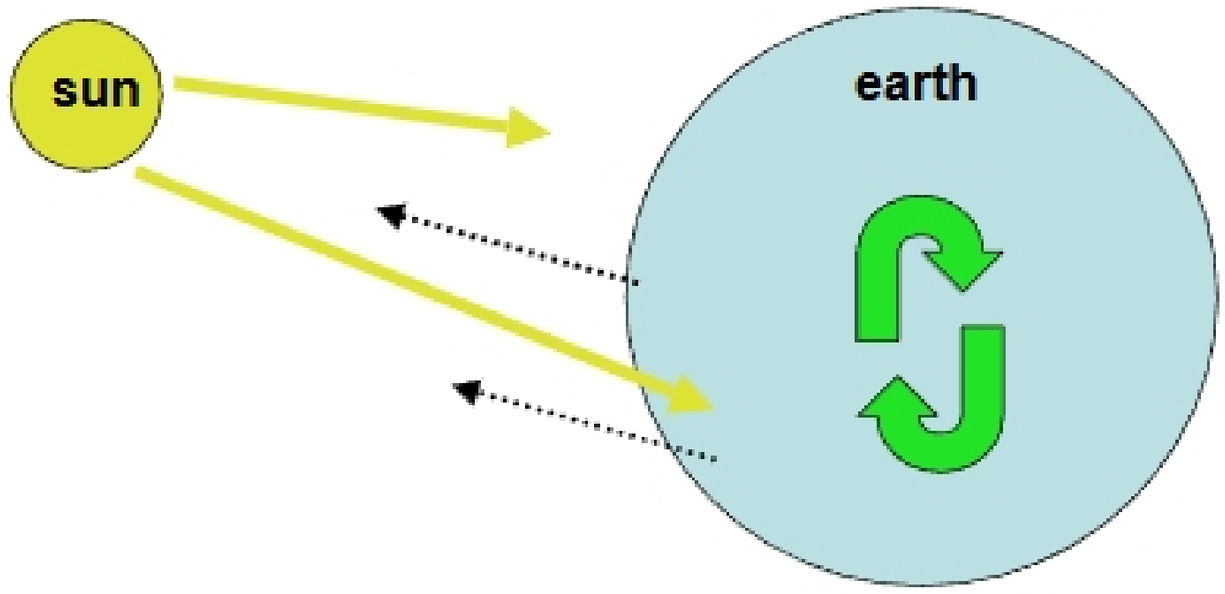
Ecosystem ecology

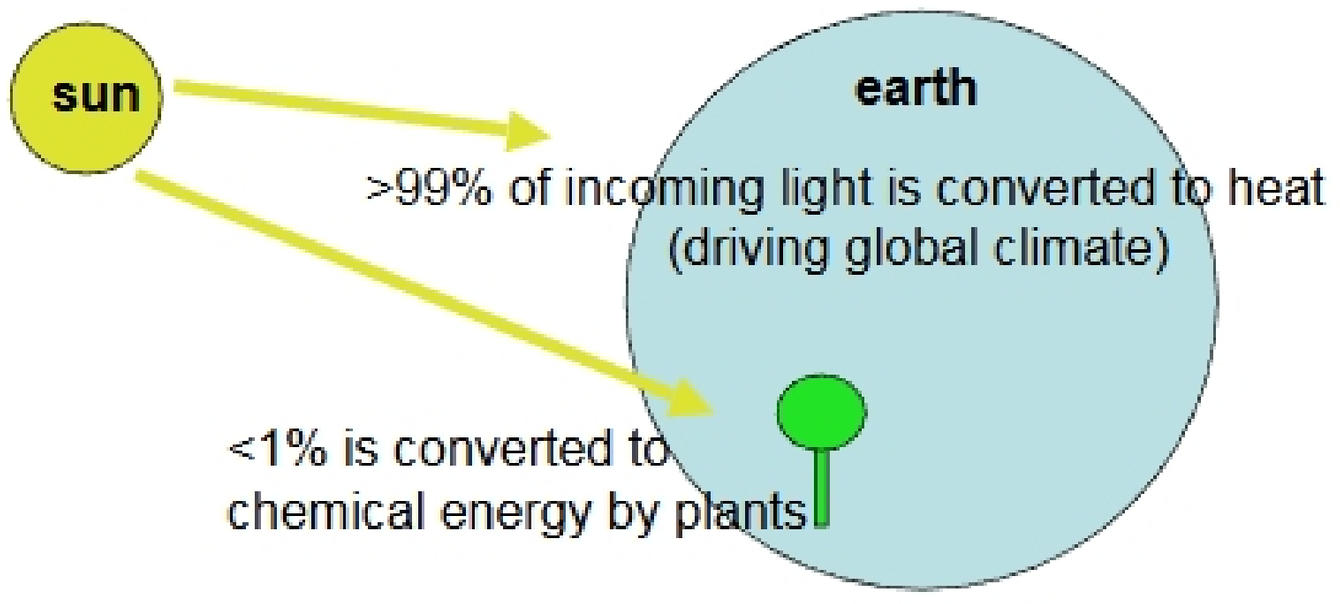
Energy Flows
open system

Nutrients cycle
closed system

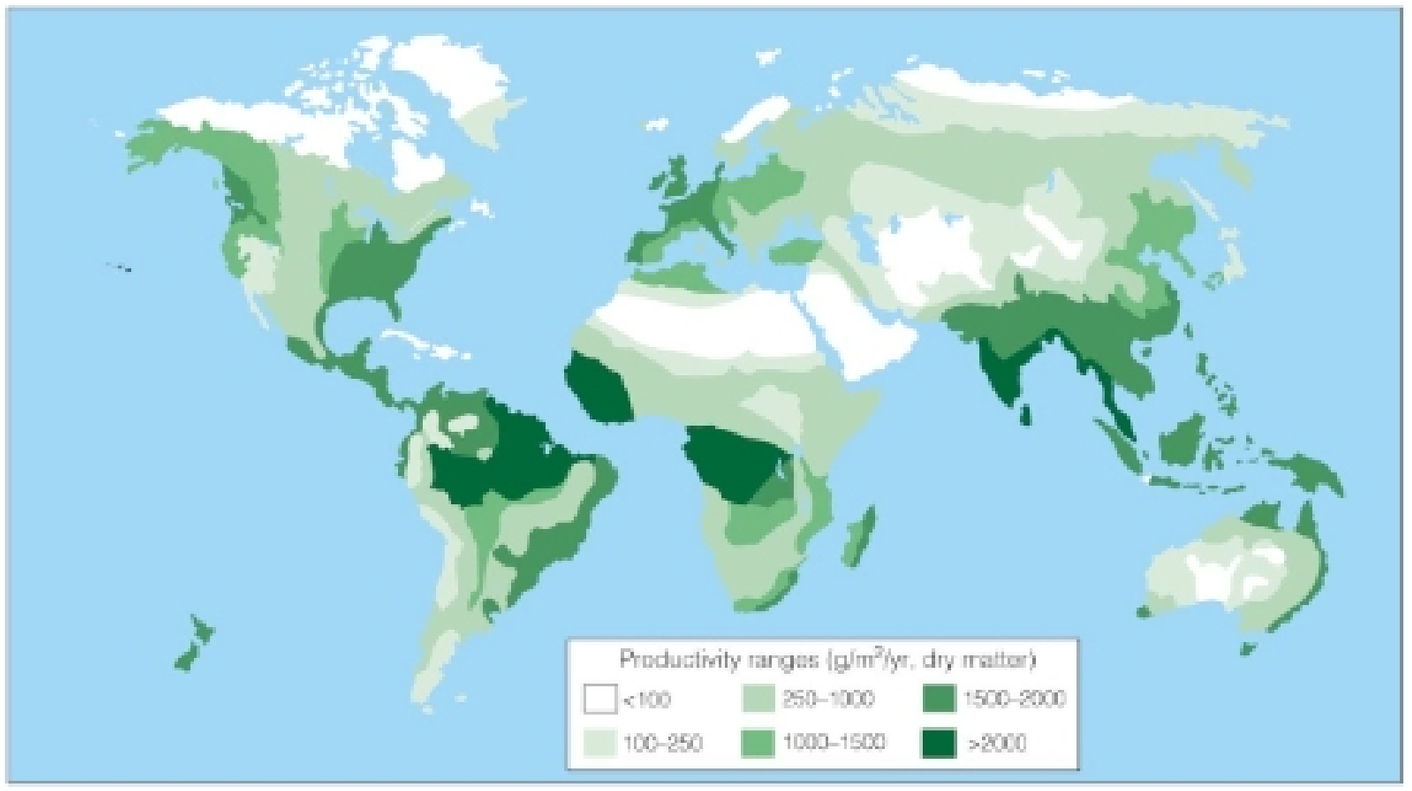


