

EDITORIAL

Celebrating the Uniqueness of Insects



Insects have long served as elegant models for fundamental research, offering insights that transcend disciplinary boundaries and often yield impacts beyond imagination. This editorial is a continuation of that conviction: insects are exceptional creatures of nature, and their activities have no parallel among other organisms. Many of their life fundamentals are original, thought-provoking, and yet too often overlooked. As entomologists, we sometimes fail to give due cognisance to these extraordinary attributes. Recognizing and exploring them is of paramount importance. Today's technological advancements—whether in molecular biology or digital tracking—provide unprecedented avenues to do so, with cascading benefits across science and society.

Recently, I came across two striking examples that illuminate this uniqueness:

Snow Flies on Ice: A recent *Current Biology* publication highlights wingless snow flies (genus *Chionea*), remarkable insects adapted to extreme cold. Active throughout winter, they traverse snow even at sub-freezing temperatures. Molecular studies now reveal antifreeze proteins, sensory signalling adaptations, and bursts of endogenous heat that enable survival in such hostile conditions. These findings not only deepen our understanding of insect thermogenesis but also hold promise for broader biological applications in extreme environments.

Honey Bees in Flight: Equally fascinating are new insights into honey bee navigation. Using a multicopter drone-based tracking system, researchers have mapped bee flight with unprecedented precision in agricultural landscapes. These studies unravel the cognitive maps bees construct, their fine-scale behavioural strategies, and the remarkable accuracy of their navigation. Emerging tools like drone-assisted tracking exemplify how modern technology can illuminate the hidden dimensions of insect ecology and cognition.

Is it not invigorating to witness such discoveries? They remind us that insects embody a universe of uniqueness waiting to be explored. My purpose in sharing these examples is to provoke thought and inspire our fraternity—especially young entomologists in India—to embrace these marvels with curiosity and creativity.

Let us celebrate insects not only as models of research but as unparalleled wonders of nature. May this spirit echo across our community, in conferences, classrooms, and conversations, and may it find resonance in the vibrant networks of the Entomological Society of India.

Dr. V. V. Ramamurthy
Editor in Chief