

Name: _____ Period: _____ Date: _____

Symbiotic Interactions

Read each scenario below. First, indicate which type of symbiotic interaction is being described. Write **P** for parasitism, **M** for mutualism, or **C** for commensalism.

- _____ 1. Some shrimp and crab live and capture food from within the tentacles of giant anemones. The anemones' stinging cells do not harm the shrimp or crab.
- _____ 2. A pearlfish spends the day inside the alimentary tract, or intestines, of a sea cucumber. The fish emerges from the sea cucumber at night to feed on small crustaceans. The pearlfish gets a safe place to live. The sea cucumber does not gain anything from the relationship, nor is it harmed.
- _____ 3. A cymothoid isopod lives inside the mouth of a snapper fish. The isopod severs blood vessels in the fish's tongue, causing the tongue to atrophy and degenerate. The isopod then hooks its pereopods, or legs, to the base of the fish's tongue, essentially replacing the tongue. The isopod stays there for the rest of its life, feeding on blood, mucus, and stray pieces of food from the fish.
- _____ 4. A boxer crab carries a pair of small anemones, in its chelipeds, or claws. When approached by a predator, the crab waves the stinging tentacles of the anemones to deter the predator. The anemones benefit from the small particles of food dropped by the crab during feeding.
- _____ 5. An alpheid shrimp digs and maintains a deep burrow. While underground, the shrimp is safe. Above ground, it is vulnerable to predators. A goby fish lives in the burrow with the shrimp. The goby fish sits at the entrance, keeping watch for predators, and signals the shrimp with a flick of its tail when it is safe for it to come out. Or, if a predator swims by, the goby darts into the burrow and the shrimp retreats further inside. These two animals are completely dependent on each other- the goby benefits by getting a burrow to live in, and the shrimp knows when predators are near.
- _____ 6. Corals feed off of the byproducts of a microscopic algae living within their own tissue, called zooxanthellae. The photosynthetic activity of the algae is vital to the survival of the coral animals, which use the energy to extract calcium from the seawater and build their calcareous skeletons. The zooxanthellae are protected by the hard coral and obtain plant nutrients from the coral.
- _____ 7. Some species of barnacles attach themselves to sea turtles or whales. As the whales or sea turtles travel, the barnacles gain access to food in nutrient-rich waters. Their host neither benefits nor is harmed by its riders.
- _____ 8. A tapeworm needs to eat food that is already digested, so it lives in the intestines of a dogfish shark and derives nourishment from the shark. As a result of the tapeworm infestation, the shark is weakened and more vulnerable to disease and predation.
- _____ 9. Imperial shrimp attach themselves to sea cucumbers and get transported by their host to a large area of potential food with only a minimal expenditure of energy. They have been observed getting off their host cucumber to feed in productive areas and then getting back on for a ride to the next spot. The sea cucumber is unaffected.

Define the following terms:

1. Commensalism - _____
2. Mutualism - _____
3. Parasitism - _____

Procedure:

1. For each pair of organisms, read the description of the symbiotic relationship involved between organisms.
2. Determine the type of relationship and circle it.
3. Tell how each organism is affected. Helped = 😊 Harmed = ☹ Not helped or harmed = 😐

Honey guide bird & badger	Commensalism Mutualism Parasitism		Honey guide birds alert and direct badgers to bee hives that contain honey. The badger then expose the hives and feed on the honey first. Then the honey guide bird eats.
Remora & Shark	Commensalism Mutualism Parasitism		Remora's attach themselves to a shark's body. They then travel with the shark and feed on the left-over food scraps from the shark's meal. There is also the possibility that the remora's help keep the shark's skin healthy.
Ostrich & gazelle	Commensalism Mutualism Parasitism		Ostriches and gazelles feed next to each other. They both watch for predators and alert each other to danger. Since the visual abilities of the two species are different, they can each identify animals the other might not see.
Bee & marabou stork	Commensalism Mutualism Parasitism		The stork uses its saw-like bill to cut up the dead animals it eats. As a result, the dead animal carcass is accessible to some bees for food and egg laying.
Cowbird & song birds	Commensalism Mutualism Parasitism		Female cowbirds lay eggs in the nests of various songbirds. Either the mother cowbird or the cowbird hatchling will force the songbird eggs/hatchlings out of the nest.
Oxpecker & rhinoceros	Commensalism Mutualism Parasitism		Oxpeckers feed on the ticks found on a rhino.
Silverfish & army ants	Commensalism Mutualism Parasitism		Silverfish live and hunt with army ants. They share the prey.
Hermit crab & snail shells	Commensalism Mutualism Parasitism		Hermit crabs live in shells made by and then abandoned by snails.
Mouse & flea	Commensalism Mutualism Parasitism		A flea feeds on the blood of the mouse.
Yucca plant & yucca moth	Commensalism Mutualism Parasitism		Yucca flowers are pollinated by the yucca moths. The moths lay their eggs in the flowers where the larvae hatch and eat some of the developing seeds.
Wrasse fish & black sea bass	Commensalism Mutualism Parasitism		Wrasse fish feed on the parasites found on the black sea bass's body.
Cowbird & bison	Commensalism Mutualism Parasitism		As bison walk through the grass, insects become active and are seen and eaten by the cowbirds.
Cuckoo & warbler	Commensalism Mutualism Parasitism		A cuckoo may lay its eggs in a warbler's nest. The cuckoo's young will displace the warbler's young and will be raised by the warbler.
Sea anemone & clown fish	Commensalism Mutualism Parasitism		The clownfish defends the sea anemone from being eaten by the butterfly fish. In return, the sea anemone provides a home to the clown fish.
Mistletoe & spruce tree	Commensalism Mutualism Parasitism		Mistletoe extracts water and nutrients from the spruce tree.