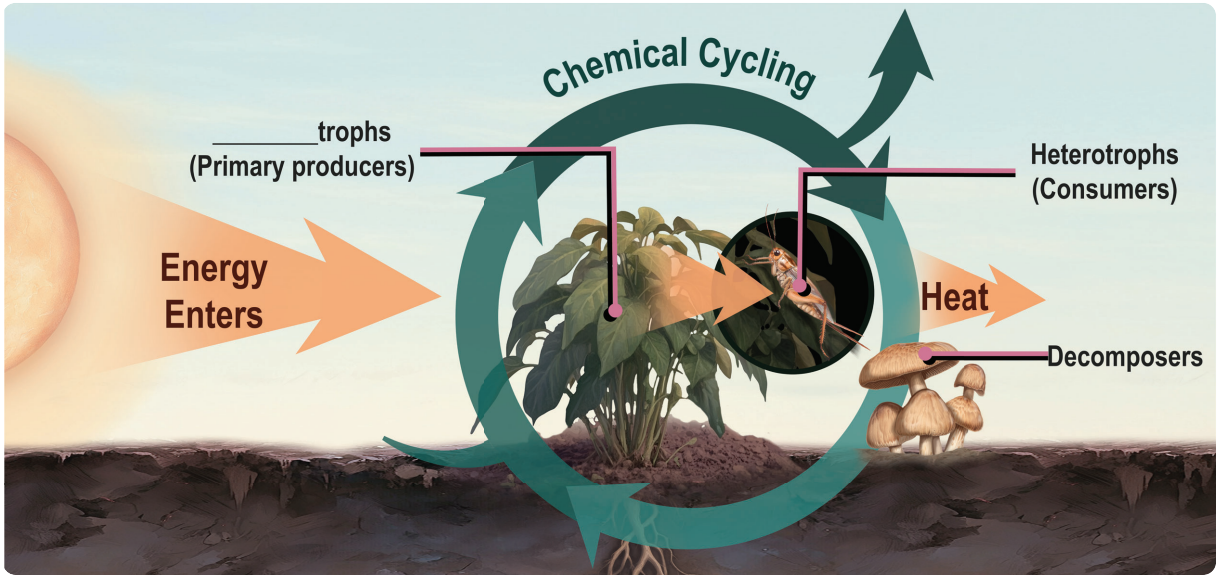
TOPIC: INTRODUCTION TO ECOSYSTEMS

Introduction to Ecosystems

◆ *Recall*: **Ecosystem**: the *living* community & *abiotic* components in a given area; has _____ key properties.

1. **One-Way Energy Flow**: all energy enters ecosystems flowing _____-way & is continuously lost as heat.
2. **Chemical Cycling**: chemicals are _____ within an ecosystem.



EXAMPLE

What will eventually happen to all of an ecosystem's incoming energy?

a) It will be used in photosynthesis.
b) It will be transferred to decomposers.
c) It will be transferred from one trophic level to the next.
d) It will be dissipated as heat.
e) It gets continuously cycled.
f) None of these options are true.

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PRACTICE

Imagine the ecosystem of your local park has gone through a harsh winter, and the total energy contained within the ecosystem is relatively low. To increase the total amount of energy entering the ecosystem, which of the following types of organism could you introduce into the park?

a) Primary producers (autotrophs).
b) Primary consumers.
c) Consumers (heterotrophs).
d) Decomposers.

PRACTICE

Which of the following terms encompasses all the others?

a) Primary consumers.
b) Herbivores.
c) Carnivores.
d) Heterotrophs.
e) Decomposers.
f) Secondary consumers.

