

THE MAIN POINTS #1:



What you should know so far...

1. What are the main characteristics of life (all life should have in common)?

2. Give a brief definition (can be a sentence fragment) of the following terms and concepts related to study of ecosystems and ecosystem structure:
 - Ecology:
 - Ecologist
 - Biosphere
 - Biome
 - Ecosystem
 - Community
 - Population
 - Individual Species
 - Biotic Factors
 - Abiotic Factors

3. [Energy Flow Through Ecosystems.](#)
 - a. Compare and contrast between food webs and chains.

 - b. Why is energy flow in an ecosystem represented by a pyramid?.

 - c. What are trophic levels?

 - d. Define and contrast heterotrophs and autotrophs.

 - e. What are producers? How are photosynthetic and chemosynthetic producers different?

- f. What are consumers? Differentiate between the different types of consumers in an ecosystem.
- g. What happens as energy moves through an ecosystem? Up an energy pyramid?
- h. What is bioaccumulation and its relationship to energy flow in an ecosystem?
- i. What is the difference between bioaccumulation and biological magnification?
- j. Give examples of three substances that will bioaccumulate in organisms' tissues.

4. Jackson Creek Analysis:

- a. What did the leaf pack macroinvertebrates tell us about the structure of the trophic levels in Jackson creek?
- b. How can tolerance levels of organisms found in Jackson creek be used to help us determine the ecological health of the creek?

5. Biodiversity ([Species Diversity Slideshow](#)):

- a. Distinguish between species richness and species evenness.
- b. How do ecosystems, species richness, and genetic diversity interact to create biodiversity?
- c. What are keystone species and why are they important? Be able to give an example.
- d. What are trophic cascades and how are keystone species related to this concept? Be able to give an example.
- e. The Simpson's Diversity Index can be used to calculate a number that quantifies species diversity. Use the equation to compare two ecosystems on the following page. The equation is below:

Simpson's Diversity Index

$$\text{Diversity Index} = 1 - \sum \left(\frac{n}{N} \right)^2$$

n = total number of organisms of a particular species

N = total number of organisms of all species

Assume that each community below has 100 individual trees total. Note, we are only focusing on trees in this example and ignoring other species.

What is the Simpson's Diversity Index for each of the communities #1 and #2?

Which has a greater diversity according to the Simpson's Diversity Index?

