



High School Science Virtual Learning

Biology

Ecology

April 20, 2020



High School General Biology

Lesson: Ecology- Energy, Producers, & Consumers

Objective/Learning Target:

Student will understand how energy flows through an ecosystem.



Bell Ringer Activity

Ants can carry objects many times their size.
Some birds migrate thousands of miles.

1. Where do they get the energy to do that?
2. How do plants capture the sun's energy?



Bell Ringer Answers



1. Animals obtain their energy by eating either other animals or plants.
2. Energy from the sun is harnessed by plants through the process of photosynthesis.



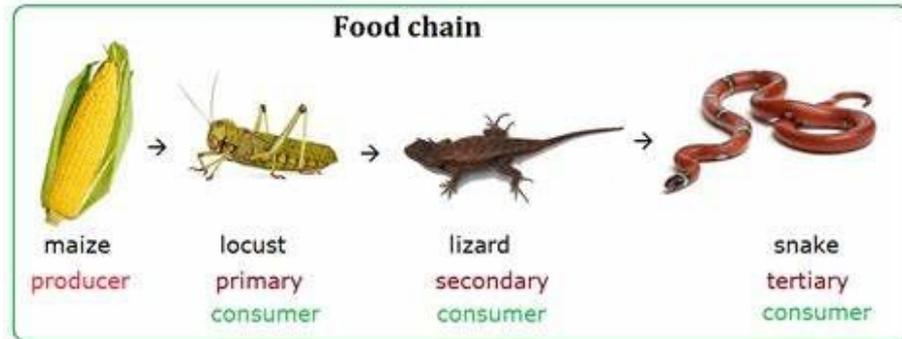
Let's Get Started!

Lesson Activity:

Directions:

1. Read the following article and define these terms: autotroph, heterotroph, food chains, primary producer, primary consumer, secondary consumer, tertiary consumer quaternary consumer, decomposers, detritivores, food web, and 10% rule of energy transfer.

Links: [Food Web Vs. Food Chain Reading](#)



Lesson Continued

II. Directions: Watch the following video and answer the questions:

[Food Webs and Energy Pyramids: Bedrocks of Biodiversity](#)

1. What is an autotroph?
2. What is a heterotroph?
3. Arrows in a food chain point in what direction?
4. If the plants/primary producers had 10,000 kilocalories how much would the next trophic level store?
5. What were to happen if you removed the apex predator, snake, in the food chain example the video gave?
6. Biodiversity can contribute to the _____ of an ecosystem.
7. What has more biodiversity, a food web or a food chain?

Lesson Answers

- 1.) An organism that makes their own food.
- 2.) An organism that has to consume food.
- 3.) The arrows point to the one doing the eating because that is the direction of the energy flow.
- 4.) 1,000 kilocalories
- 5.) We might end up with an overpopulation of frogs in this scenario.
- 6.) Sustainability
- 7.) The food web



Practice Questions

1. What are some examples of producers?
2. What are the different types of consumers?
3. What is the role of decomposers in an ecosystem and why are they important?
4. What would happen to the ecosystem if producers were eliminated?

Practice Questions Answers

Once you have completed the practice questions check with the **answer** key.

1. Examples of producers include plants of all types (with a few exceptions as parasitic plants), cyanobacteria and phytoplankton.
2. The four types of consumers in ecology are herbivores, carnivores, omnivores, and decomposers.
3. Decomposers and scavengers break down dead plants and animals. They also break down the waste (poop) of other organisms. Decomposers are very important for any ecosystem. If they weren't in the ecosystem, the plants would not get essential nutrients, and dead matter and waste would pile up.
4. The removal of the producers would cause the collapse of the entire food web. Primary consumers or herbivores, which feed on producers directly, would die off. ... Higher level consumers would suffer as organisms from lower trophic levels start to die off.

Common Misconceptions

“Organisms higher in a food web eat everything that is lower in the food web.”-not true. Organisms higher in a food chain eat some, but not necessarily all, of the organisms below them in the food web.

