Energy Flow in an Ecosystem

Lesson 4

Energy

- What do organisms need energy for?

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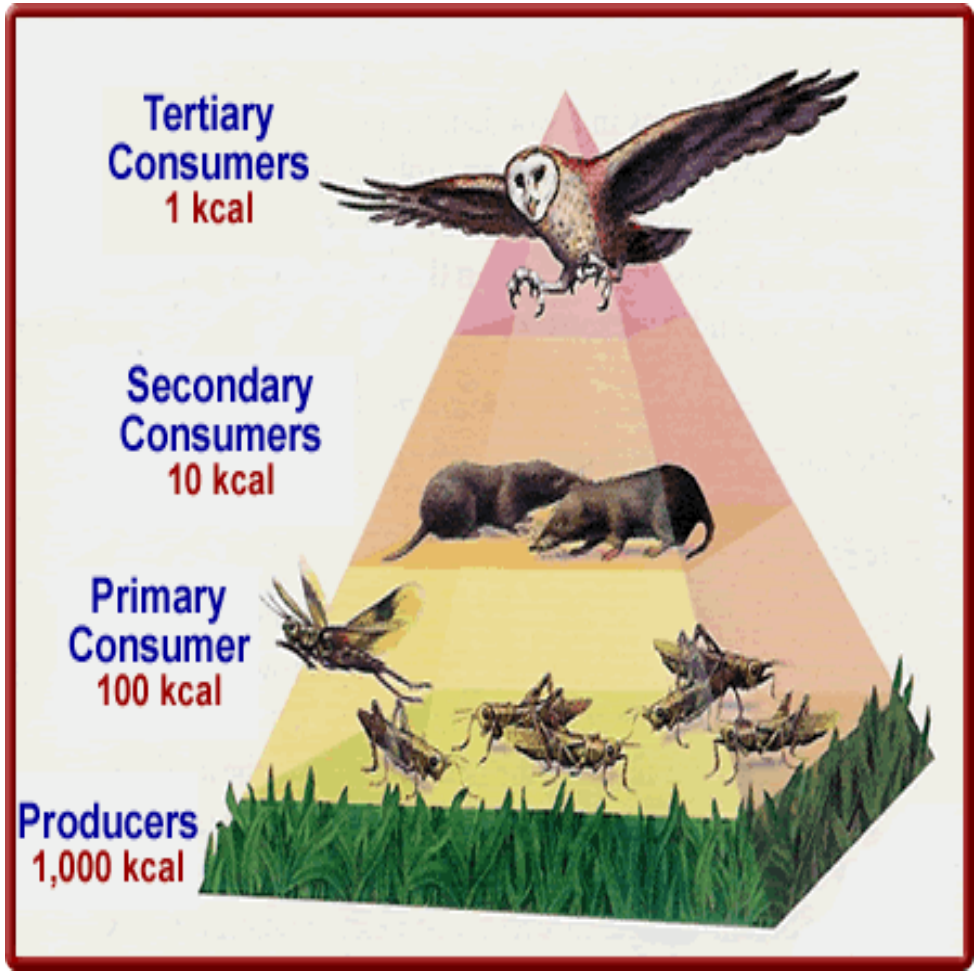
