

# ECOSYSTEMS, FOOD CHAINS AND FOOD WEBS

## Food Chains and Food Webs

Understanding food chains and food webs requires understanding the flow of energy and food sources among living things on Earth. Let's review.

The ability to produce energy from sunlight gives plants the name **producers**. Producers do not need to eat other living things since they produce their own food.

Organisms that obtain their food by eating another living organism are called **consumers**. They must consume another living thing to get the energy they need to sustain life.

Energy  
plants  
plants  
consumers  
ecosystem

A food  
chain  
they  
in the  
organism

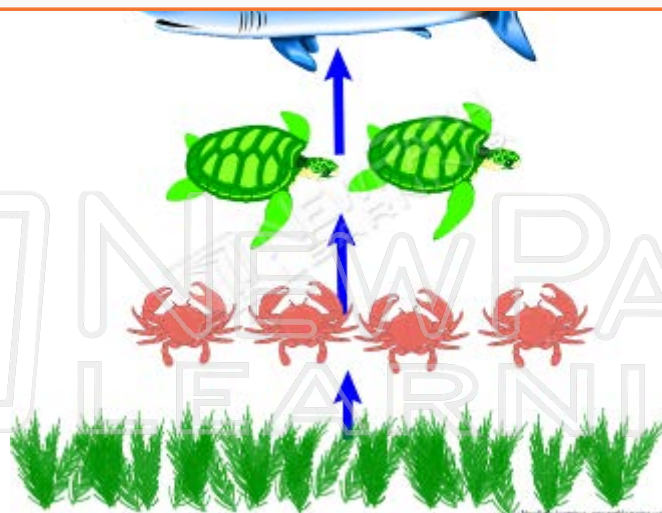
by

st

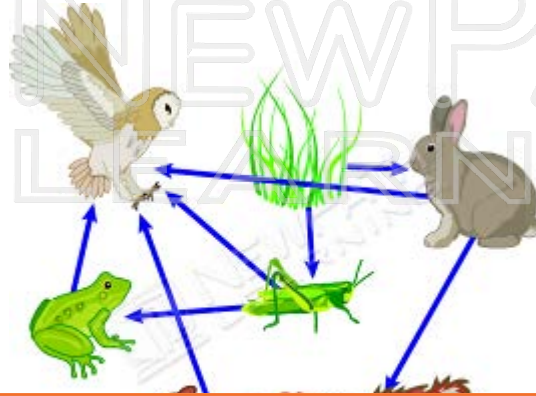


### PREVIEW

Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet



A **food web** is made up of many different food chains in an ecosystem. A food web helps us understand how organisms are interrelated within an ecosystem. For example, foxes are part of several food chains, since they will eat a variety of types and species of animals, including rabbits, mice, and birds. A food web makes this clear.



