# Interactions Within Ecosystems

**Name:** ..... **Date:** .....

Living things in an **ecosystem** constantly **interact** with each other. These interactions are vital for survival, helping organisms find food, protection, and mates. Relationships are broadly categorized into **symbiotic** (close, long-term) and **nonsymbiotic** (other types, often temporary or less intimate) interactions.

## Symbiotic Relationships

**Symbiosis** refers to a **close, long-term relationship** between individuals of **different species**.

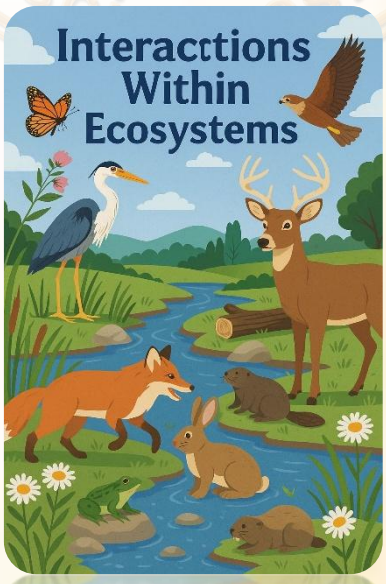
**There are three main types:**

1. **Mutualism** **(Benefits Both Species: +/+)**: Both organisms benefit from the interaction. *Example:* Oxpeckers (birds) feed on parasites and dead skin on a buffalo, getting food while the buffalo stays clean and healthy.
2. **Commensalism** **(Benefits One, Harms Neither: +/0)**: One organism benefits, and the other is neither helped nor harmed. *Example:* Barnacles attach to a whale for shelter and feeding without affecting the whale.
3. **Parasitism** **(Benefits One, Harms the Other: +/-)**: One organism, the **parasite**, benefits by living in or on the other organism, the **host**, which is harmed. *Example:* A mosquito (parasite) feeds on human blood (host).

## Nonsymbiotic Relationships 🐄

These interactions are generally **not close, long-term relationships** between **different species**, but they are still crucial for ecosystem dynamics.

1. **Predation (Predator-Prey)**: An interaction where one organism, the **predator**, hunts and feeds on another organism, the **prey**. *Example:* A lion (predator) hunts a zebra (prey). 🦁 🦓
2. **Competition**: Occurs when organisms **compete** for limited resources like food, water, or shelter. Competition can be **within the same species** or **between different species**. *Example:* Two birds fighting over food. 🐓 🐓
3. **Cooperation**: An interaction where individuals from the **same species** work together to help each other survive. This is a **nonsymbiotic** relationship because it is **within the same species**. *Example:* Wolves hunting together in a pack. 🐺 🐺



## I. Multiple Choice Questions

**Choose the best answer for each question.**

**1. What is the basic primary characteristic of symbiotic relationships?**

a) are interactions that involve competition between species

b) are close long-term relationships between different organisms

c) are interactions between species that do not involve close relationships

d) are interactions where one species preying on another

**2. Oxpeckers feed on parasites and dead skin found on the buffalo, which helps keep the buffalo clean and healthy. What type of relationship is between oxpeckers and buffalo?**

a) predation

b) parasitism

c) commensalism

d) mutualism

**3. Which type of symbiotic relationship benefits one species and does not affect the other species?**

a) competition

b) mutualism

c) commensalism

d) parasitism

**4. Mosquitos feed on human blood for nutrients, while humans suffer discomfort and risk of disease transmission, like malaria. Which statement is TRUE about the relationship between a mosquito and a human?**

a) The mosquito acts as a predator, while the human is the prey.

b) The mosquito acts as a parasite, while the human is the host.

c) There is a competitive relationship between the mosquito and the human.

d) There is a prey-predator relationship between the mosquito and the human.

