**KEY**

**Practice: Symbiotic Relationships** **(Community Interactions)**

*Classify each of the scenarios listed below as parasitism, commensalism, or mutualism and explain why you believe it should be classified as such. Identify which species benefits, which species is harmed, and/or which species is not affected.*

1. Adult wasps sting the Catalpa Worm (a caterpillar), injecting their eggs into the worm. The eggs hatch and devour the caterpillars from the inside, being careful not to disrupt any vital functions. Eventually they emerge and spin cocoons of silk in which they transition from larvae to adult.

Type of symbiosis: parisitism

Why?:

Species that benefits, is harmed, or not affected: wasp + / worm -

1. The Saguaro cactus provides food in the form of a large fruit for white-winged doves. The bird consumes the fruit, also ingesting the cactus’ seeds. The bird then flies off and later deposits the seeds in a new location (with a nice does of fertilizer to boot!). In this way, the cactus gets its seeds transported away from the parent plant, allowing it to potentially colonize new places.

Type of symbiosis: mutualism

Why?:

Species that benefits, is harmed, or not affected: Cactus + / doves +

1. Tiny coral animals (which individually resemble freshwater hydra) form huge colonies, with each hydroid encased in stone secreted by the animals. Collectively, these colonies can grow very large. Each hydroid in turn may harbor cells of photosynthetic algae; the algae are called zooxanthellae and give the coral its brown or green appearance. As mentioned above, the zooxanthellae “trade” sugars for nutrients; it’s convenient that the wastes of the coral (CO2, ammonia, etc) are the very things needed by the algae for photosynthesis.

Type of symbiosis: mutualism

Why?:

Species that benefits, is harmed, or not affected: algae +/ coral +

1. The Acacia Tree is partially protected by large thorns, but gets extra protection from Acacia Ants. The plant does 3 things to lure in the ants. First, the large thorns are hollow and provide a place for the ants to live. Second, the plants have swollen glands, nectaries, which produce a sugary solution the ants drive. The third thing the plant does is to produce Beltian bodies, small structures which the ants bite off and eat. The Beltian bodies are rich in protein and supplement the sugars provided by the nectaries. In return for the room and the board the ants chase off herbivores, kill and eat herbivorous insects, and destroy plants that try to compete with the Acacia.

Type of symbiosis: mutualism

Why?:

Species that benefits, is harmed, or not affected: Acacia +/ Ant +

1. The squawroot may look like a fungus, but it is actually a distant relative of the magnolia; it betrays its tru nature (by flowering) when it comes time to reproduce. It gets its energy by tapping into an oak’s roots.

Type of symbiosis: parisitism

Why?:

Species that benefits, is harmed, or not affected: squawroot +/ oak -

1. Bromeliads are plants that avoid the hassle of creating a trunk to lift their leaves above the forest floor and closer to the sun. They simply grow on the branches of tress. Bromeliads don’t take any nutrients from the tree.

Type of symbiosis: comensalism

Why?:

Species that benefits, is harmed, or not affected: bromeliad +/ tree 0

1. Lichens are an association between a fungus and an alga. They are the terrestrial equivalents in some ways of corals. The fungus provides a tough, waterproof body able to withstand extreme environments on rocks and tree trunks. It is good at obtaining water and secretes acids to dissolve minerals from the rocks. It also produces carbon dioxide. All of these materials are then funneled to the algae, which use the materials in photosynthesis and produce sugars which are then shared with the fungus.

Type of symbiosis: mutualism

Why?:

Species that benefits, is harmed, or not affected: fungus +/ algae +