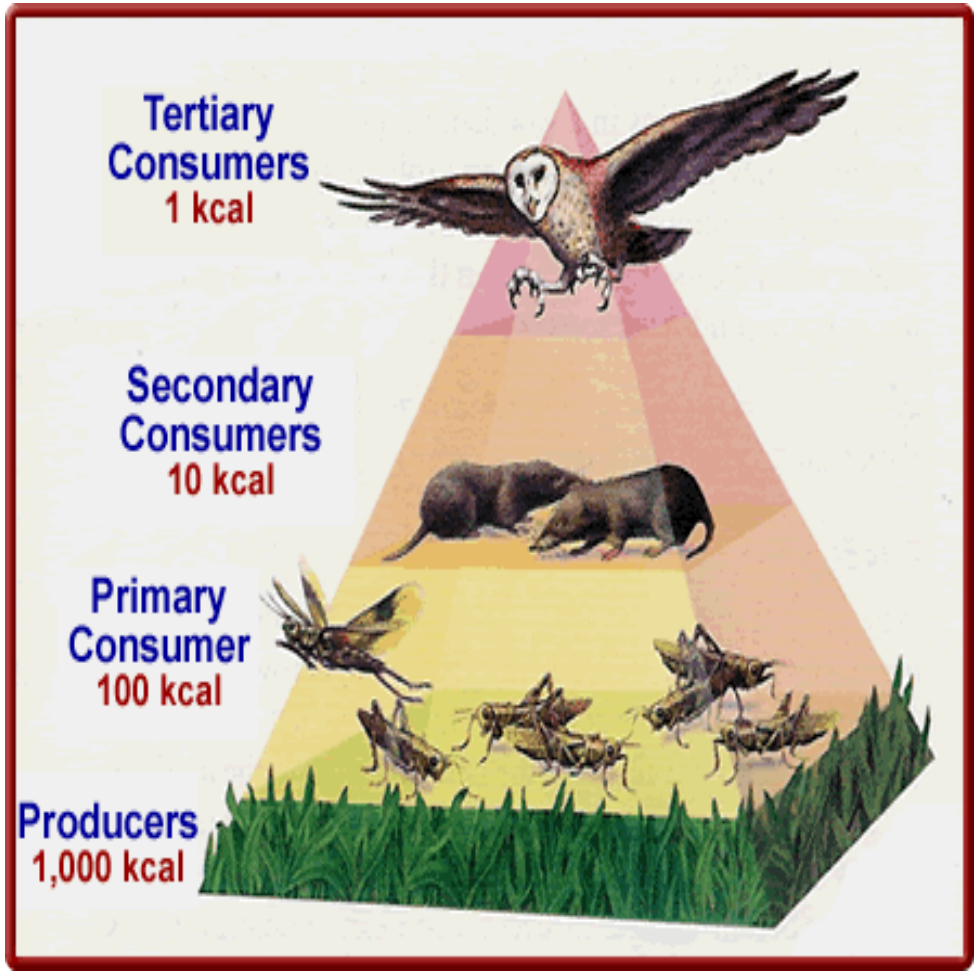
  - Growth, repair, maintenance.
  - Maintain body temperature.
  - Collect or hunt for food.
  - Play and having fun.
  - Stored for future use.

