

Virtual Lab - Ecosystems Pyramids of Numbers and Energy

Virtual Lab
Model Ecosystems
X

Question

How does energy flow through an ecosystem?

An ecosystem consists of a community of living organisms interacting with each other and the environment. The source of energy that fuels most ecosystems is the Sun. Plants use the Sun's energy to produce food in a process called photosynthesis. Organisms that use energy from the Sun or energy stored in chemical compounds to produce their own nutrients are called autotrophs. They are also called producers because most other organisms depend on autotrophs for nutrients and energy. Heterotrophic organisms that cannot make their own food may obtain nutrients by eating other organisms. A heterotroph that feeds only on plants is called an herbivore. Herbivores are also called first order heterotrophs. Carnivores that feed on herbivores are called second order heterotrophs. Carnivores that feed on other carnivores are called

Deciduous Forest Ecosystem

Field Notes

Deciduous Forest Ecosystem

Plants:

- Deciduous Trees
- Ferns
- Berry Bushes
- Wild Flowers
- Grasses

Mammals:

- Chipmunks
- Deer
- Foxes
- Opossums
- Rabbits
- Wolves

Birds:

- Hawks
- Woodpeckers
- Owls
- Chickadees

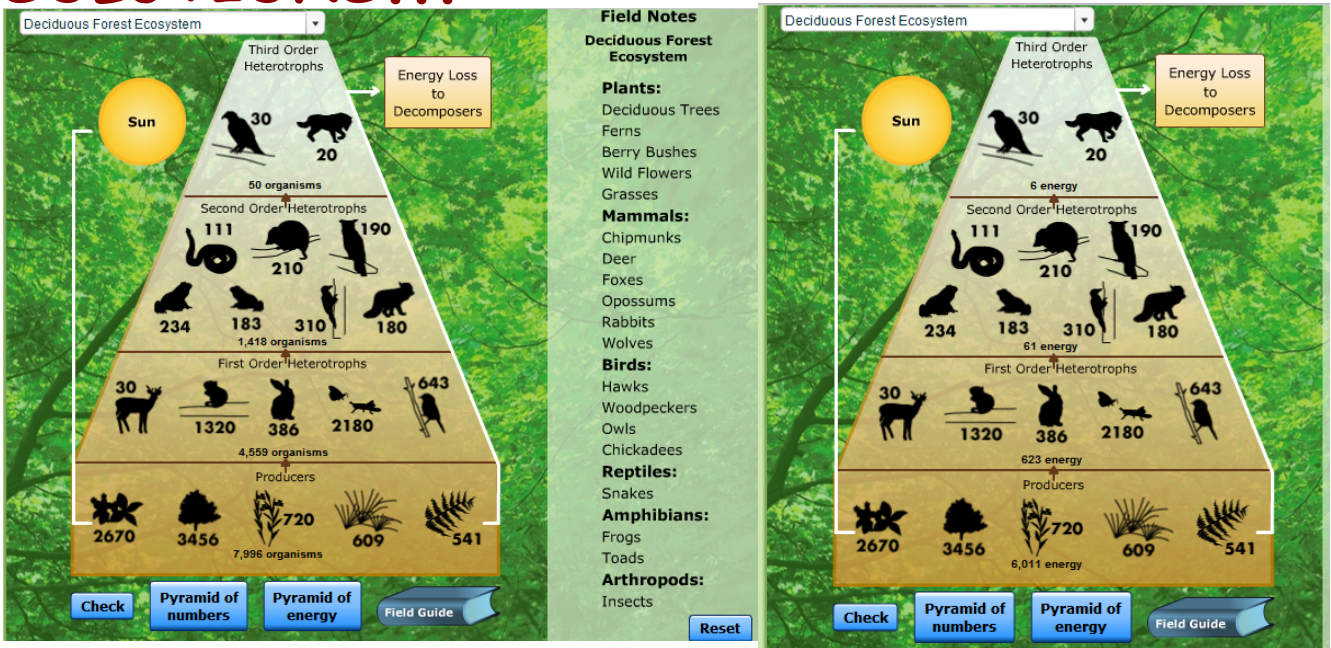
Reptiles:

