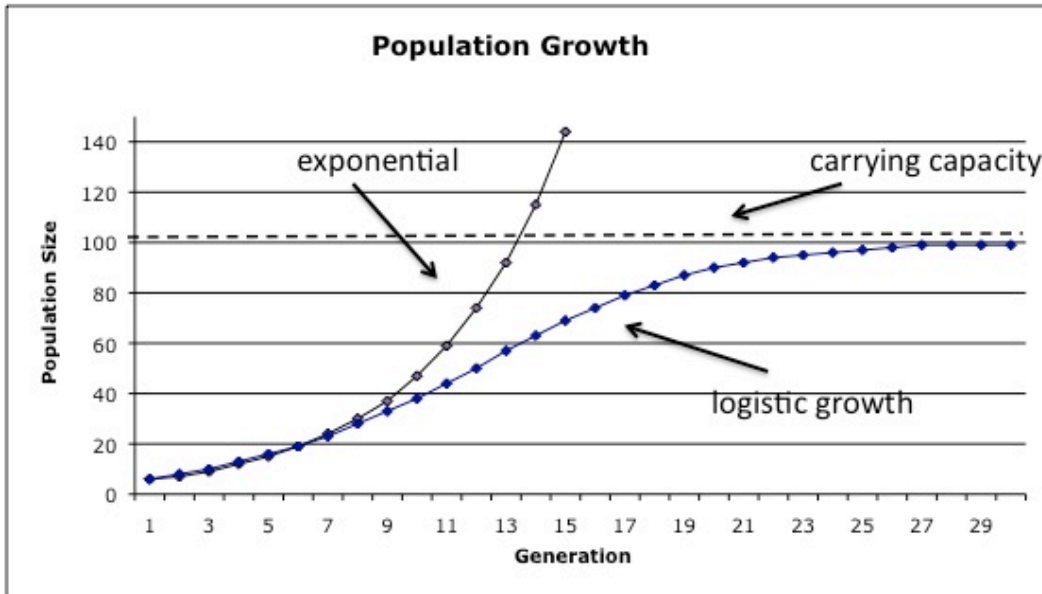


L100 – Lecture Quiz #6

ANSWER KEY

1. On the graph below draw two lines - one showing a logistic growth curve and one showing an exponential population growth curve. **Label curves.** You only have to sketch in a curve showing a typical logistic growth curve and a typical exponential curve. (2.5pt)



2. Indicate carrying capacity on the above graph with a dotted line. Are both of these population growth curves influenced by a carrying capacity? If not, which one isn't? (1pt)

Carrying capacity influences logistic growth; not exponential growth. Exponential growth is unconstrained – no limits on growth. Logistic growth takes into consideration the resources available in the habitat that supports the population.

3. What is carrying capacity? Is it always constant? If so, why? If not, why might it change? (1pt)

Carrying capacity is the amount of resources needed to support the population. No, carrying capacity is not constant. It could change as the resources or habitat changes. It could change as a result of a decrease/increase in food supply, increase/decrease in predation pressures, loss of habitat through storms, etc.....

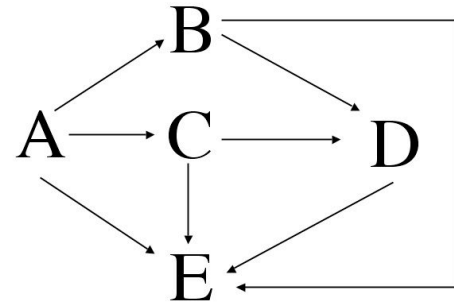
4. In the figure below each letter is a species within a community. The arrows represent energy flow through the ecosystem.

Match the following (NOTE one trophic level has two answers) – 2.5pts

From the figure:

trophic level

- A E decomposer
 B B & C_ primary consumer
 C D secondary consumer
 D A primary producer
 E



5. What is competitive exclusion? Explain in your own words. (1pt)

When two species compete for the same ecological niche and the two sides are not equally capable of handling the competition, one species will drive the other species extinct locally.

If the two niches do not completely overlap the two species may co-exist even one species is excluded (extinct) in one area.

6. Energy is lost at each trophic level as it moves through the ecosystem. Why is there less energy available for each subsequent trophic level? Explain what happens to the energy. (1pt)

When a plant produces carbohydrates via photosynthesis or an organism consumes food some of the energy that it takes in must be used to drive the metabolism (cellular functioning of the body). Only a very small percentage (1-20%) will be incorporated into the biomass of the organism. It is only that part that is incorporated into the biomass that is available to the next trophic level. So at each trophic level some energy is lost in the form of heat (byproduct of chemical conservations) as well as lost due to metabolic functioning.

7. Give an example of a mutualistic relationship and explain why it is mutualistic. (1pt)

Lichen – mutualistic relationship between a fungus and a photosynthetic partner (cyanobacteria or green algae). The fungus absorbs nutrients and water for the photosynthetic partner to use and the photosynthetic partner produces carbohydrates via photosynthesis and allows the fungus to feed off of it.

Mycorrhizal fungus / plants – Same relationship as described above but it is a vascular plant who is the photosynthetic partner.

Leaf-cutter Ants & the Acacia trees: The ant protects the plant by reducing competition with other plants, by clearing the surrounding area of other plants. The ants also deter herbivory by driving herbivores away. Plants feed the fungus from the carbohydrates produced by photosynthesis.

Hummingbirds (or another pollinator) and flowers. The plants produces nectar that the pollinator gets when visiting the flower. Given the location of the nectar, the bird must probe its bill into the flower's tube and as a result get pollen on its head. When it travels to the next plant it brushes some of the pollen on to the nearby plant. The plant gets pollinated and the bird gets fed (nectar).