

## SYMBIOSIS ACTIVITY

### BACKGROUND

Two individuals of the same or different species may interact in a variety of different ways. A very specific interaction that may occur between the organisms is defined as **symbiosis**, a close, **coevolutionary** association between one species (host) and another species (symbiont). Species may interact in a variety of different ways:

1. **Amensalism** (- , 0) -- in this interaction, one species suffers while the other is unaffected. An example is *alleopathy* where one species release a chemical substance to inhibit the growth of another species.
2. **Competition** (- , -) -- based upon a competition for resources. There are four types of competition, and it is possible for an interaction to be a combination of two of the types. In *intraspecific competition*, organisms from the same species compete for the same resource. In *interspecific competition*, organisms of different species compete for the same resource, usually aggressive. In *exploitation competition*, occurs when indirect effects reduce a resource, and there's no interaction and aggression between individuals. But, they're still reducing the amount available to others. In *interference competition*, an organism prevents physical establishment of another organism in the habitat. Read how the anemone fish (clown fish) competes.
3. **Commensalism** (+, 0) -- in this interaction, one species benefits from the interaction while the other is neither helped nor harmed. Until definitive evidence of the benefit served by the anemone is discovered, the clown fish and the sea anemone described above are an example of this.
4. **Mutualism** (+, +) -- in this interaction, both species benefit.
5. **Neutralism** (0, 0) -- while this interaction is almost always implied rather than stated in most superficial interactions, it is crossing of paths where neither organism is affected by the other.
6. **Parasitism** (+,-) -- in this interaction, one species benefits while the other is harmed. Parasites generally attach to a host as a consistent source of nutrition. Parasites may be *endoparasites*, existing outside the host, or *endoparasites*, existing inside the host. The parasite does not want to kill its host, as this would remove the source of food.
7. **Predation** (+,-) -- in this interaction, one species benefits while the other is harmed. Predators obtain food at the expense of their prey. Predation may be considered *herbivory* or *carnivory*. Observe the population dynamics between the snowshoe hare and lynx at the following.
8. **Saprophytism** (+, 0) -- in this interaction, a dead or decaying organism is fed upon by another organism. Most of these *detritivores* replenish essential environmental nutrients as part of the biogeochemical cycles.

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Name \_\_\_\_\_ Date \_\_\_\_\_

## TASK

1. Look at each of the following 15 images of interactions.
2. Classify the type of interaction that takes place in the image(s) shown.
3. Briefly describe the specific interaction.

NOTE: You may use the web, your textbook, or other resources to locate *specific descriptions* of the interactions.

- \_\_\_\_\_ Interaction #1 Grizzly Bear & Monarch Butterfly
- \_\_\_\_\_ Interaction #2 Bromeliad & Wild Tamarind Tree
- \_\_\_\_\_ Interaction #3 Lion & Zebra
- \_\_\_\_\_ Interaction #4 *E. coli* & Humans
- \_\_\_\_\_ Interaction #5 Remora & Great White Shark
- \_\_\_\_\_ Interaction #6 Flukes & Elk
- \_\_\_\_\_ Interaction #7 Lichen
- \_\_\_\_\_ Interaction #8 Hummingbirds
- \_\_\_\_\_ Interaction #9 Mycorrhizae & White Oak Tree
- \_\_\_\_\_ Interaction #10 Lianas & Flying Fox
- \_\_\_\_\_ Interaction #11 Sea Anemone (*Calliactis tricolor*) & Hermit Crab
- \_\_\_\_\_ Interaction #12 Africanized Honey Bees & European Honey Bees
- \_\_\_\_\_ Interaction #13 European Starling & Purple Martin
- \_\_\_\_\_ Interaction #14 Mussel (clam) Larvae & Large Mouth Bass
- \_\_\_\_\_ Interaction #15 Dung Beetle

**Interaction #1 Grizzly Bear & Monarch Butterfly**



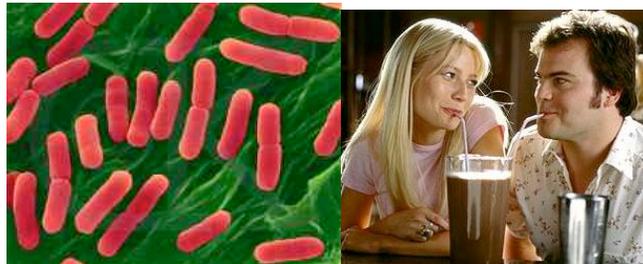
**Interaction #2 Bromeliad & Wild Tamarind Tree**



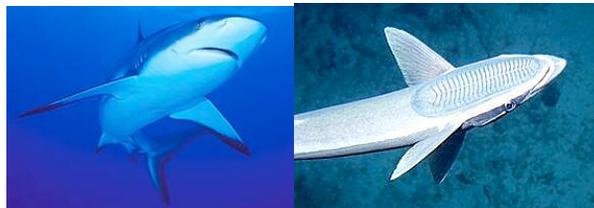
**Interaction #3 Lion & Zebra**



**Interaction #4 *E. coli* & Humans**



**Interaction #5 Remora & Great White Shark**



**Interaction #6 Flukes & Elk**



**Interaction #7 Lichen**



**Interaction #8 Hummingbirds**



**Interaction #9 Mycorrhizae & White Oak Tree**



**Interaction #10 Lianas & Flying Fox**



**Interaction #11 Sea Anemone (*Calliactis tricolor*) & Hermit Crab**



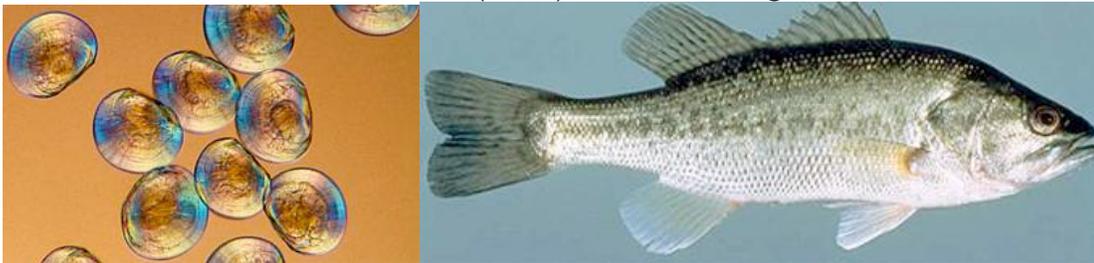
**Interaction #12 Africanized Honey Bees & European Honey Bees**



**Interaction #13 European Starling & Purple Martin**



**Interaction #14 Mussel (clam) Larvae & Large Mouth Bass**



**Interaction #15 Dung Beetle**