“Food chains involve predator and prey, but not producers.”-not true. Producers are an essential part of all food chains and webs.

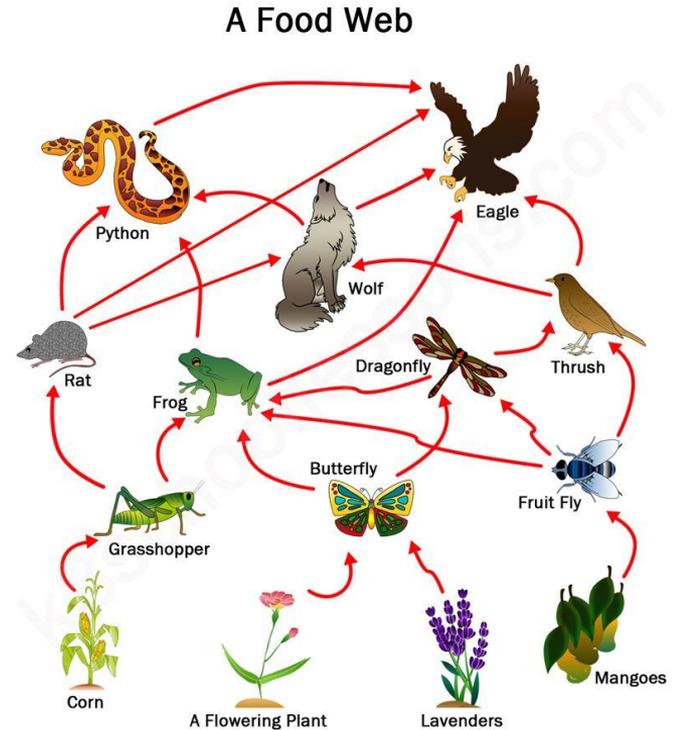
“Carnivores are big or ferocious, or both. Herbivores are small and passive.”-not always. Although some carnivores may be big and ferocious and some herbivores small and passive, there is a great diversity among each group of organisms.

More Practice

Follow the links below to do more practice.

1. [Food chains and food webs](#)
2. [Food Chain and Food Web](#) - Be sure the click on the quiz link.

These sites provide the answers.

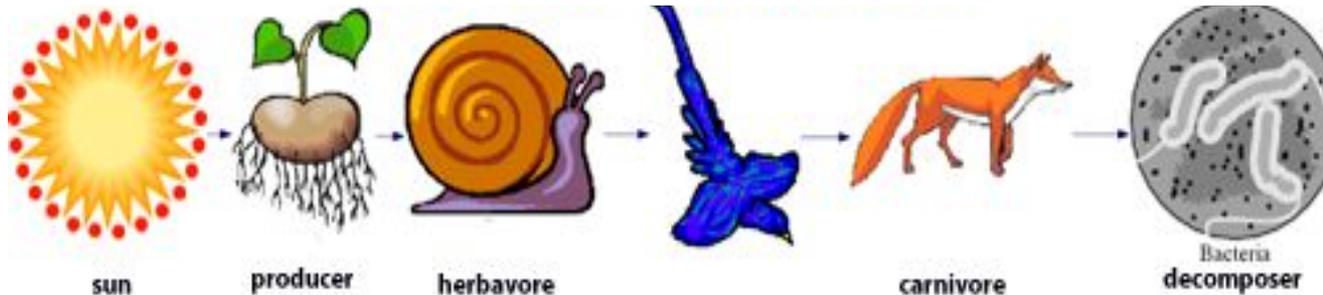


Additional Online Practice:

Click on the links below for additional practice.

[What Eats What - Game](#)

[Food Webs](#)





Additional Resources

[Parts of the Food Chain \(Producers/Consumers...\)](#)

[Ecosystem Energy Flow](#)

[Energy Flow through Ecosystems](#)