

Understanding Urbanization Trends through Anthropod Bioindicators

BY

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Purpose & Hypothesis

- **The Problem:** Deforestation compresses wildlife into fragmented habitats.
- **Why Arthropods?** They are bio-indicators. Changes in their population signal changes in regional environmental health.
- **Internship Goal:** To gain field methodology skills and understand how human-wildlife overlap affects local ecosystems.



Methodology

- Location: Forested vs. Deforested sites.
- Technique: Pitfall trapping (captures ground-dwelling communities).
- Process:
 - 1. Strategic placement of traps.
 - 2. Laboratory classification.
 - 3. Microscopic analysis for taxonomic inventory.



Results: The Data Shift

- **Natural Site Highlights:** High dominance of Hymenoptera (54) and Lepidoptera (30+ total). Greater overall variety (e.g., Odonata, Acrididae present).
- **Deforested Site Highlights:** A massive spike in Isopoda (45 vs. 3 in natural sites) and a significant presence of Formicidae (19).
- **Key Observation:** Deforested areas showed a "narrower" diversity but higher concentrations of specific hardy groups like Isopods (pill bugs/woodlice).



Data Table



Order/Group	Natural Site Count	Deforested Site Count
Isopoda	3	45
Hymenoptera	54	19
Lepidoptera	31	13
Orthoptera	15	5

Conclusion & Ecological Implication

Key Finding: Urbanization leads to "Biotic Homogenization." While the natural site had a balanced distribution of Hymenoptera (ants/bees) and Lepidoptera (butterflies), the deforested site was dominated by a single group: Isopoda.

- **The Impact:** This shift suggests that as we lose forest cover, we lose essential ecosystem services like pollination, replacing them with a less diverse community of decomposers.

The "Why": Deforested areas often have "anthropogenic subsidies" (human-provided food/shelter) and soil disturbances that favor hardy, opportunistic species like Isopods (pill bugs) over sensitive pollinators.

Professional Growth & Future Outlook

Skill Acquisition: Through the mentorship of Dr. Sundararaj Vijayan, I moved beyond the classroom to master field methodology (pitfall trapping) and microscopic taxonomic identification.

Personal Change: This internship shifted my perspective on urban development. I no longer see "empty lots" as empty; I see them as critical hybrid zones where the health of the "little things" (arthropods) predicts the health of the whole region.

Career Application: I plan to apply these data collection and analysis skills to a career in Environmental Technology. Understanding how to monitor bio-indicators is essential for creating sustainable cities and smarter agricultural practices.

Sustainability

Thank you!

QUESTIONS?