- Snakes

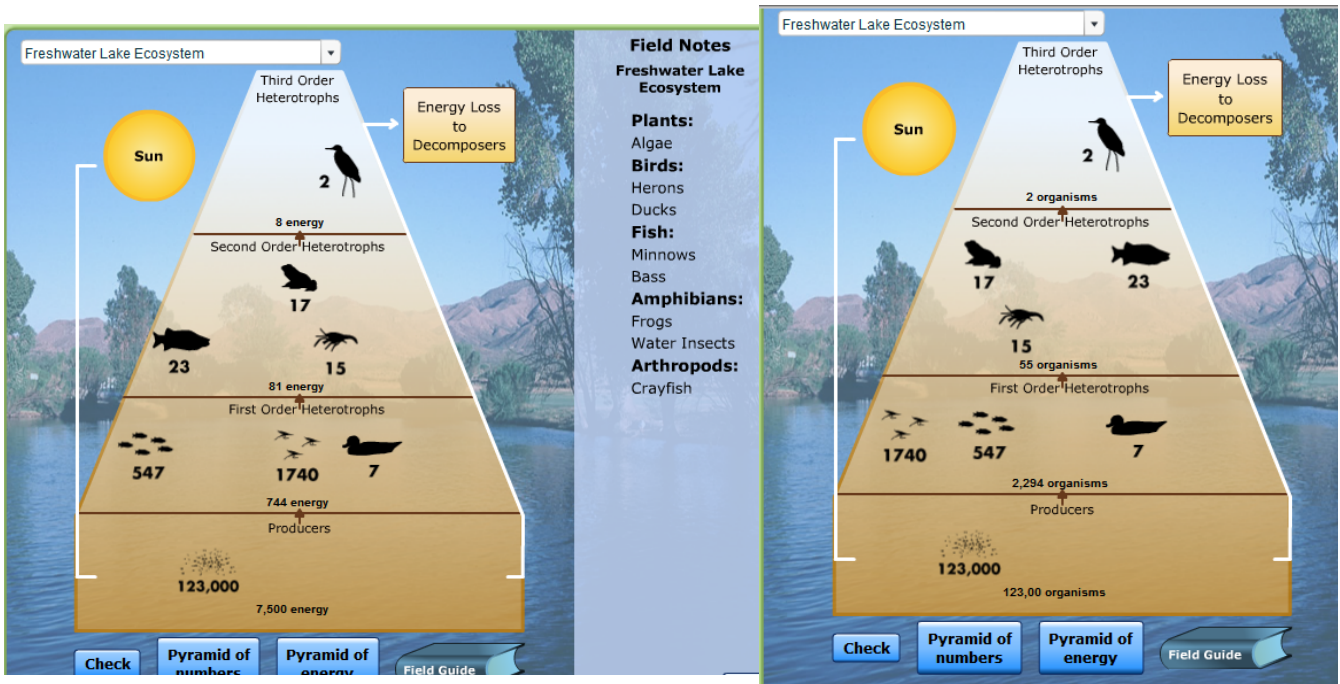
Amphibians:

- Frogs
- Toads

SOLUTIONS...



SOLUTIONS...



Matter in Ecosystems

An ecosystem needs more than energy to function. It also needs matter. Matter is used by organisms in ecosystems for life processes. Most ecosystems need over 20 elements. Just the plants in most ecosystems need 16 elements. These essential elements are called **nutrients**.

 **NOTES - Nutrients and Cycles.pdf**

Re-order the descriptions on the right to line up with the terms on the left.

non-mineral nutrients

magnesium - one of the atoms
in a chlorophyll molecule

mineral nutrients

needed in relatively large amounts for
plant growth (found in commercial fertilizers)
-nitrogen, phosphorus and potassium

macronutrients

iron - needed to make hemoglobin
molecules in red-blooded animals

primary macronutrients

nutrients which enter an
ecosystem from bedrock

secondary macronutrients

nutrients which enter an ecosystem
in the form of water and carbon dioxide
- oxygen, carbon, hydrogen
(building blocks of life)

