ENERGY AND ECOSYSTEMS

What Is an Ecosystem?

An **ecosystem** includes all the living and non-living things in an area. This includes populations and communities of many different animals.

A **population** is a group of organisms *of one species* that live in the same area at the same time and

A **community** is all the populations that live in an area.

So in a grassland ecosystem, you could have a large population of lions, a small population of wildebeests, and a large population of elephants. All of these populations could make up a community in one area of Africa.

A **habitat** is where an organism lives.

All living things have a role to play in their environment…a **niche** is an organism's role in the environment. For example, producers, such as plants, provide energy to all the organisms that eat the plant directly or indirectly. So producing energy for other organisms

An environ actors???

- **Biot** nment. Livin e they are LIVI
- **Abiotic factors** are the non-living components of an environment. Abiotic factors include the Sun, wind, air temperature, soil, and precipitation…all important and even essential, but not living.

Water Ecosystems

Ecosystems are not just on land; there are water ecosystems too!

Rivers are made up of freshwater. Many organisms live in or near rivers. Rivers provide food, water (obviously), and a place to live for many organisms!

Wetlands are areas of land often covered or drenched in water. Wetlands are home to a wide variety of organisms. However, wetlands do not just supply organisms with a place to live. A wetlands area acts as a water filter too! Plants, soil, and microorganisms filter water that flows through the wetlands, cleaning the water of any impurities it may have.

Oceans are ecosystems too! Scientists study the ocean and its creatures by zones, which are defined by water depth. Sunlight only reaches the shallow zones, which means plants can't grow in the deepest ocean zones. Most ocean organisms live in the shallower zones so that they have plants to eat and the comfort of the warmer shallower waters.

Ecosystems can change, but how?

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People ca…forests in order to build new homes and buildings, they are taking away homes and food sources essential to the lives of many organisms, and thus changing the ecosystem. Pollution caused by people can negatively affect an environment as well.

Natural events such as wind storms (as in hurricanes and tornadoes) and floods can quickly change an ecosystem by destroying the habitats and food sources of many animals and the growing environments of many plants.

Not all change in an ecosystem is bad, of course. Some things can be a BENEFICIAL change to an environment. When a beaver builds a dam, it stops the flow of water creating a pond which provides homes and food for MANY organisms.

Flow of Energy

All animals need ENERGY to carry out their life processes, to move, to run, to hunt, to build homes…to do everything! A food chain represents how energy is transferred from one organism to another. An **energy pyramid** represents the amount of energy that flows through an ecosystem. Producers have the MOST energy in an ecosystem. You can see that the producers are at the base of the energy pyramid and that means there are more of them than any other kinds of creatures.

A lot of energy is released as heat into the environment. Animals get their energy from the food they eat, from eating other animals and/or plants. They then use that energy to run around and carry out life processes. When they are busy running around, energy is released as body heat from animal and is lost into the environment.

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Which brings up two words: endangered and extinct

Those animals who can't adapt to harmful changes in environment, those who are killed faster than they can reproduces, or those who have their resources become too limited may become **endangered**…which means they are in danger of losing all of their species. Tigers are an example of an endangered species. To be **extinct** means that there is not one living member of a species left on earth. Dinosaurs are an example of an extinct species.

Food shortage, limited resources, dramatic changes in climate, and human intervention are just a few main reasons for the extinction of animals. Fossils are evidence that a great number of plants and animals have become extinct over time.