Energy Pyramids



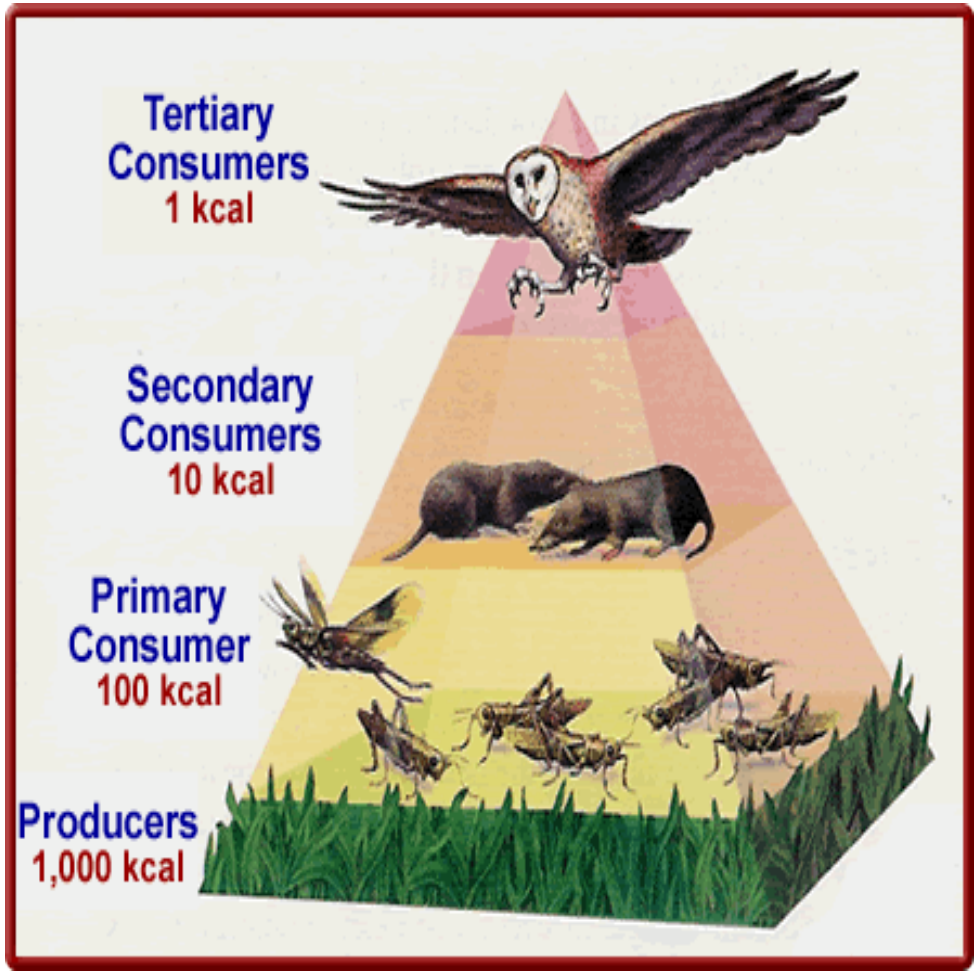
- Only about 10% of the energy that an organisms eats is passed on to the next level of a food chain.
- As a result, there are usually no more than four levels to a food chain.
- There is just not enough energy to feed the top consumers.

Energy Pyramids



- As you move higher in the food chain you will notice:
  - Levels of energy get smaller.
  - Population sizes get smaller.
  - Organisms must eat more food in order to get enough energy (so you will see greater population sizes near the bottom).