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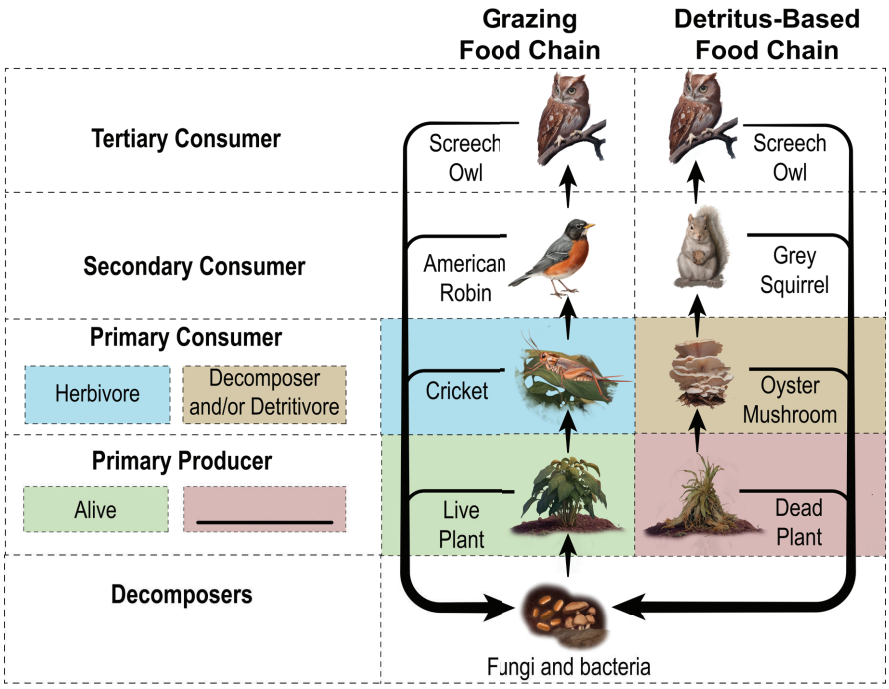
Grazing & Detritus-Based Food Chains

◆ *Recall*: **Trophic Level**: an organism's position in a food chain/web (e.g. primary producer → quaternary consumer).

- **Grazing Food Chain**: primary consumers feed on _____ plants.
- **Detritus-Based Food Chain**: primary consumers feed on detritus (_____ matter).



NOTE: Decomposition rates tend to _____ with increasing temperature, moisture, & oxygen.

EXAMPLE

In which of the following locations would decomposition occur at the fastest rate, and why?

a) A field in a temperate grassland, because the high wind speeds speed up decomposition.

b) A tropical rainforest, because decomposers work faster in wet and warm conditions.

c) A beach on the east coast of the USA, because the salty air speeds up decomposition.

d) Decomposition would occur at the same rate in all 3 locations.

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PRACTICE

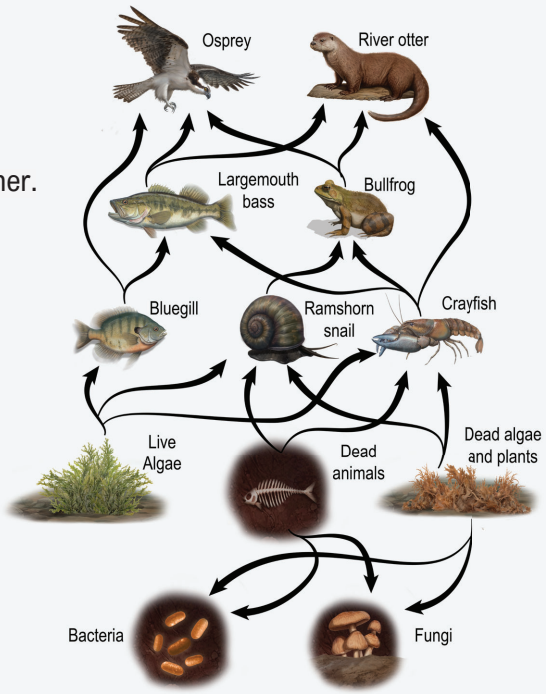
According to the following food web:

a) The bullfrog is a primary consumer.

b) The largemouth bass is an apex predator.

c) Nutrients in detritus are not recycled within the ecosystem.

d) The otter acts as both a secondary consumer & a tertiary consumer.



PRACTICE

Decomposers are unique in that they:

a) Return nutrients from dead organisms back to primary producers in an inorganic form.

b) Can act as both primary producers & primary consumers.

c) Can consist of animals, plants, prokaryotes, or fungi.

d) Detoxify detritus, allowing primary producers to use the nutrients.

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According to the following food web diagram:

a) #2 represents a primary producer.

b) #3 represents an apex predator.

c) #7 represents a decomposer.

d) #6 represents a primary consumer.