

ECOLOGICAL PYRAMID

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WHAT IS ECOLOGICAL PYRAMID

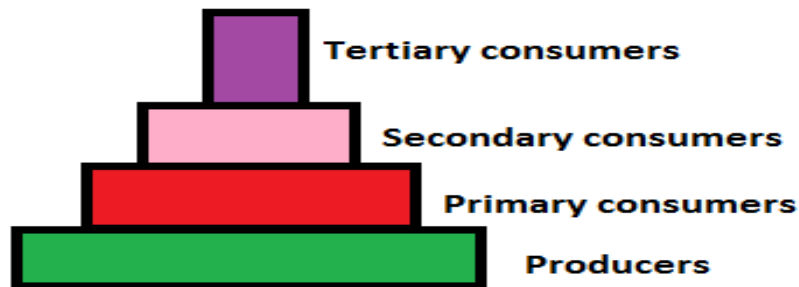
- ◉ An ecological pyramid is a graphical representation of the relationship between the different living organisms at different trophic levels. It was given by G.Evlyen Hutchinson and Raymond Lindeman.
- ◉ It can be observed that these pyramids are in the shape of actual pyramids with the base being the broadest, which is covered by the lowest trophic level, i.e., producers. The next level is occupied by the next trophic level, i.e., the primary consumers and so on.
- ◉ All the calculations for construction of these types of ecological pyramids must take into account all the organisms in a particular trophic level because a sample space of a few numbers or a few species will end up giving a huge level of errors.

TYPES OF ECOLOGICAL PYRAMID

- Three types of ecological pyramid exist. They are as follows:
 1. Pyramid of Numbers
 2. Pyramid of Biomass
 3. Pyramid of Energy

PYRAMID OF NUMBERS

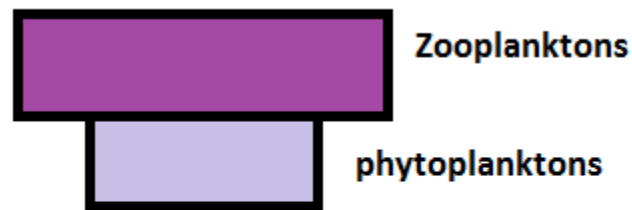
- In this type of ecological pyramid, the number of organisms in each trophic level is considered as a level in the pyramid. The pyramid of numbers is usually upright except for some situations like that of the detritus food chain, where many organisms feed on one dead plant or animal.



Pyramid of numbers

PYRAMID OF BIOMASS

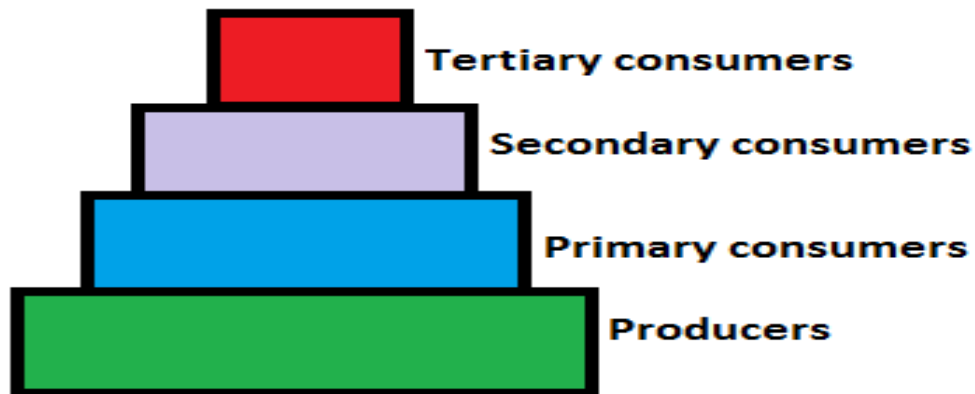
- In this particular type of ecological pyramid, each level takes into account the amount of biomass produced by each trophic level. The pyramid of biomass is also upright except for that observed in oceans where large numbers of zooplanktons depend on a relatively smaller number of phytoplanktons.



Pyramid of biomass in oceans

PYRAMID OF ENERGY

- Pyramid of energy is the only type of ecological pyramid, which is always upright as the energy flow in a food chain is always unidirectional. Also, with every increasing trophic level, some energy is lost into the environment.



Pyramid of energy

IMPORTANCE OF ECOLOGICAL PYRAMID

- ◉ The importance of ecological pyramid can be explained in the following points:
- ◉ They show the feeding of different organisms in different ecosystems.
- ◉ It shows the efficiency of energy transfer.
- ◉ The condition of the ecosystem can be monitored, and any further damage can be prevented.

LIMITATIONS OF THE ECOLOGICAL PYRAMID

- More than one species may occupy multiple trophic levels as in case of the food web. Thus, this system does not take into account food webs.
- The saprophytes are not considered in any of the pyramids even though they form an important part of the various ecosystem.
- These pyramids are applicable only to simple food chains, which usually do not occur naturally.
- These pyramids do not deliver any concept in relation to variations in season and climate.
- They do not consider the possibility of the existence of the same species at different levels.