

# Competition

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### Section 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
- Competitive Exclusion
- Classifying Competitive Interactions
- Resource Competition
- Interference Competition
- Section Summary
- Ask Your Instructor

### Section 2: Intraspecific Competition

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

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- Intraspecific Competition in Mosquito Larvae
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- Competition Limits Population Growth
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### Section 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
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- Lotka-Volterra Competition Equation
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- Engineering an Effective Probiotic
- Interpreting Isoclines to Predict Outcomes
- Successful Application of Probiotics
- Lotka-Volterra in the Lab
- Section Summary
- Ask Your Instructor

#### **Section 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
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- Ask Your Instructor