

NOTES FOR ECOLOFE PART 4

Name: _____

EVERYTHING IS CHANGING

Evolution: evolution is change of a population of organisms from one generation to the next. Usually an advancement.

Evidence of Evolution

- The fossil record of changes in plants and animals over millions of years.
 - From simple to more complicated.
- Chemical and anatomical similarities of related life forms.
- The geographic distribution of related species.
- Genetics (DNA) A more recent branch of science that shows how organisms have evolved and are related on a genetic level.

The four parts to Darwin's theories.

- Organisms have changed over time.
- Organisms share a common ancestor.
- Change is a slow process over many generations.
 - Punctuated evolution shows us that it can during some periods speed up.
- The mechanism of evolutionary change was natural selection.

Natural Selection: Organisms best suited to their environment reproduce more often than others and pass the adaptation to their offspring (kids).

The mechanism for evolution is natural selection.

- #1.) Without checks like predators, populations would increase exponentially. Survival of the fittest!
- #2.) Most populations are stable in size except for seasonal changes.
- #3.) Natural Resources are limited. - A struggle for existence. Remember the bean game!
- #4.) No two individuals are alike.
- #5.) Variation is inheritable. (Animals pass their traits to their young).

Variation + Many Offspring + Heredity = Natural Selection.

Divergent evolution: When a group from a specific population develops into a new species.

Convergent Evolution: Similar evolved structures in unrelated animals.

Please record the following

- -Spoon beak.
- -Grabber Beak.
- -Magnetic Beak.
- -Tweezer Beak.

New Area of Focus: Ecological Succession.

Ecological succession: The gradual replacement of one community of living things by another community.

Primary Succession: Begins in an area with no previous life supported (bare rock).

Secondary Succession: Succession in an area that previously colonized life but is now disturbed.

Plant Succession: Plants are replaced (succession is dominated by plants).

Animal Succession: Animals are replaced (Animals help succession).

The order of ecological succession from primary succession

- Bare Rock
- Lichens
 - Acids secreted by the lichens attack the rock (chemical weathering) and create soil fragments.
- Mosses
 - Create humus and retain moisture.
- Grasses and Sedges
- Meadow Stage
 - Grasses
 - Yearly plants
 - Weeds
- Old Field Community
 - Perennials (year after year).
 - Goldenrod, Milkweed.
- Sun Loving Shrubs
 - Soil base now forms.
 - Sumac, Willow, Dogwood, Apple.
- Sun Loving Trees
 - Organic matter increases from fallen leaves.
 - Poplar, Birch, Quaking Aspen.
- Conifers
 - Enriched soil allows pines to grow
 - Pines are sun loving and grow well

- Eventually they shade out their offspring, no new pines grow.
- Shade Tolerant Hardwoods
 - These can grow in shade.
 - Oak, Hickory, Ash.
- Climax Community (Shade loving hardwoods)
 - Beech Trees, and Maples
 - Climax means final community.

Events that can restart succession.

- - A forest fire.
- - A volcanic event.
- - Logging / Human Impact.
- - Erosion.
- - Ice Age / Glaciers.

As succession increases in time

- # of species.....increases
- Total population.....increases
- Type of organism.....increases
- Total Biomass.....increases
- Organic Matter.....increases

SAVE THESE NOTES FOR THE ECOLOFE PART 4! Do Not Lose!