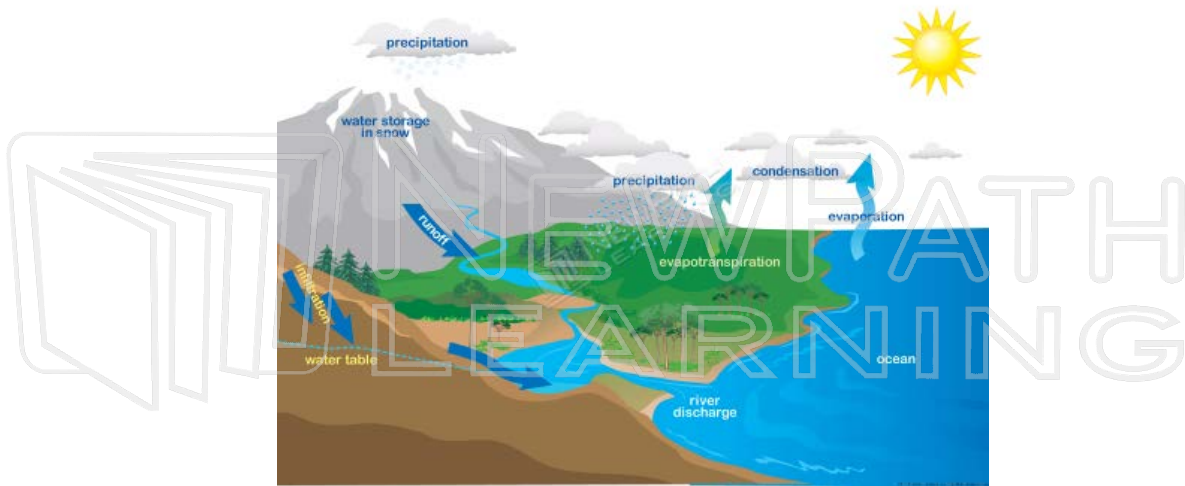
## PREVIEW

Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet

**Lesson Checkpoint:**  
**What does an energy pyramid tell us?**

## The Water Cycle

Water is the most abundant substance in our bodies. Water is constantly recycled on earth in a process known as the water cycle. The water cycle is a constant process of water movement from the ground through the atmosphere and back to the ground. There are three stages of the water cycle which occur over and over again: evaporation, condensation, and precipitation.



- **Evaporation** is the process of water molecules in liquid form



## PREVIEW

Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet

The **carbon dioxide cycle** is a process of recycling carbon and oxygen gases.

- Carbon makes up living organisms and is present in our atmosphere as carbon dioxide gas. Plants take in carbon dioxide from the atmosphere to gain energy from the process of photosynthesis. The carbon is used to make energy and the waste that is produced is oxygen.
- The oxygen that is produced by plants is used by heterotrophs to break down food and release the energy within the food. The waste created by the heterotrophs is carbon dioxide.

**Lesson Checkpoint:**  
*How does a mammal participate in the carbon dioxide cycle?*



## The Nitrogen Cycle

As we learned in Topic 22, 78% of our Earth's atmosphere is made up of nitrogen gas. Nitrogen makes up the matter of living organisms, but we are not able to obtain nitrogen from the atmosphere directly. The atmospheric nitrogen must be combined with other elements to be used by organisms.

**Nitrogen fixation** is the process used to change nitrogen in the atmosphere into usable nitrogen that is combined with other elements.

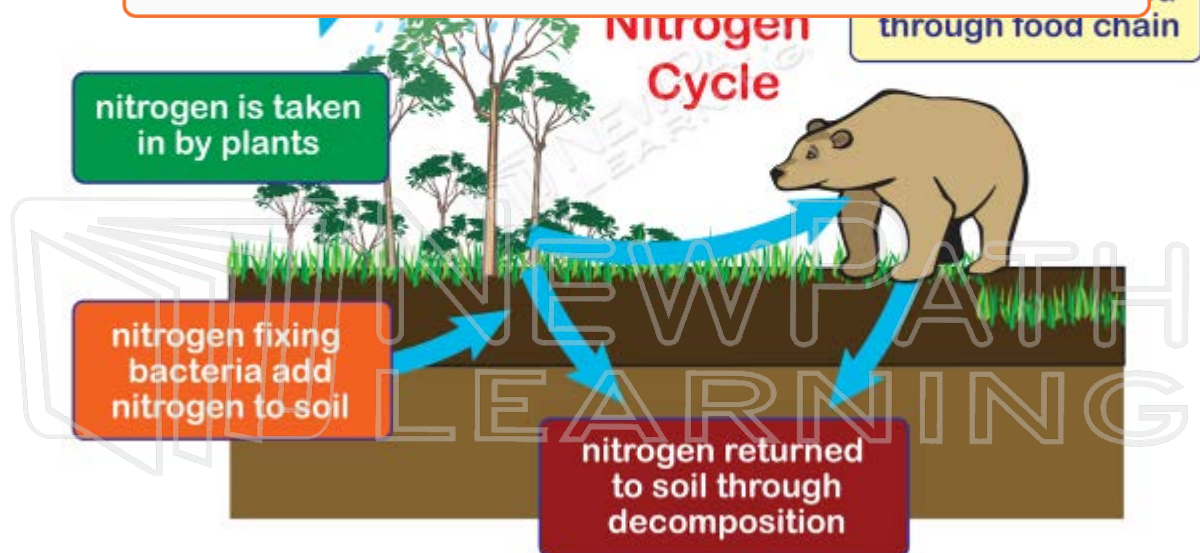
- Some bacteria are able to combine nitrogen molecules. These bacteria live in the roots of certain plants in structures called **nodules**. The plants and the bacteria have a mutually symbiotic relationship. The bacteria have a place to live and the plant is supplied with nitrogen that is usable. The fixed nitrogen is used to

- V
- E



### PREVIEW

Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet



## Rainforest Biome

A **biome** is an ecosystem that has a similar climate and similar organisms that live within the ecosystem. Biomes are generally determined by the climate conditions of the ecosystem. The rainforest biomes are usually located near the equator and the conditions are hot and humid year round. Plants are abundant in rain forests, as well as animal life. The rainforest is made up of different layers of trees.