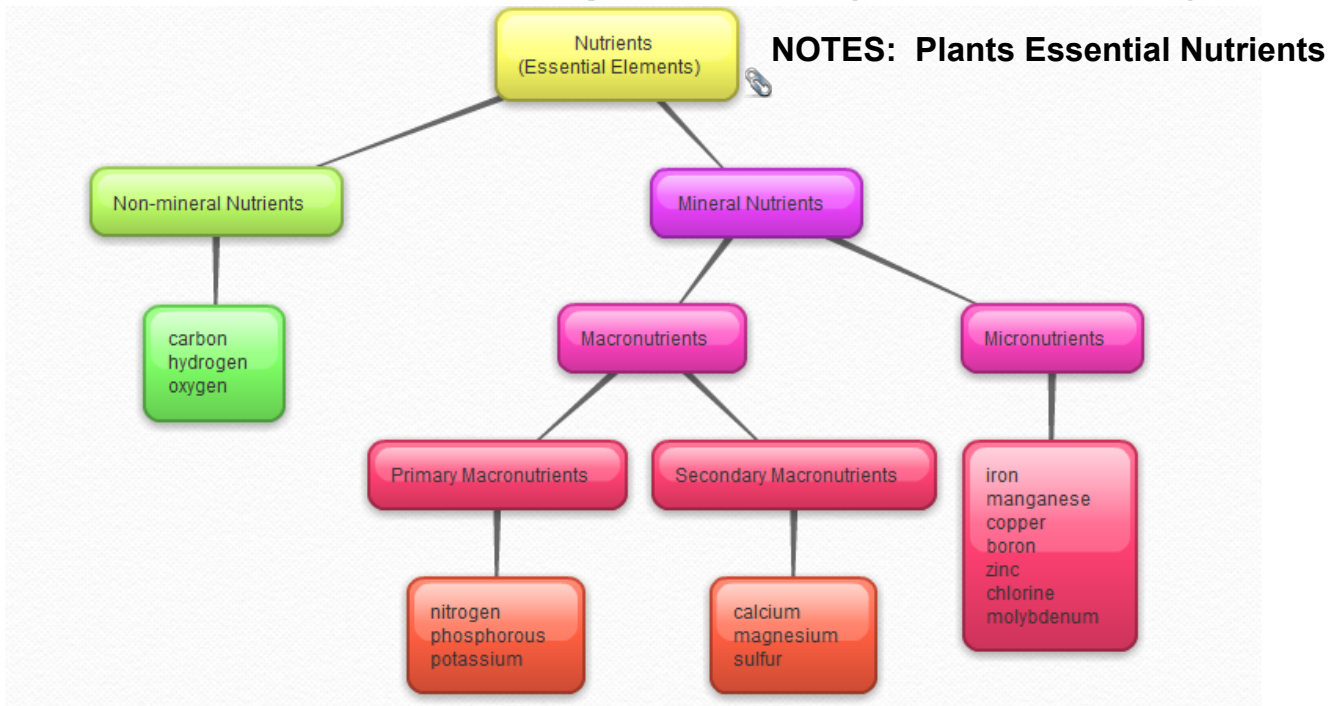
micronutrient

required in greater amounts than micronutrients

Correct Matches

- non-mineral nutrients** → nutrients which enter an ecosystem in the form of water and carbon dioxide
- oxygen, carbon, hydrogen
(building blocks of life)
- mineral nutrients** → nutrients which enter an ecosystem from bedrock
- macronutrients** → required in greater amounts than micronutrients
- primary macronutrients** → needed in relatively large amounts for plant growth (found in commercial fertilizers)
-nitrogen, phosphorus and potassium
- secondary macronutrients** → magnesium - one of the atoms in a chlorophyll molecule
- micronutrient** → iron - needed to make hemoglobin molecules in red-blooded animals

- 16 elements which most plants need (excludes nickel)...



Essential and Beneficial Elements in Higher Plants																	
H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Lr	Rf	Db	Sg	Bh	Hs	Mt									
		La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb		
		Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No		

Attachments

NOTES - Nutrients and Cycles.pdf

Essential Nutrients for Plants.pdf