Productivity and Energy Flow

Thermodynamics: energy cannot be created or destroyed, only transformed



Productivity is higher in the tropics where warm weather and sufficient rainfall promote plant growth



What happens to that primary productivity?

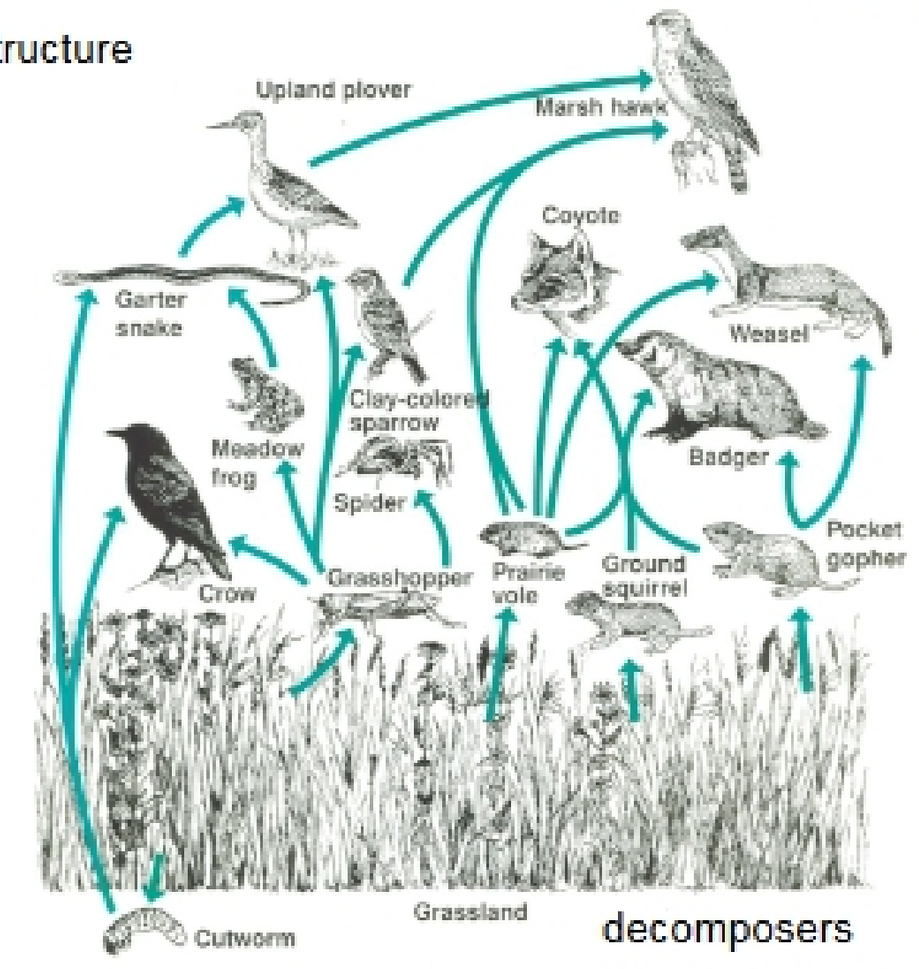
Food webs and trophic structure in a prairie grassland