Energy Pyramids

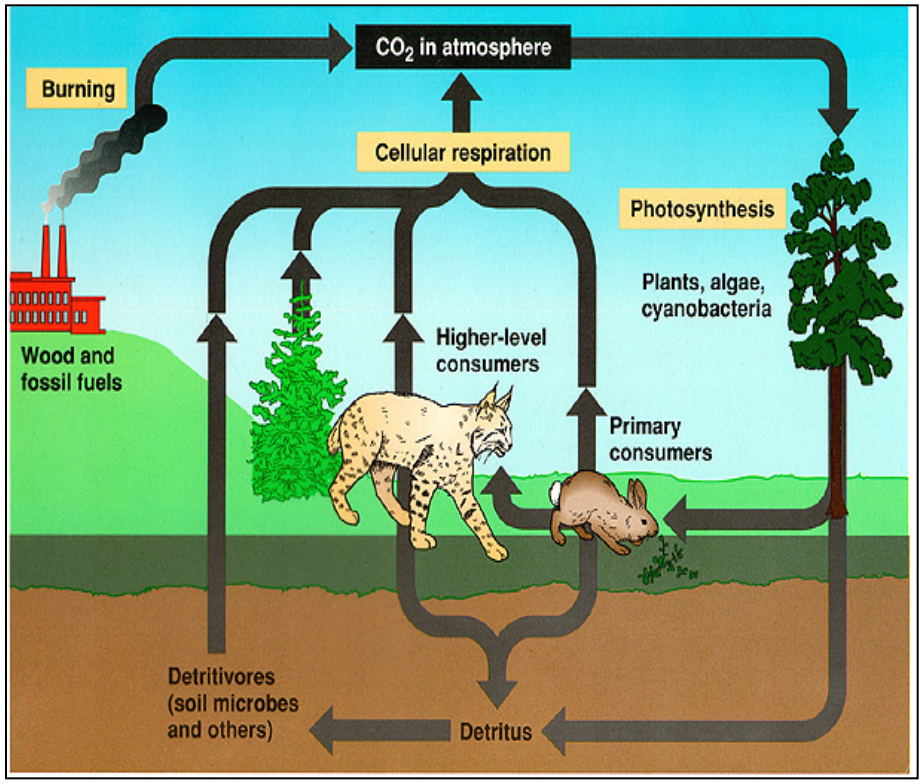


- To maintain stable populations in an ecosystem, there must be large numbers of producers to provide enough food energy for all the levels of the ecosystem.
- The wider the base (of producers), the more consumers can live in the ecosystem

Cycling of Matter

- When organisms die, detrivores and decomposers break down organic matter in order to recycle the nutrients.
- These important nutrients include carbon, nitrogen, and phosphorus.

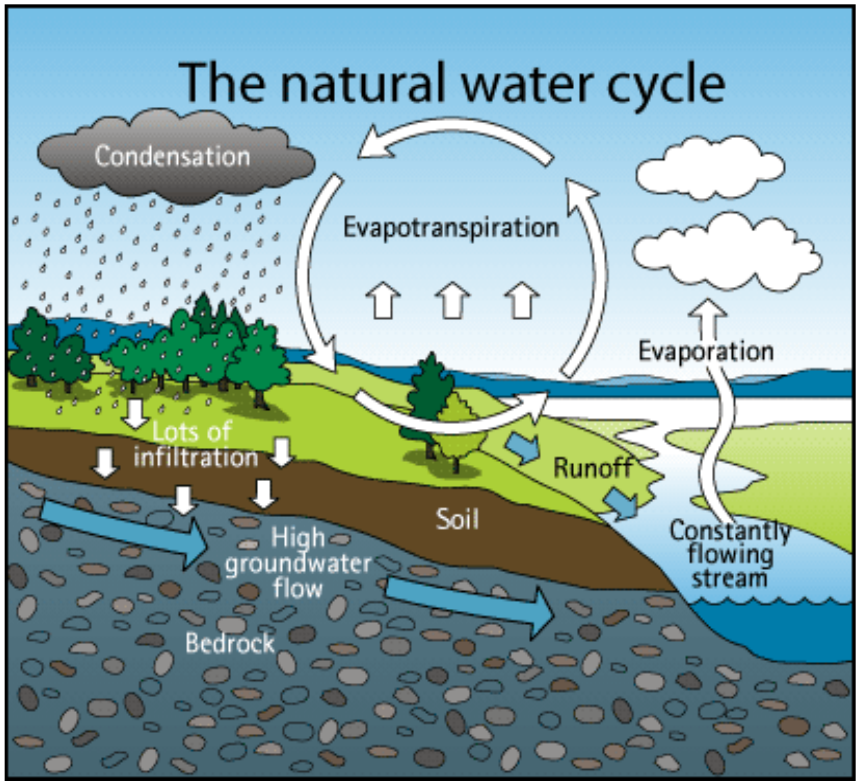
Cycling of Matter



Carbon Cycle

- Carbon makes up all living things.
- Carbon is released into the atmosphere when coal, oil, and natural gas is burned.
- Carbon is also released when organisms breathe out CO_2, release waste, and when they decompose.
- Producers take the carbon (as CO_2) out of the atmosphere and return it to the ecosystem.

Cycling of Matter



Water Cycle

- Water keeps all living things alive.
- Water runsoff along the surface (rivers, streams) and collects in basins (lakes, oceans).
- Water also filters into and flows through soil and rocks.
- It evaporates into the atmosphere and condenses as clouds.
- Water reenters the ecosystem as rain and snow precipitation.