The Insect World: Hidden Lives in central Illinois

Facilitator

Mark DuBois, FRES

Email

centralllIinoisInsects
@gmail.com

Session 2 Questions – if you don't have the book, there is a WWW

The Trap of Light Pollution. Moths and other nocturnal insects rely on moonlight and starlight for navigation (Chapter 3), using highly sensitive eyes (Chapter 4). How can we practically mitigate the disruptive effects of artificial patio and security lights on local insect populations?

Chapter 3: Movement

Spotting Flight Styles: Insects display drastically different flight patterns, from the erratic zig-zag of a butterfly to the steady hover of a syrphid fly. Based on the muscle mechanics in Chapter 3, what clues can you look for in your garden to guess whether an insect uses direct or indirect flight muscles?

Surface Masterminds: Naturalists often find beetles clinging effortlessly to the undersides of leaves or flies walking upside down on patio ceilings. How does the book's explanation of tarsal claws and adhesive pads change how you observe insects navigating the vertical terrain of your garden?

Locomotion and Foraging: Consider the difference between a crawling caterpillar, a jumping grasshopper, and a sprinting ground beetle. How do their different leg structures dictate where and how they look for food in a typical backyard ecosystem?

Weathering the Storm: On a windy or rainy day, backyard insects face immense physical challenges. How do you think the flight mechanics described in this chapter help small pollinators like native bees stay on target when navigating gusty winds to visit garden flower beds?

Chapter 4: Senses

Gardening for UV Vision: Knowing that many insects see in the ultraviolet spectrum and look for "nectar guides" on petals, how does this change your perspective on flower selection? How might we alter our gardens to better cater to what insects see versus what humans find pretty?

Antennae Tracking: When watching a wasp or an ant explore a plant, you will often see their antennae constantly tapping the surface or waving in the air. Based on the chapter's description of chemoreceptors, what specific chemical stories do you think they are reading on that plant?

The Backyard Stealth Game: We often try to photograph a fly or a grasshopper, only to have it vanish the moment we move. How do the insect's compound eyes and rapid decentralized reflex loops make it so incredibly difficult for a human to sneak up on them?

Soundscapes and Night Senses: As the sun sets, the backyard soundscape changes to cricket chirps and katydid songs, while moths take over the air. How do the specialized hearing organs (tympanal organs) and nocturnal adaptations discussed in Chapter 4 facilitate this vibrant night shift?

If we have time…

Pesticides and Sensory Disruption: Many backyard pesticides target an insect's nervous system. Based on Chapter 4, how might sublethal exposure to these chemicals disrupt an insect's ability to fly, navigate back to a nest, or successfully find host plants in a neighborhood? Might they also affect the overall health of the micro-biomes (bacteria and viruses in the insect gut and haemolymph)?