**5. Which of the following is an example of commensalism?**

a) bees taking nectar from flowers and pollinating them

b) a predator hunting its prey

c) a tapeworm infecting the intestine of a host

d) the shark protecting the suckerfish (remora fish)

**6. Which of the following is a type of symbiosis?**

a) predator-prey relationship

b) parasitism relationship

c) cooperative relationship

d) competitive relationship

**7. How do species interact in a mutualism relationship?**

a) one species benefits and the other is harmed

b) both species are harmed

c) one species benefits and the other is unaffected

d) both species benefit

**8. Barnacles are sea animals that attach to whales for shelter and feeding without affecting the whales. What type of relationship is between the barnacles and the whales?**

a) predation

b) parasitism

c) commensalism

d) mutualism

**9. Wolves hunt in groups, working together to capture the prey. What type of relationship is between the wolves?**

a) Predator-prey relationship

b) Competitive relationship

c) Cooperative relationship

d) Mutualism relationship

**10. Which of the following is a type of nonsymbiotic relationship?**

a) predation

b) parasitism

c) commensalism

d) mutualism

**11. How can relationships between living things benefit the individuals involved?**

a) Relationships between living things help the individuals move to new habitats.

b) Relationships between living things harm the individuals involved.

c) Relationships between living things help the individuals survive in their habitat.

d) Relationships between living things do not benefit or hurt any of the individuals involved.

**12. Which best describes the interaction when two different species fight for the same limited food source?**

a) Mutualism

b) Parasitism

c) Predation

d) Competition

**13. What might be some real-life examples of cooperative relationships?**

a) oxpeckers feeding on parasites from a deer's back

b) clownfish living among sea anemones for protection

c) wolves hunting together in packs to catch prey

d) bees pollinating flowers while gathering nectar

**14. How does a cooperative relationship differ from a symbiotic relationship?**

a) Cooperative relationships benefit one species, while symbiotic relationships benefit both.

b) Cooperative relationships involve competition, while symbiotic relationships avoid it.

c) Cooperative relationships involve the same species, while symbiotic relationships involve different species.

d) Cooperative relationships require dependence, while symbiotic relationships do not.

**15. In what ways can organisms within the same species work together to enhance their survival?**

a) by avoiding other members of their species to reduce conflict

b) by competing for resources to eliminate weaker individuals

c) by cooperating to gather food, protect each other, and raise young

d) by sharing the same habitat without interacting at all

## II. Fill-in-the-Blank Questions

**Fill in the blank with the correct term.**

**16.** In a parasitic relationship, the host is _____ and the parasite_____ .

**17.** Mutualism is a_____ relationship that involves individuals from _____ .

**18.** A lion hunting and feeding on a zebra is an example of a _____ relationship, where the lion is the _____ and the zebra is the _____ .

**19.** Cooperative relationships are a type of _____ interaction that involves individuals from _____ .

**20.** Organisms eat food to gain _____ .

**21.** The relationship where one species benefits and the other is neither helped nor harmed is called _____ .

**22.** _____ occurs when organisms fight over limited resources.

## III. Short Answer Questions

**Answer the following questions in complete sentences.**

**23**. Describe the difference between a **mutualism** and a **commensalism** relationship, using the symbols (+, -, or 0) to represent the effect on each organism.

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**24**. Explain why cooperation is considered a powerful strategy for survival for some animals.

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**25**. Give an example of a parasitic relationship and clearly identify the parasite and the host.

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# Answer Key

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|---|---|
| 1 | b) |
| 2 | d) |
| 3 | c) |
| 4 | b) |
| 5 | d) |
| 6 | b) |
| 7 | d) |
| 8 | c) |
| 9 | c) |
| 10 | a) |
| 11 | c) |
| 12 | d) |
| 13 | c) |
| 14 | c) |
| 15 | c) |
| 16 | harmed, benefits |
| 17 | symbiotic, two different species |
| 18 | nonsymbiotic, predator, prey |
| 19 | nonsymbiotic, the same species |
| 20 | energy |
| 21 | commensalism |
| 22 | Competition |
| 23 | Mutualism is a relationship where both species benefit (+/+). Commensalism is a relationship where one species benefits, and the other is neither harmed nor helped (+/0). |
| 24 | Cooperation is a powerful survival strategy because when individuals of the same species work together, they can gather resources more efficiently, protect each other from predators or danger, and raise their young successfully, increasing the overall survival and success of the group |
| 25 | Example: A tick feeding on a dog. The tick is the parasite (it benefits), and the dog is the host (it is harmed). (Acceptable alternatives include: Mosquito/human, Tapeworm/host, Flea/cat). |