### Rainforest Layers of Vegetation

At the very top is the **canopy**, which is made up of tall trees. The layer below the canopy is called the understory. The **understory** is made up of vines and smaller trees. Barely any light reaches the **ground** in a rainforest, but life is abundant at this level.

Des

A de  
rain  
the

Dur  
very  
extr  
usu

Gra

The

**75 centimeters of rain** per year. This is not enough water necessary for a tree to grow, but it is enough water for the many species of grasses that the biome supports. Grasslands are able to support many different species of herbivores. Grasslands that are located close to the equator are called **savannas**.



**PREVIEW**

Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet

### Lesson Checkpoint

*Why don't trees grow in the Grasslands?*



## Deciduous Forest Biome

The deciduous forest biome is made up of trees that grow leaves and shed them in the fall. Forests in this biome are at least

50% deciduous trees. The deciduous forest biome has four seasons with broad-leafed trees that lose their leaves in the fall and hibernate in the winter.



## PREVIEW

Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet

## Born

The deciduous forest biome is made up of trees that grow leaves and shed them in the fall. Forests in this biome are at least 50% deciduous trees. The deciduous forest biome has four seasons with broad-leafed trees that lose their leaves in the fall and hibernate in the winter. The deciduous forest biome is home to many different types of animals. Some of the animals that live in the deciduous forest are herbivores that eat the seeds that are produced by the conifer trees. These herbivores support the existence of large predators like bears, wolves, and wolverines in this biome.







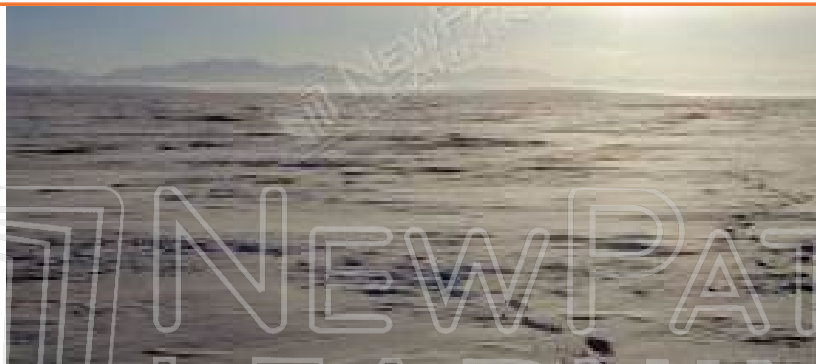
**Tun**

The  
little  
all y  
tunc  
larg  
The



## PREVIEW

Please [Sign In](#) or [Sign Up](#) to download  
the printable version of this worksheet



***Lesson Checkpoint:***  
***Where is the permafrost, and what is it?***

## Freshwater Ecosystems

Nearly three quarters of earth is covered with water. Plants that live in water are able to produce energy using photosynthesis just like the plants that live on land. Water absorbs light from the sun, so plants are only able to take in enough light for photosynthesis near the surface or in shallow water.

The freshwater biomes are made up of **water that does not contain salt** like the marine biome. The waters in lakes and ponds are still or standing. This means that the water does not move or does not move much. There are many plant and animal species that live within the lakes and ponds.

Stream and river freshwater biomes are different from lakes and ponds because the water is moving rapidly. Many plants are not able to

survive in these environments.

## Marine Ecosystems

Surf

Org:

• The

is

• The

low

v

a



## PREVIEW

Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet

- The **neritic zone** starts at the area of the lowest low tide and runs until it meets the continental shelf. The water in this zone is usually fairly shallow, allowing plants to survive. Coral reefs also usually form within this zone.
- The **surface zone** is the top portion of the ocean where light can penetrate the ocean waters.
- The **deep zone** is located directly below the surface zone. Light is not able to penetrate through to the waters of the deep zone. Most organisms are able to survive off of the remains of organisms that lived in the surface zone and sank down to the deep zone. Some of the most interesting animal species are within the deep zone.