

Competition

Part 1: Limited Resources and Competition

Niches and environmental tolerance. Fundamental vs. realized niche. Competitive exclusion. Different mechanisms of competition, including exploitation, interference, territoriality, allelopathy, and preemption.

- Not Enough To Go Around
- Resource Limitation Results in Competition
- Mosquitoes in Florida
- Niches and Environmental Tolerance
- Asian Tiger Mosquito vs. Yellow Fever Mosquito
- Competitive Exclusion
- Classifying Competitive Interactions
- Resource Competition
- Interference Competition
- Summary of Part 1
- Quiz Questions
- Questions About Concepts?

Part 2: Intraspecific Competition

Exponential and logistic growth. Effect of competition on individual growth rates. Carrying capacity and resource availability.

- Modeling Competition Within Populations
- Intraspecific Competition in Mosquito Larvae
- Survival of the Fittest (or Fattest)
- Competition Limits Population Growth
- Carrying Capacity
- Logistic Growth
- Summary of Part 2
- Quiz Questions
- Questions About Concepts?

Part 3: Interspecific Competition

Competition coefficients. Lotka-Volterra competition equation. Phase planes, phase portraits, and isoclines. Four outcomes from competitive interactions. R^* competition. Laboratory studies of competition.

- Species vs. Species
- The Communities Inside Your Body
- Probiotics vs. Pathogens
- Competition Coefficients
- Lotka-Volterra Competition Equation

- Phase Planes
- The Phase Portrait
- Isoclines of Zero Population Growth
- Engineering an Effective Probiotic
- Interpreting Isoclines to Predict Outcomes
- Successful Application of Probiotics
- Lotka-Volterra in the Lab
- Summary of Part 3
- Quiz Questions
- Questions About Concepts?

Part 4: Competition in Complex Environments

Field studies of competition. Common garden experiments. Competition importance across taxa. Hypotheses for competitive coexistence: environmental heterogeneity, trade-offs, interspecific interactions, and neutral theory of biodiversity.

- Competition Outside the Lab
- Common Garden Experiments
- Hypotheses for Competitive Coexistence
- Mosquitoes in a Complex Environment
- Mosquito Abundance and Competition
- Summary of Part 4
- Quiz Questions
- Questions About Concepts?