Species Interactions & Animal Behavior

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Essential Questions

- 1. Identify and describe the main types of species interactions in a community.
- 2. Compare individual and group behavior.
- 3. Explain how the different types of group or cooperative behavior can increase a species chance of survival.

Species Interactions



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- Ecological communities contain populations of interacting species
 - Symbiosis a close interactions between species
 - Symbioses (pl) may be beneficial, harmful or have no effect on the species involved
- Five major types of Symbioses:
 - Predation
 - Parasitism
 - Competition
 - Mutualism
 - Commensalism

Predation (+/-)

- One individual (predator) captures, kills and consumes another individual (prey)
 - Benefits predator (+)
 - Harms prey (-)



Predator Adaptations





- Improves the efficiency of finding, capturing & consuming prey
 - Sensory adaptations (sight, smell, hearing)
 - Sharp teeth & claws
 - Speed & agility
 - Binocular vision
 (increases depth perception)

Prey Adaptations

- Increases ability to avoid being captured
 - Camouflage
 - Toxicity (chemical defense)
 - Warning coloration (usually signals toxicity)
 - Mimicry (harmless species resemble poisonous species)
 - Spines, thorns
 - Monocular vision (increases peripheral vision)







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Parasitism (+/-)



- One individual (parasite) feeds on another individual (host)
 - Benefits parasite (+)
 - Harms host (-)
- Does not usually result in immediate death of host
 - Parasite will feed on host for long periods of time
- Parasite & host are often in an evolutionary arms race (co-evolving)

Competition (-/-)

- Two or more species using the same limited resource
 - Often negative for both species



Common Results of Competition





- Competitive Exclusion one species out competes the other
 - One species is eliminated)
- Resource Partitioning Each species uses only a portion of the resources
 - Both species co-exist

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Mutualism (+/+)

- A cooperative relationship where both individuals benefit
 - Example: butterflies get nectar from flowers & the flowers are pollinated



Commensalism (+/0)





- One individual benefits, but it does not affect the other individual
 - Example: barnacles attached to a whale
 - Example: cow birds

Summary of Species Interactions



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Animal Behavior

- Understanding animal behavior can help us to understand:
 - Species interactions
 - Adaptations
 - Wildlife management strategies

– Etcetera...

Group Behavior

- Species interactions focuses on the behavior of individuals
 - Each organisms acts a specific way to improve its own chances of survival
- Group behavior focuses on the actions of the whole social group



Advantages of Social Groups



- Protection from environmental factors
- Protection against predators
- Easier to find potential mates
- Defense against competing species
- Division of labor
- Population regulation

Disadvantages of Social Group Behavior

- Increased competition for resources
- Increased chance for diseases to spread
- Interference with reproduction



Examples of Group Behavior



- Flocking birds feed and nest in flocks
 - Protection against predators
 - Protections against environmental conditions
- Schooling fish swim in schools
 - Protections against predators
 - Increased ability to locate food sources
 - Conserves energy for individuals
 - Increases likelihood of finding mates
- Herding land animals move in herds
 - Protection against predators
 - Protection of resources

Cooperative Group Behavior

- Cooperative group behavior is a more organized form of social behavior
 - Individuals often have specific jobs within the group



Examples of Cooperative Group Behaviors



- Swarming allows insects to fight off predators
- Hunting a group of individuals work together to bring down prey
- Migrating a group of individuals travel long distances together

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