

CROCOTHEMIS – SPECIES IN NEWS / ENVIRONMENT

The scarlet dragonfly (*Crocothemis erythraea*), a high-altitude species, has been scientifically confirmed in the Western Ghats, correcting a long-standing misidentification with its lowland cousin. This discovery reveals the Western Ghats' role as a climatic refuge for species since the Ice Age, highlighting the vulnerability of its unique ecosystems.

Introduction – A Scarlet Rediscovery in the Western Ghats

Scientists have officially confirmed the presence of the scarlet dragonfly (*Crocothemis erythraea*) in the high-altitude regions of the southern Western Ghats. This significant rediscovery corrects a long-standing misidentification and provides profound insights into the region's ecological history, dating back to the Ice Age.

Species Basics and a Case of Mistaken Identity

The confirmation clarifies the distribution of the two known species of the *Crocothemis* genus in India.

Genus in India –

1. **Crocothemis servilia** – This is the common scarlet dragonfly, widely distributed and typically found in lowland regions, such as plains, wetlands, and agricultural fields.
2. **Crocothemis erythraea** – This species is adapted to high-altitude habitats. Its known range includes Europe, temperate Asia, and the Himalayas. The recent confirmation officially adds the southern Western Ghats to its habitat.

The Confusion – For years, specimens of *C. erythraea* found in the Western Ghats were misidentified as *C. servilia* due to their strong morphological similarities. The recent study has now definitively distinguished the two populations.

The Journey of Rediscovery – A Scientific Timeline

The confirmation was the result of a multi-year research effort marked by initial skepticism and meticulous verification.

2018 – The first photographic evidence of a suspected *C. erythraea* was recorded in the Munnar high ranges of Kerala, sparking curiosity among researchers.

2019–2023 – Following the initial sighting, multiple scientific expeditions were conducted to locate the species again and gather conclusive evidence of its presence.

2021 – The species was tentatively included in Kerala's official odonata (the order of insects that includes dragonflies and damselflies) monograph. However, it was later removed due to scientific skepticism and the need for more robust proof.

2023–24 – A detailed, evidence-based study was published in the peer-reviewed International Journal of Odonatology, which scientifically reconfirmed its presence, settling the debate.

Scientific and Ecological Significance

This rediscovery is more than just a new entry on a species list; it tells a compelling story about climate history and biodiversity.

Ice Age Colonisation – The presence of this temperate species in a tropical region is explained by events during the Pleistocene Ice Age. During this period, cooler global conditions allowed temperate fauna like *C. erythraea* to extend their range southward and colonize the high-altitude areas of the Western Ghats.

A Refugial Population – As the Ice Age ended and the climate warmed, the cooler, high-altitude ecosystems of the Western Ghats acted as a climatic refuge. This allowed species that had migrated south to survive in isolated populations, preserving ancient biodiversity.

Biogeographical and Ecological Insights – The dragonfly serves as a biological indicator, providing clear evidence of historical climatic shifts and the resulting species migration patterns. The Western Ghats function as a unique "climatic island," supporting both tropical lowland species (like *C. servilia*) and temperate high-altitude species (like *C. erythraea*).

Conservation Importance and Future Outlook

The confirmation has significant implications for the conservation of the Western Ghats.

A Global Biodiversity Hotspot – The rediscovery further highlights the ecological richness of the Western Ghats, a UNESCO World Heritage Site, and reinforces the need for its protection.

Indicator of Climate Change – High-altitude species are often highly sensitive to temperature changes, making them vulnerable to global warming. *C. erythraea* can serve as an indicator species to monitor the health of its fragile ecosystem.

Need for Monitoring and Surveys – The finding underscores the importance of continuous faunal surveys to discover and correctly identify species. It also calls for long-term monitoring to protect these habitats from threats like plantations, unregulated tourism, and climate change.

Research Contribution and Key Findings – The study represents a significant contribution to India's odonatology. The research was led by Kalesh Sadasivan, the study's lead author, and his team. The findings were published in the prestigious International Journal of Odonatology, ensuring global scientific validation. Crucially, this research confirms the co-existence of both *Crocothemis* species in India for the first time, each occupying a distinct ecological niche.

Comprehensive Takeaway

The rediscovery of *Crocothemis erythraea* offers several key lessons – It corrects a long-standing misidentification, thereby enriching our understanding of India's odonate diversity. It showcases the vital role of the Western Ghats as a climatic refuge that has preserved species since the last Ice Age. It strengthens the argument for conducting more climate-linked species distribution studies to understand the long-term impacts of environmental change. It reinforces the urgent need for long-term monitoring and conservation efforts to protect the unique and vulnerable high-altitude ecosystems of India.

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