

TEKS Covered

Interdependence in Ecosystems

Part I

10C analyze the levels of organization in biological systems and relate the levels to each other and to the whole system

12E describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles

12C analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids

11C summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems

12A interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms

Part II

12D recognize that long-term survival of species is dependent on changing resource bases that are limited

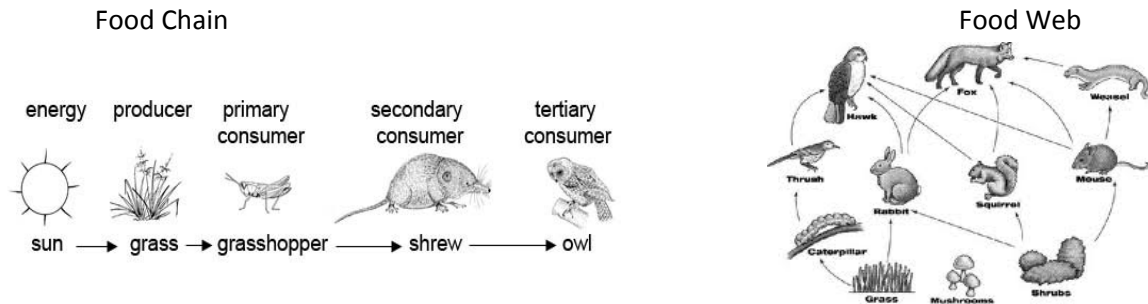
12F describe how environmental change can impact ecosystem stability

11B investigate and analyze how organisms, populations, and communities respond to external factors

11D describe how events and processes that occur

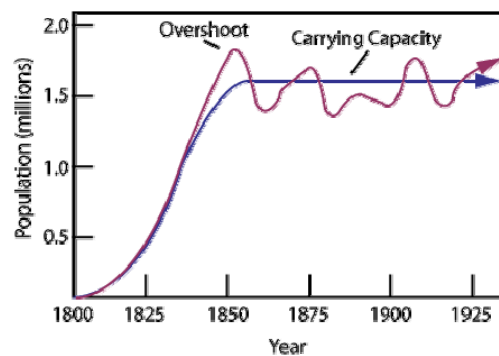
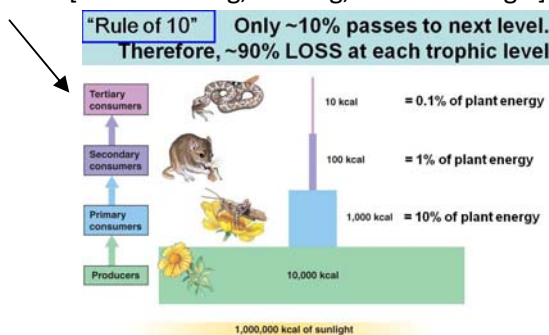
Food Chains and Webs: Showing how energy flows through the ecosystem

- Arrows in a food chain and web show where the energy is going. Energy starts with the sun.
- Trophic levels: organisms are classified by their feeding relationships.
 - Producer, Primary consumer, Secondary consumer, Tertiary Consumer, Quaternary Consumer
 - In a food web, one organisms might be in multiple trophic levels.
- Food Chain: shows one line of energy flow
- Food Web: shows all the relationships and energy in an ecosystem
 - Don't forget about decomposers, like bacteria and mushrooms.



- Relationships Among Organisms
 - Predation: one predator captures and eats the prey
 - Bear eats Salmon
 - Competition: two organisms compete and fight for the same resource (mates, food, shelter, water)
 - Two foxes fight over a rabbit; Two stags fight for a doe
 - Parasitism: one organism--parasite, benefits by living and harm another--host
 - Flea and Dog
 - Commensalism: one organism benefits by living with another, but the other is not harmed or benefits
 - Vine living with a tree for support
 - birds live around cattle to eat the bugs that get stirred up when the cattle walks
 - Mutualism: both organisms benefit by living together
 - Bird eats all the ticks on a rhino

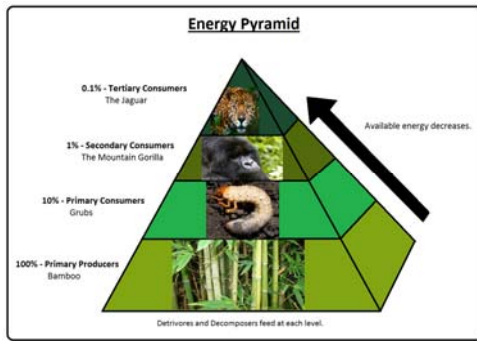
- Only 10% of energy is passed on when organisms are eaten. 90% is lost in creating heat and survival life processes [like breathing, moving, heart beating...]



