

Key Concept 4: Ecological Community Dynamics

Learning Objectives

Students will be able to ...

Essential Knowledge

Students need to know that ...

Interspecific Competition

ECO 4.1(a) Explain how competition shapes community characteristics.

ECO 4.1(b) Use data to analyze how competition influences niche-partitioning in an ecological community.

ECO 4.1(c) Create and/or use models to explain predictions about the possible effects of changes in the availability of resources on the interactions between species.

ECO 4.1.1 Competition between species drives complex interactions in ecosystems.

- a. Predator and prey populations respond dynamically to each other.
- b. Keystone species have a dramatic impact on the structure and diversity of ecological communities (e.g., trophic cascade).
- c. Competition will lead to the exclusion of all but one species when two or more species attempt to occupy the same niche.
- d. Niche-partitioning is a means of reducing competition for resources.

Symbiosis

ECO 4.2(a) Describe what symbiotic relationship exists between two organisms.

ECO 4.2(b) Explain how a symbiotic relationship provides an advantage for an organism by reducing one or more environmental pressures.

ECO 4.2.1 Competition in ecosystems has led to symbiotic relationships where two or more species live closely together.

- a. Mutualistic relationships often form to provide food or protection for both of the organisms involved.
- b. Parasitic relationships benefit only one organism in the relationship (the symbiont) and harm the host.
- c. Commensalism is a kind of relationship that benefits only one organism in the relationship (the symbiont); the host is neither harmed nor helped.