The Water Cycle

3 Main Steps

1.) Evapor ation through solar energy

2.) Conden sation of vapor into clouds

3.) Precip itation of rain

Relationships ♥ Symbiosis

symboisis	a relationship between two different species
parasitism	one benefits while other is harmed ☺ / ☹
mutualism	both benefits ☺ / ☺
commensalism	one benefits and other is unaffected ☺ / 😐

Vocabulary

abiotic factors	nonliving, physical features
biotic factors	living organisms
population	same species in one given area (breed to have fertile children)
carrying capacity	the limit a population can grow to
limiting factor	the reason why populations can't grow infinitely

Vocabulary Pt. 2

competition	occurs when two or more species rely on similar limiting factors
interspecific competition	competition between different species
Intraspecific competition	competition between same species
predation	one animal captures and feeds on another animal

Vocabulary Pt. 2 (cont)

cryptic coloration	literally just camouflage
aposematic coloration	bright, warning patterns
batesian mimicry	harmless species mimics a dangerous one
mullerian mimicry	a few different species mimic each other, so predators know to avoid animals with that pattern

Energy Vocabulary

energy	capacity to do work or cause change
chemical energy	energy ϟ stored in organic molecules
free energy	portion of energy ϟ released during reactions that is available to do work
autotrophs	make own food
heterotrophs	obtain food from outside source
activation energy	energy ϟ needed to "activate" reaction and break the bonds between atoms
catalysts	speed up the rate of reaction by lowering the activation energy ϟ needed (is not used up or changed in reaction)

Vocabulary Pt. 3

synthesis	“building-up” reactions - store energy
decomposition	“breaking down” reactions - result in energy release
ATP energy	cellular energy currency

Vocabulary Pt. 3 (cont)

^^ ATP can store/release small amounts of energy. The bond between the 2nd and 3rd phosphate is made or broken to exchange energy.

The Nitrogen Cycle

Nitrogen is essential to building

The main steps in this process are:

1.) Nitrog en- fixing bacteria cans

2.) Bacteria give that nitrogen to

Population

Density Independent Factors

affect population sizes no matter

* Natural disasters
* Climate change

^ Drought, extreme weather, or events

Density Dependent Factors

affect popula tions size as they ay

* Competition for space, shelter, food
* Predators, disease, stress, parasitism

Ecological Succession

Definition:

The process by which an existing c

Pioneer Species:

first to colonize new, or previous m

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Ecological Succession (cont)

Succession Steps:

1.) Lichen and Moss, as well as bacteria grow and put nitrogen in the soil

2.) Grasses start to dominate the area and put even more nitrogen in the soil

3.) Bushes, shrubs, and small trees inhabit the area next and put EVEN MORE nitrogen in the soil

4.) Finally, there is enough nitrogen in the soil to support large trees and

Types of Reactions

Endothermic

- Stores energy overall
- **More energy is needed to break bonds** than amount of energy released
- Ex: photos ynt hesis

Exothermic

- Energy is released
- Less energy is needed to break bonds than is **released when forming new bonds**
- Ex: cellular respir ation

Energy Exchange in Cells

- Decomp osition reactions release energy
- **Oxidation** is the removal of electrons from a molecule
- Bonds are broken and rearranged
- Some energy of the original molecule is released as heat and free energy
- Free energy is finally captured in ATP (adenosine triphosphate)

Enzymes

- **Protein molecules that act as catal**
- Speed up a chemical reaction or reactor
- Speed up a biological reaction or reactor

How Enzymes Work

- Bind to specific reactants to form
- Reactant enzymes interact with **subs**
- Substrates bind to the enzyme in a

Factors Affecting Enzyme Action

- When conditions are not ideal for an enzyme, it **denatures**
- **Denaturing an enzyme** will cause the 3D shape of the active site, maki

The Carbon Cycle

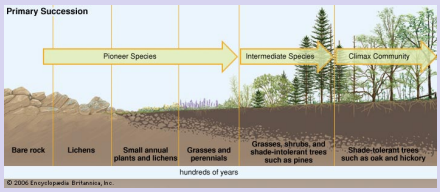
The main steps in this cycle are:

1.) Photos ynt hesis removes CO2 from the

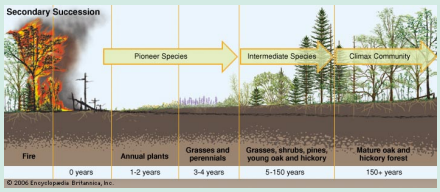
2.) Death/ Dec omp osition and Respir ati here

Burning of fossil fuels adds CO2 to the atmosphere as well

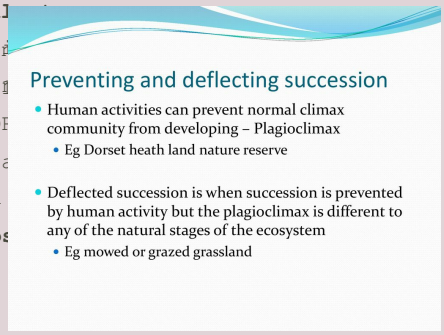
Primary Succession



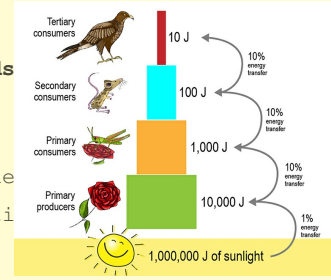
Secondary Succession



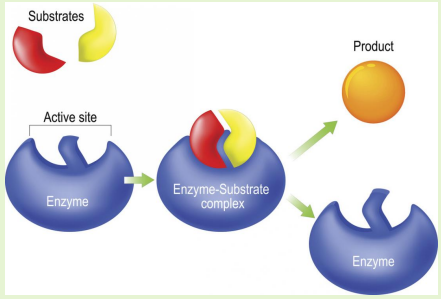
Defleating Succession



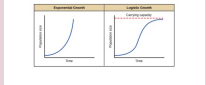
Energy Transfer Through Trophic Levels



Ezyme



S Curves vs J Curves



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