



COMMUNITIES AND SYMBIOSIS

EQ: How do organisms live together and compete for resources?

What is an ecological community?

Recall that a community is all of the populations that make up an ecosystem.

Describe the community you might find in a tropical rainforest.



Competition

Because communities live in the same area, they need to compete.

When two or more species use the same resources they participate in a biological interaction called competition.



Resources for which species compete may include:

food water shelter mates nesting sites sunlight soil



Niche

In order to understand how competition influences communities, it is important to understand an organism's niche.

A niche is the role or function of an organism in its ecosystem.

Example) A jaguar's niche

- Native to South America
- Diet- mice, frogs, fish, turtles, caiman, tapir, deer
- Reproduction- year round mating, multiple cubs stay with mom for up to 2 years
- Time of activity- diurnal



All of the variables that contribute to how an organism affects its ecosystem makes up its niche.

Symbiosis

Symbiosis is a close, long-term relationship shared among species (meaning "living together").

There are 4 general types of symbiotic relationships: predation, mutualism, parasitism, and commensalism.



Predation- the act of one organism killing another for food.

Example- grizzly bear + salmon



Parasitism- symbiotic relationship in which one individual is harmed but the other is benefitted.

Example- ticks



<u>Mutualism</u>- relationship in which both participating individuals benefit

Example- bees + flowers



<u>Commensalism</u>- one individual benefits; the other is *neither* helped nor harmed.

Example- clown fish + anemone



Coevolution

What is coevolution? Back and forth evolutionary adjustments between species.

(example: clown fish's immunity to anemone toxins)

Coevolution can be used to explain some of the symbiotic relationships we see today!

Coevolution produces a balance among communities

 no species overpopulates or overpowers another because they have evolved in such a delicate way.

If an entirely NEW species is introduced to a community, it can disrupt this special balance.



Invasive Species

Invasive species are species that are brought to a new habitat by human means (may be purposeful or accidental i.e., tourism, travel).



Invasive species are considered problematic if they have no population control (no natural predators) in their new habitat, and can thrive in the conditions. They often kill off native species (directly or indirectly) and disrupt the balance found in communities.