4th trophic level (top carnivores)

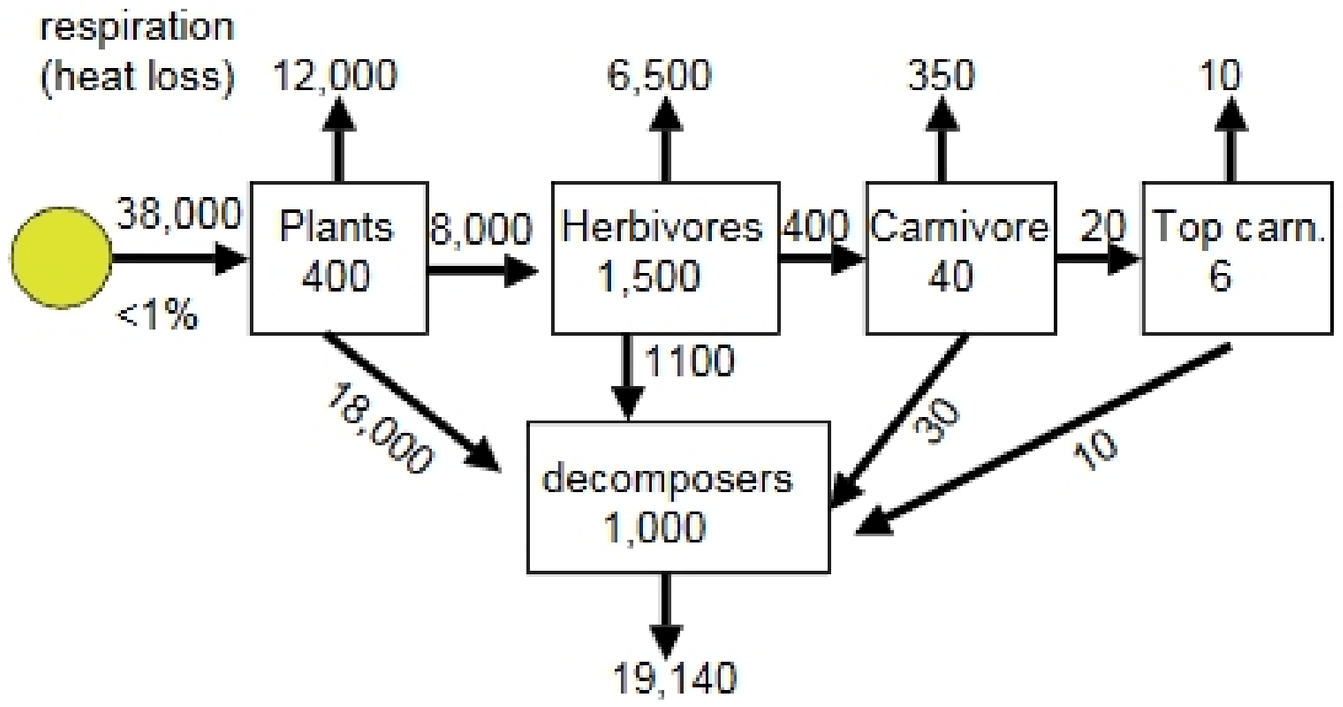
3rd trophic level (carnivores)

2nd trophic level (herbivores)

1st trophic level (plants producers)



Diagrams for energy flow through ecosystems (steady state)



All energy must be accounted for either in biomass (**amounts=kcal/m²**; boxes) or as fluxes transferred to other trophic levels (**rates=kcal/m²/yr**; arrows)