this unique ecological region.

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Introduction

Malenadu, a picturesque region in Karnataka, India, is renowned for its lush greenery, rolling hills and rich biodiversity. Among its many natural wonders, the cicadas stand out as fascinating insects that contribute to the region's unique soundscape and ecological balance.

What are Cicadas?

Cicadas are part of the family Cicadidae, comprising over 3,000 species worldwide. These insects are known for their distinctive, loud calls produced by males to attract females. The sound is generated by vibrating membranes called tymbals located near the base of their abdomen.

The Malenadu region in the Western Ghats is home to several unique cicada species. Some notable species include:

1. *Huechyssanguinea*: Known for its striking red and black coloration, this species is often found in dense forests.

2. *Pomponia linearis*: This species is characterized by its large size and distinctive song, which can be heard during the monsoon season.
3. *Cicadatra raja*: A smaller species, it is known for its high-pitched calls and is commonly found in the lower elevations of the Western Ghats.
4. *Rustia kodagura*: Recently described, this species is unique to the Kodagu region within Malenadu.

These cicadas play a crucial role in the ecosystem, serving as both pollinators and a food source for various predators. Their presence and abundance can also be indicators of environmental health, making them important subjects for ecological studies.

Life Cycle and Behaviour

Cicadas have a complex life cycle that includes both underground and above-ground phases. The nymphs live underground for several years, feeding on sap from tree roots. When they emerge, they moult into adults, leaving behind their exoskeletons clinging to tree trunks and branches. This emergence is often synchronized, leading to large numbers of cicadas appearing simultaneously.

In Malenadu, cicadas typically emerge during the monsoon season, triggered by the warm, moist conditions. Their emergence is a spectacular event, filling the air with their characteristic buzzing and clicking sounds.

The lifespan of cicadas in Malenadu, like other regions, varies depending on whether they are annual or periodical cicadas.

Annual Cicadas

Annual cicadas, which are more commonly found in Malenadu, typically have a life cycle of 2 to 5 years. These cicadas spend most of their lives underground as nymphs, feeding on sap from tree roots. When they emerge, they moult into adults and live above ground for about 3 to 6 weeks. During this time, they mate, lay eggs, and then die.

Periodical Cicadas

While less common in Malenadu, periodical cicadas have a much longer life cycle, spending 13 or 17 years underground. These cicadas emerge in large numbers, which helps them avoid predators through sheer numbers. Once they emerge, their above-ground lifespan is similar to that of annual cicadas, lasting only a few weeks.

Lifecycle Stages

1. **Egg Stage**: Females lay eggs in tree branches. The eggs hatch after about 6 to 10 weeks.
2. **Nymph Stage**: The nymphs drop to the ground and burrow underground, where they remain for several years.
3. **Adult Stage**: After emerging from the ground, they moult into adults, mate and the cycle begins anew.

Cicadas are an integral part of Malenadu's ecosystem, contributing to the region's biodiversity and natural beauty.

Cicadas' mating behaviours are not only fascinating but also crucial for their survival and reproduction. Their unique strategies ensure that they can continue to thrive in the diverse ecosystems of Malenadu and beyond.

Cicadas have a fascinating and unique mating behaviour, which is particularly noticeable due to their loud and distinctive calls.

Mating Calls

Male cicadas produce loud, rhythmic sounds to attract females. These calls are made by rapidly vibrating specialized structures called tymbals located on the sides of their abdomen. Each species of cicada has its own distinct call, which helps females identify males of the same species. The intensity and frequency of these calls can vary, often reaching up to 120 decibels, which is as loud as a rock concert!

Female cicadas are quite selective when it comes to choosing their mates. Here are some key factors that influence their choice:

1. Mating Calls

The primary factor is the male's mating call. Each species of cicada has a unique call, and females are attracted to the specific sound of their species. The characteristics of the call, such as its rate, duration, and frequency, play a crucial role. Females tend to prefer males with higher calling song rates and shorter pulse durations.

2. Courtship Songs

In addition to the calling songs, males may also produce courtship songs once a female approach. These songs are typically softer and more complex. The quality and variation in these songs can further influence the female's choice.

3. Physical Condition

The physical condition of the male can also be a factor. A strong, healthy male is more likely to produce a louder and more consistent call, which can be an indicator of good genes and overall fitness.

4. Location and Timing

Males often gather in specific trees or areas to sing in choruses. The location and timing of these gatherings can affect female choice. Females may prefer males that are in prime locations or those that sing at optimal times of the day.

5. Visual and Tactile Cues

While sound is the primary mode of attraction, visual and tactile cues can also play a role. Females may respond to the male's movements or the way he positions himself during the courtship process.

6. Predator Avoidance

Females also consider the safety of the mating site. Areas with fewer predators are more attractive, as they provide a safer environment for mating and subsequent egg-laying. By being selective, female cicadas ensure that they mate with the best possible males, which helps improve the chances of their offspring's survival and success.

Courtship and Mating

Once a female is attracted to a male's call, she will approach him. The male may then perform a series of courtship behaviours, which can include additional calling, wing flicking and other movements to further entice the female. If the female is receptive, mating will occur. This process involves the male and female joining at the abdomen, where the male transfers sperm to the female.

Egg Laying

After mating, the female cicada will lay her eggs in small slits she creates in tree branches using her ovipositor. She can lay hundreds of eggs in multiple locations. These eggs will eventually hatch into nymphs, which will drop to the ground and burrow into the soil to begin their long underground phase.

Synchronized Emergence

One of the most remarkable aspects of cicada mating behaviour is their synchronized emergence. In some species, particularly the periodical cicadas, large populations emerge simultaneously after spending many years underground. This mass emergence overwhelms predators, ensuring that enough cicadas survive to mate and continue the species.

Predator Avoidance

The loud calls and synchronized emergence also serve as a strategy to avoid predation. By emerging in large numbers, cicadas reduce the likelihood of any one individual being eaten, a phenomenon known as predator satiation.

Ecological Importance

Cicadas play a crucial role in the ecosystem of Malenadu. Their emergence provides a significant food source for various predators, including birds, mammals and other insects. Additionally, the process of laying eggs in tree branches helps prune the trees, promoting new growth and maintaining the health of the forest.

Cultural Significance

In Malenadu, cicadas are often associated with the arrival of the monsoon and are considered harbingers of the rainy season. Their songs are woven into the cultural fabric of the region, inspiring local folklore, music and poetry.

Conservation Concerns

Despite their ecological and cultural importance, cicadas face threats from habitat loss and climate change. Deforestation and urbanization can disrupt their life cycles and reduce their populations. Conservation efforts are essential to preserve the natural habitats of Malenadu and ensure the survival of these remarkable insects.

Conclusion

The cicadas of Malenadu are more than just noisy insects; they are an integral part of the region's biodiversity and cultural heritage. Understanding and protecting these fascinating creatures can help maintain the ecological balance and natural beauty of Malenadu for future generations.

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