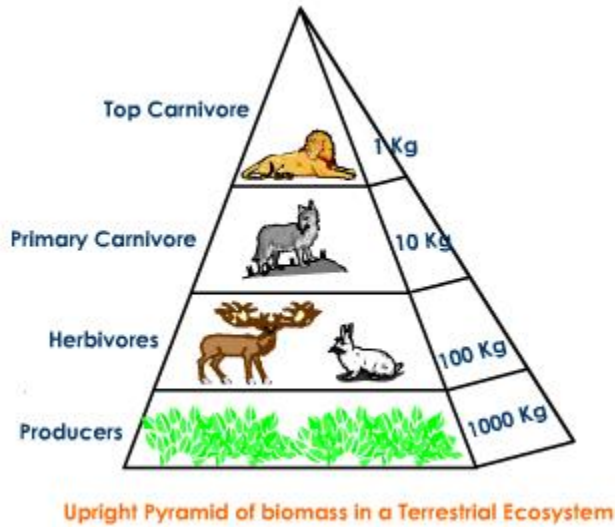
- Carrying Capacity: because of finite resources (food, water, shelter), an area can only support a certain number of organisms. This is called the carrying capacity.

8. Types of Ecological Pyramids

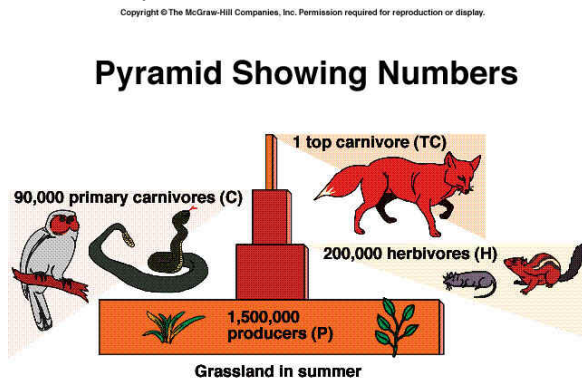
- a. Energy Pyramid: shows amount of energy available at each trophic level



- b. Biomass Pyramid: shows amount of biotic (living) tissue available at each trophic level

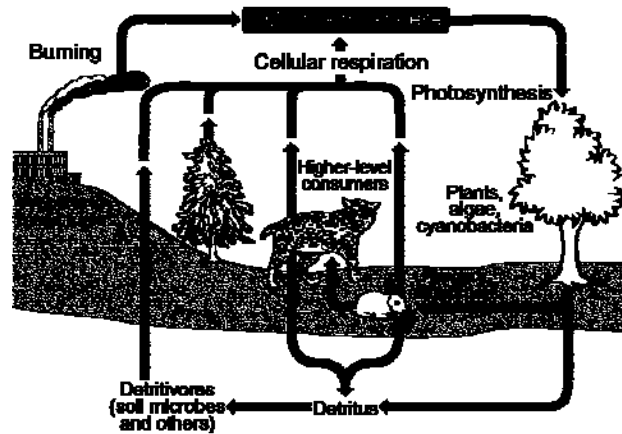


- c. Numbers Pyramid: shows the number of individual organisms found at each trophic level



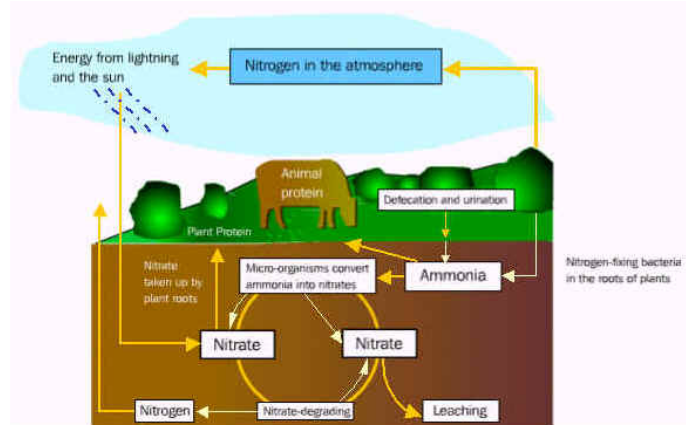
Cycles: Showing how nutrients flow through the ecosystem

Carbon Cycle: Carbon is needed by living organisms



Nitrogen Cycle: Nitrogen is needed by living things; can be found in all DNA

1. Bacteria and lightening changes nitrogen in the air into a usable form
2. Plants uptake the nitrogen from the soil; plants are then eaten by animals
3. Animals die and get decomposed, returning the nitrogen back into the soil
4. Some bacteria can change nitrogen in the soil into nitrogen gas to be released back into the air



Ecological Succession:

1. Primary: land starts out w/no soil; must start with pioneer species like lichen in order to create soil, takes longer
2. Secondary Succession: land already has soil, occurs after a disturbance like forest fire, occurs faster

