

Ecology and trophic levels research paper examples

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Trophic levels

What are the leading primary producers and top consumers in the ecosystem you researched?

The top consumers in the food chain include Swanson's hawk, coyote, grey fox, kit fox, and great horned owl. These organisms are the top consumers since they feed on tertiary consumers. They are not consumed by any organism in the food chain. The top consumers in the food web are omnivores, which feed mainly on other organism. They complete the food web by feeding on other organism that feed on primary consumers. Termites are also primary leading producers since they feed on litter found underground which results into soil aeration.

Using the energy pyramid concept (Figure 3. 16 in the textbook is a good example), how did the amount of energy gained compare to the amount of energy lost as heat at the 2nd-4th trophic levels?

The pyramid of energy is a representation of the amount of energy found in a biomass at different trophic levels at a defined time period. The amount of energy available at each trophic level is limited by the amount of energy stored by the trophic level below owing to the fact that energy is lost as it is transferred from one level to another; there is subsequently less energy as you move up the level. As energy passes through the different trophic levels, the amount of energy received decreases due to loss of large amount of energy. This in turn leads to fewer numbers of species and biomass that exist at each level.

The transfer of energy between different trophic levels is not 100% efficient since energy is lost via respiration, death, excreta, decay, and heat lost

through metabolism. The subsequent loss of energy result into fewer organisms that can be supported at each level, but the size of the each organism increases at each trophic level.

What are the consequences if all individuals belonging to one of these key species are removed?

If individual species is removed from the ecosystem, several changes or alterations will occur in the ecosystem. For example, removing carnivores from the ecosystem will result into increase in the number of herbivores since there will be no predators feeding on them. This will result into influx in the number of herbivores consequently resulting into pressure on grasses and seeds. The resulting pressure on primary producers will render the ecosystem deficient of food to transfer along the food chain. Removal of species in any trophic level can result into further extinction. The removal of a specie from the food web results into extinction of species both above and the deleted species.

If you have the option to save from extinction either the carnivores or the primary producers in an ecosystem, which would you protect? Why?

When faced with such a scenario, the best option that I would pick to save is the primary producers in the ecosystem. The reason for considering is owing to the fact that without primary producers, all organisms would become extinct. It is only the primary producers that have the ability to transform the energy received from the sun through photosynthesis into energy that can be consumed by primary consumers. Carnivores depend on primary consumers, which depend on primary consumers. Extinction of primary producers from the ecosystem will compromise the existence of primary

consumers that are preyed on by carnivores. Without grass, there will be no gazelles for lions to feed on. This will result into complete extinction of the ecosystem. It would however prove dangerous to save primary producers and ignore carnivores since this can result into large increase in the number of herbivores thereby putting pressure on primary producers.

Considering the amount of energy required to produce animal-based foods and goods, should humans change their habits so they consume products closer to the bottom of the food chain? Provide rationale for your response. Humans should not change their habits to consume products that are closer at the bottom of the food chain. What will happen to the whales when we eat all the krill? Humanbeings should produce animal-based foods and goods for their consumption so that the products that are closer at the bottom of the food chain are left to primary consumers. Reserving products in the bottom of the food chain will ensure that the ecosystem supports itself and people also produce what they can consume.

References:

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Desert food web