Critical reading_Trophic levels

Trophic Levels

Read these passages from the text and answer the questions that follow.

The feeding positions in a food chain or web are called trophic levels. The different trophic levels are defined in Table 1. All food chains and webs have at least two or three trophic levels. Generally, there are a maximum of four trophic levels. Examples are also given in the table.

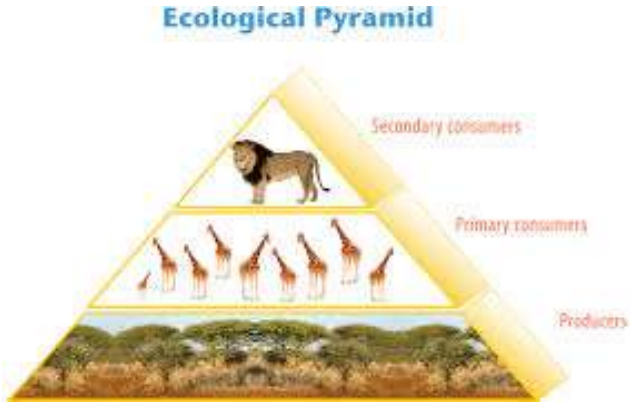
Table 1: Trophic Levels

Trophic Level	Where It Gets Food	Example
1st Trophic Level: Producer	Makes its own food	Plants make food
2nd Trophic Level: Primary Consumer	Consumes producers	Mice eat plant seeds
3rd Trophic Level: Secondary Consumer	Consumes primary consumers	Snakes eat mice
4th Trophic Level: Tertiary Consumer	Consumes secondary consumers	Hawks eat snakes

Many consumers feed at more than one trophic level. Humans, for example, are primary consumers when they eat plants such as vegetables. They are secondary consumers when they eat cows. They are tertiary consumers when they eat salmon.

Trophic Levels and Energy

Energy is passed up a food chain or web from lower to higher trophic levels. However, only about 10 percent of the energy at one level is available to the next level. This is represented by the pyramid below.



What happens to the other 90 percent of energy? It is used for metabolic processes or given off to the environment as heat. This loss of energy explains why there are rarely more than four trophic levels in a food chain or web. Sometimes there may be a fifth trophic level, but usually there's not enough energy left to support any additional levels.

Ecological Pyramid.

This pyramid shows how energy and biomass decrease from lower to higher trophic levels. Assume that producers in this pyramid have 1,000,000 kilocalories of energy. How much energy is available to primary consumers?

Critical reading_Trophic levels

Trophic Levels and Biomass

With less energy at higher trophic levels, there are usually fewer organisms as well. Organisms tend to be larger in size at higher trophic levels, but their smaller numbers result in less biomass. Biomass is the total mass of organisms at a trophic level. The decrease in biomass from lower to higher levels is also represented by the figure above.

Questions

1. What is a trophic level?

2. Which trophic level includes humans?

3. What types of organisms are in the first trophic level? Give an example.

4. Assume that producers in an ecosystem have 1,000,000 kilocalories of energy. How much energy is available to primary consumers?

5. Which trophic level has the greatest biomass?