

# Read About Food Webs: Cycling of Matter and Flow of Energy

## WHAT ARE FOOD WEBS: CYCLING OF MATTER AND FLOW OF ENERGY?

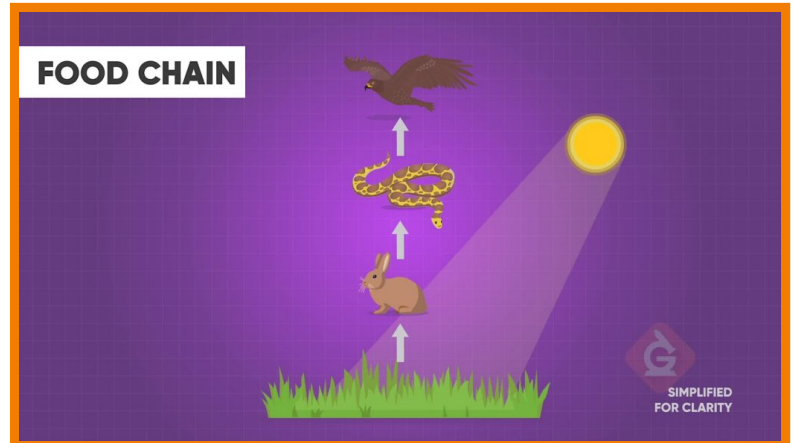
Every ecosystem is made up of a variety of living and nonliving things. The living things within an ecosystem depend on each other to obtain their energy.

*To better understand Food Webs: Cycling of Matter and Flow of Energy...*

### LET'S BREAK IT DOWN!

## Producers Make Their Own Food

A simple diagram called a food chain represents how energy flows in an ecosystem. A food chain starts with producers. These are the plants at the bottom of the chain. Next, a first order consumer eats the plants to obtain energy. Next in the chain is the second order consumer, followed by a tertiary consumer. Food chains typically have 4 levels, though this can vary.



A food web is the overlapping of food chains within an ecosystem. Living things don't eat the same thing all the time. Just like people, animals like variety in their diets. This results from living things eating from multiple food chains, which creates a food web. Some living things may eat from different levels of a food chain. Bears for example, consume plants, but also consume fish.

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## Ecosystems Rely on Chemical Processes

Living things undergo chemical processes that are essential to the living things in an ecosystem. Plants are the producers of an ecosystem and they undergo a process called photosynthesis to make food. This chemical process uses energy from the sun to turn carbon dioxide and water into sugar and oxygen. Likewise, when animals take in food, their bodies

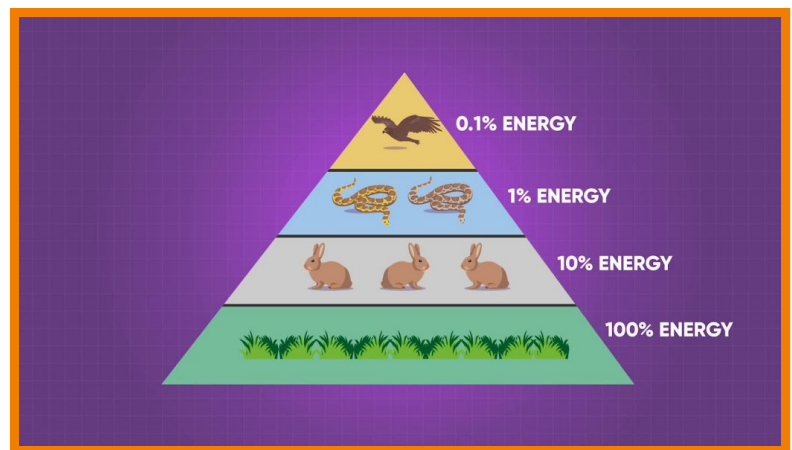


undergo a process called cellular respiration. This chemical process takes sugar and oxygen and forms carbon dioxide and water while releasing energy.

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## Energy Flows Through an Ecosystem

All ecosystems start with energy from the sun. Without sunlight, plants cannot undergo the process of photosynthesis. Using sunlight, water and carbon dioxide, plants make sugar and release oxygen. When a consumer comes along and eats the plant, it gains some energy from these sugars. When the next consumer in the food chain eats the first consumer, energy is passed from one consumer to the next. Since the amount of energy decreases with each level of the food chain, ecosystems can only support smaller numbers of consumers as you go up the food chain. At the top of a food chain, there might only be one hawk. At the bottom of the food chain, there would be many plants.



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## Decomposers Play an Important Role in an Ecosystem

Decomposers are organisms such as worms or maggots, that break down dead matter. This is important to the cycling of matter in an ecosystem. As the decomposers feed on dead animals and plants, they break down the molecules into carbon dioxide and water molecules that go back into the soil. The amount of matter in an ecosystem never changes; it just cycles through the ecosystem in different ways.



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## Many Careers Study Food Chains

Several different careers study food chains. Marine biologists study food chains within the ocean ecosystem. This is important to humans since humans consume food from the ocean ecosystem. Through their studies, marine biologists have learned that the chemical mercury can be passed from smaller fish to larger fish. This impacts our food supply and could be harmful if too much of certain types of fish are consumed.



Another career that studies food chains is a registered dietician. A registered dietician helps people make meal plans that work for them. Some people have food allergies or other dietary needs that require the help of a registered dietician. Registered dietitians also work with schools to design healthy food programs for growing students.

**FOOD WEBS: CYCLING OF MATTER AND FLOW OF ENERGY  
VOCABULARY**

**Ecosystem**

A system of living and nonliving things in a particular area or environment.

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**Producer**

A living thing that produces its own food.

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**Consumer**

A living thing that eats other living things.

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**Decomposer**

A group of living things that break down dead things.

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**Food Chain**

A simple diagram to show how energy moves from one living thing to another.

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**Food Web**

A model that shows us how matter cycles and energy flows in an ecosystem through the intertwining of food chains.

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## **FOOD WEBS: CYCLING OF MATTER AND FLOW OF ENERGY DISCUSSION QUESTIONS**

### **When we consume food, what happens to the molecules?**

When we eat food, our body breaks the molecules down through chemical processes. In cellular respiration, our bodies use sugar and oxygen to create energy for our bodies to use in different ways. The molecules are broken down into building blocks and put back together in different ways.

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### **Why are there typically a larger number of producers than tertiary consumers in an ecosystem?**

Only about 10% of energy is passed on to the next organism in a food chain, so there needs to be more of the living things lower in the energy pyramid to support the living things higher in the pyramid.

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### **When living things die, why are there only bones remaining after some time?**

Decomposers break down dead material. They break the dead matter into molecules like carbon dioxide and water, that go back into the soil.

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## **What is the difference between a food chain and a food web?**

A food web is the overlapping of several food chains. Living things don't eat the exact thing all the time, so this causes food chains to overlap.

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## **What is an apex consumer and what are some examples?**

An apex consumer is the consumer at the top of a food chain. Some examples are hawks or bears.

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## **What do marine biologists study that relates to food chains?**

Marine biologists study food chains within our oceans. This is important because humans eat fish and we need to be aware of hazards such as mercury in the fish that we eat.

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