

Name: _____

Unit 5: ECOSYSTEMS

NOTES: 6.04

FOCUS: Energy Pyramids & The Cycling of Matter in an Ecosystem

ESSENTIAL QUESTION: Can you describe what an energy pyramid is and explain the relationship between the level on an energy pyramid and the available energy at that level? Can you describe and explain the various processes involved in the cycling of matter through an ecosystem?

What have we already learned about FOOD WEBS and FEEDING RELATIONSHIPS in an ecosystem?

Take a few minutes to study your food web that you created in class. Also, study the food webs created by your classmates. Jot down what you learned through this activity.

Difficult to place some organisms on the food web.
 Difficult to know what some organisms eat.
 Different levels, from producers up to Quaternary consumers.

Energy Pyramids

- Energy pyramids show the flow of energy from producers at the bottom to consumers at every level in a food chain.

- **Why are energy pyramids shaped the way they are?**



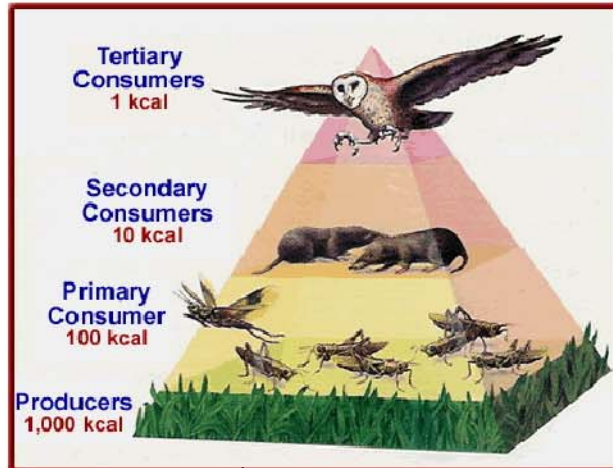
- The amount of useful energy in the form of food decreases at each level.
- As organisms use food for energy in their bodies, heat is produced as a by-product and then lost to the surrounding environment.

Name: _____

Unit 5: ECOSYSTEMS

NOTES: 6.04

- o Almost 90% of energy in a food source is lost as heat before it reaches the next level in a food pyramid.
- o Consumers at the top of the pyramid have much less energy available to support them than those at the bottom.



- o For this reason, there are far fewer high-level consumers in a community than there are primary consumers or producers.

Where does the energy go?

- o Heat is either dissipated into our atmosphere or re-radiated back into outer space.

Cycling of Matter

- Energy is lost in the feeding relationships within an ecosystem, but matter is constantly recycled.
- As a matter of fact, the matter that is passed through a food web is the same matter that has been passed through food webs on Earth since Earth's formation.
- Abiotic matter that is recycled in an ecosystem includes:
 - o Water
 - o Oxygen
 - o Nitrogen
 - o Carbon

Name: _____

Unit 5: ECOSYSTEMS

NOTES: 6.04

- Water is recycled through the Water cycle.
- Carbon and oxygen are recycled through the processes of photosynthesis & respiration.
- Nitrogen is recycled through the processes of urination by animals and then nitrogen fixation by decomposers found in soil.
- All of these substances serve as raw materials needed to build the cells of new organisms and help in the process of using energy from the sun.

