

Insect Ecology - Plant Sci 9810 - Syllabus, Fall

Introductory Comments

UNIT 1: Plant-Herbivore Interactions [PWP Chapters 5 and 6]

Host Plants as Heterogeneous Resources for Herbivores (Lecture #1)

No class - DPS orientation

Labor Day

Ecol. Stoichiometry & the Role of N in Plant/Herbivore Interactions (Lecture #2)

Theory and Pattern of Plant Defense (Lecture #3)

DISCUSSION 1

Counterplays of Herbivores to Plant Defense (Lecture #4)

Diet Breadth and Host Plant Specialization (Lecture #5)

"Enemy-Free" Space and Herbivore Distribution and Abundance (Lecture #6)

Plant Pattern and Herbivores: Reciprocal Responses (Lecture #7)

Co-evolution between Herbivores and Host Plants (Lecture #8)

DISCUSSION 2

UNIT 2: Predator (Parasite)/ Prey Interactions [PWP Chapters 7, 8, and 9]

Functional Responses (Lecture #9)

No class

Numerical Responses, Uncoupling Factors and Outbreaks (Lecture #10)

Insect Defense against Natural Enemies (Lecture #11)

Predator-Prey Population Dynamics (Lecture #12)

DISCUSSION 3

"Stability" and Persistence of Predator-Prey Interactions (Lecture #13)

Ecological Basis for Biological Control (Lecture #14)

Top-down Versus Bottom-up Control and Trophic Cascades (Lecture #15)

DISCUSSION 4

UNIT 3: Life History and Reproductive Strategies [PWP Chapter 14]

Life History Theory including Migration and Diapause (Lecture #16)

Constraints on Life History Evolution (Lecture #17)

MIDTERM EXAMINATION (Material from Units 1, 2, and 3)

UNIT 4: Population and Metapopulation Dynamics [PWP Chapters 17, 18, and 19]

Historical Perspectives on Insect Population Regulation (Lecture #18)

Current Controversies in Insect Population Regulation (Lecture #19)

Metapopulation Dynamics and Conservation Ecology (Lecture #20)

DISCUSSION 5

UNIT 5: Competition and Community Structure [PWP Chapters 20-24]

Coexistence, the Division of Resources and the Niche (Lecture #21)

Do Insects Compete? (Lecture #22)

Insect Community Structure and Development (Lecture #23)

DISCUSSION 6

Temporal Patterns of Diversity and Tropical Richness (Lecture #24)

Insect Diversity and the Functioning of Ecosystems (Lecture #25)

Entomological Society of America National Meetings (no class)

DISCUSSION 7

Recess

UNIT 6: Behavioral Ecology and the Evolution of Social Behavior [PWP Chapter 15]

Sexual Selection (Lecture #26)

Mating Systems, Parental Investment and Sex Ratio (Lecture # 27)

Structure of Insect Societies (Lecture #28)

Evolution of Insect Societies (Competing Hypotheses) (Lecture #29)

DISCUSSION 8

TBA

FINAL EXAMINATION (Material from Units 4, 5, and 6)