THE INSECT WORLD: HIDDEN LIVES IN CENTRAL ILLINOIS

FACILITATOR

Mark DuBois, FRES

EMAIL

centralIllinoisInsects@gmail.com

Session 5 Questions – if you don't have the book, there is a WWW

Chapter 10: Behavior and Anatomy

The Senses Behind Actions: How do microscopic structures—such as specialized sensilla, Johnston's organs, or compound eyes—translate environmental stimuli into immediate physical actions?

The Mechanics of Flight: Observe a heavy-bodied insect (like a bumblebee or beetle) versus a light-bodied one (like a damselfly). How do differences in their thoracic anatomy and wing coupling mechanisms change their agility, hovering capacity, and wind resistance?

The Cost of "Superpowers": Chapter 10 highlights incredible physical adaptations. Evolutionarily speaking, what are the biological trade-offs of an insect investing significant metabolic energy into building highly specialized anatomical structures (like massive compound eyes or heavy defensive armor)?

Defying Gravity and Physics: Insects regularly pull off physical feats that defy human engineering (e.g., flies walking upside down on glass using specialized leg hairs). Spoiler alert – they don't really defy gravity or physics. How does studying the micro-anatomy of insect extremities reshape our understanding of biological biomechanics?

Chapter 12: Diversity and Conservation

The Scale of Diversity: Insects have survived five mass extinctions. Based on the chapter, what primary physiological or behavioral adaptations (e.g., wings, versatile skeletal structures, high reproductive potential) have allowed them to diversify into millions of specialized niches?

The "Unknown" Majority: A massive percentage of the global insect population remains undocumented. What unique obstacles do entomologists and naturalists face when attempting to measure and catalog insect biodiversity compared to large mammals or birds?

Trophic Cascades: Consider the fact that well over half of all fish, birds, amphibians, and reptiles rely heavily on insects for food. If a localized area experiences a sharp decline in insect biomass, what specific secondary impacts might you expect to observe in higher-trophic-level wildlife populations?

Synergistic Pressures: Insect populations are facing an array of threats, including habitat fragmentation, pesticide contamination, invasive species, and climate change. How do these factors act synergistically (compounding one another) to accelerate localized extinctions?

Landscape Heterogeneity: Conservation biologists emphasize the importance of maintaining varied, high-quality landscapes. As a land steward or gardener, what concrete steps can you take to increase structural and floral diversity to support a wider array of native insect life cycles?