

Energy Gain up the Food Chain

Grade	Standard / Element
3	S3L1. Obtain, evaluate, and communicate information about the similarities and differences between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia.
4	S4L1. Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem.

Main ideas:

- There are three main roles in a food chain: producer, consumer, and decomposer.
- Some animals eat only plants (herbivore), some eat only meat (carnivore), and some eat both meat and plants (omnivore).
- Animals that are eaten by another animal are prey while animals that eat other animals are predators. Some animals may serve both roles.

Misconceptions:

- Animals produce their own energy.
- All consumers eat meat.
- A food chain represents a particular animal's diet.
- An animal's diet consists of what you've observed it consuming (or eating).

What You Need to Know:

- All animals must eat, or consume, food to grow, survive, and reproduce.
 - Primary Consumers eat only plants and are considered herbivorous or herbivores. This type of consumer gains energy from eating producers, which create their own energy from the sun. This includes plants like grasses, fruits, etc. Examples in the Chattahoochee Valley area include but are not limited to: rabbit, deer, grasshoppers, beavers, squirrels, and frogs.
 - Secondary Consumers can either eat both plant matter and other animals, or meat and are considered omnivorous, or omnivores or they eat only meat but are still prey to other animals. This type of consumers gains its energy from producers that create their own energy and/or from primary consumers. Humans are omnivores, as we eat both meat and plants. Examples of in the Chattahoochee Valley area include but are not limited to: mice, lizards, birds, bears, and foxes. Secondary consumers, though they eat meat, are also prey for other animals.
 - Tertiary Consumers are strict carnivores and eat only meat. This type of consumer is at the top of the food chain, and serves the role of a predator but is not prey to other animals. This type of consumer gains its energy solely from eating other animals.
- Animals that are prey are eaten by other animals, or predators. Some animals may serve both roles. Prey animals are either primary or secondary consumers. Predators may be

secondary or tertiary consumers. A primary consumer is never a predator, as they eat only plant matter.

- A food chain is a simplified model of how energy is transferred in a system. A food chain considers only one food per organism, with the energy flowing from the sun to the producer, and then energy is transferred from the producer to the consumer(s) that eat each item in consecutive order.
 - For example, in a food chain a frog may eat an insect and the frog may be eaten by a snake. This is not accurate to real-world scenarios because a snake would eat mice and other rodents, possibly birds, maybe other smaller snakes or lizards, and many other possibly prey items – the snake would not get all of its energy from only consuming frogs.
- A food web is a more complex model illustrating how energy flows within a habitat or community. A food web considers a few food items for each animal, and a food item is consumed by more than one other organism.
 - For example, in a food web a frog may eat a fly and a cricket and the frog may then be eaten by a heron, snake, snapping turtle, or larger frog. A food web has more organisms and shows how energy is transferred from multiple producers to multiple consumers and is more accurate in representation than a food chain.
- Some animals are more specialized, or more “picky” eaters. Frugivores (like fruit bats) eat only fruit while insectivores (like brown bats) eat only insects!