

## LIFE SCIENCE: BIOMES & FOOD CHAINS FLIP CARD

**Big Idea: The Earth exhibits a wide variety of physical conditions (environments) on its surface. In any environment, the survival of organisms depends on living (other plants and animals) and nonliving (climate, weather, geography) factors.**

	Swamps	Rivers and Streams	Tropical rainforests	Deserts	Polar regions
<b>Climate</b>	Warm-hot	Varies	Hot	Hot-cold	Cold
<b>Water</b>	Plentiful, slow-moving or still	Plentiful & flowing	Humid with precipitation	Rare & Valuable	Dry air, Frozen water
<b>Plant life (examples)</b>	Cypress trees, Ferns, Water lilies	Bushes/Trees on banks, Water plants	Abundant Trees, vines, Lush growth	Scarce Cactus	Plankton, kelp, lichens, mosses
<b>Animals (examples)</b>	Alligators Water birds Turtles	Fish, Crayfish Snakes Insects	Birds, Frogs, Monkeys	Lizards, Scorpions, Rabbits	Seals Polar bears Penguins

**There are other biomes:** estuaries and salt marshes, oceans, lakes and ponds, temperate forests, taiga, and grasslands (savannah & prairie), but you will explore these in 5<sup>th</sup> grade and beyond.



**Swamps** are located in areas with warm temperatures. Because swamps have thick plant growth such as ferns and reeds, small bushes and small trees do not thrive due to lack of sunlight. The surviving trees are very tall, reaching for sunlight. Standing water causes the trunks of the trees to spread out to provide support. An example of a tree found in the swamp, the cypress has “knees”, or roots that come to the surface for oxygen. The animals that live in the swamp are adapted to a water environment: alligators, turtles, swimming ducks, and wading egrets.

**Rivers and streams** are moving bodies of water that can be found in warm or cold areas. They can be fast or slow moving water. The speed of the water flow determines the types of plants and animals that live in them or use them. The banks are often covered with plants and many animals use these plants for food and shelter.



**Tropical rainforests** are very humid and warm and have lush plant growth. Many animals that live in the rainforest are colorful, to match and blend in with the many varieties of plants (camouflage) or to warn other animals they are poisonous (warning protective coloration). Many animals are also tree dwellers, moving across the tree canopy rather than traveling on the ground.

**Deserts** are dry with extreme temperature ranges. Most deserts are covered with sand or rock. During the day it is very hot, whereas the nights are very cold. Most of the plants, like cacti, and animals have ways to conserve the moisture and are able to go long periods without water.

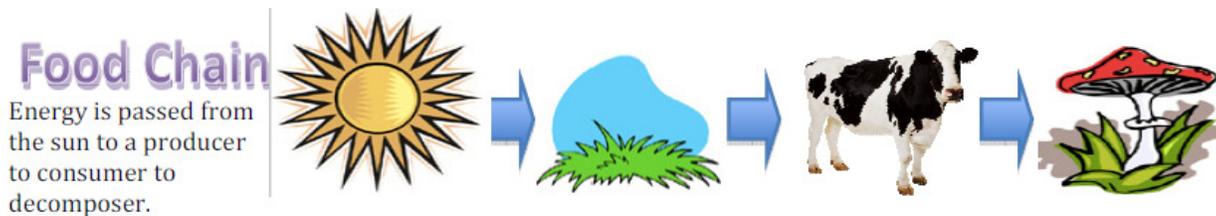


**Polar Regions** are very cold and include the Arctic and Antarctic regions. Plant life is limited to water plants such as plankton and kelp, lichens growing on rock, or reindeer moss and low-growing tundra bushes. Most plant growth occurs during the summer. The growing season is short and plants go through their life cycle very quickly. A small community of animals--reindeer, moose, rabbits, foxes, polar bear (north pole), seals (north and south pole), and penguins (south pole only)--survive after the growing season because of the adaptations of thick fur or fat-insulated bodies. Other animals—marmots (ground squirrels), birds, fish species, and whales--migrate or hibernate.

**Big Idea: Almost all food energy on Earth originally comes from sunlight; plants use the energy from light to make sugar and oxygen from carbon dioxide and water; almost all kinds of animals' food can be traced back to plants.**

Every living thing needs energy in order to live. Plants use sunlight, water, and nutrients to get energy (in a process called photosynthesis—making energy from light). Every time animals do something (run, jump) they use energy to do so.

A **food chain** shows how each living thing gets food, and how energy travels through the system. Most food chains begin with the Sun, followed by plant life, continue with animal life, and may end with fungi or bacteria.



Because they can create their own food, scientists call plants **producers**. Animals that get their energy by eating plants or by eating other animals that eat plants are **consumers**. An animal that consumes or eats other living animals to survive is called a **predator**. Animals that are captured and eaten by other animals are **prey**.

Animals and other organisms (fungi, molds, microbes, and bacteria) that eat dead or decaying and some eat dead or decaying plant and animal matter are a special type of consumer called **decomposers**; they keep dead organisms from piling up and provide nutrients for plants so the food chain can continue. Animals that eat dead animals that they find that died due to old age, accident, or predators are also called **scavengers**.



Some animals eat only plants (**herbivores**), some animals eat other animals (**carnivores**), and some have adapted to eat plants or animals (**omnivores**). Often, students can infer what kind of food an animal eats by studying mouth structures (snouts and beaks) and types of teeth.

**Balanced ecosystems:** Because no animal can perfectly convert all of what they eat into energy, there is waste. In any healthy ecosystem, there need to be many organisms at the beginning or bottom of the food chain (producers like grasses and plants), fewer in the middle (consumers like mice), even fewer next (consumer predators like snakes that eat mice as prey), and only a small number at the end or top (top predators such as hawks).

An organism's survival is related to: other organisms that are present; the availability of food and other resources; and the physical characteristics of the environment.



### Oh, Deer! The game of student deer herds growing and shrinking with changes

- The temperature, amount of rainfall, and the vegetation in an environment can affect how much energy is available in a food chain.
- Most organisms depend on other organisms for food. As availability of food and other resources increases, numbers of a species may increase.
- Organisms may compete for space, shelter, food or resources if too many organisms are in the environment.
- Herbivores might overgraze land leading to erosion and starvation, but they can also fertilize the fields on which they graze and new plants can grow