To understand the different biomes throughout the world and how animals and plants are adapted to survive in those biomes.

Biomes

Tundra
Climate---long cold winters(low precipitation) --- VERY short summers---windy conditions---Great area for wind mills (a flow resource) ***windy conditions will dry out animal and plant tissue that is not protected***

Permafrost...Solid frozen layer of soil about one foot down...makes it impossible for plants to develop deep root---no trees
Tundra Plant Life---Short (low to the ground) to avoid being dehydrated by wind---must have shallow root system) quick reproductive cycle---growing season---maybe 6 weeks

Tundra animals

Fat (blubber)---body fat to insulate against the cold---compact body shape to conserve heat

Protective coloration---you change with the colors of the Tundra---white in winter---brown (dirt like) in the summer...no place to hide

Ex: Arctic hare and fox
Animal Ex: of Tundra
Arctic fox --- Arctic hare --- Arctic owl --- Caribou --- Migrate to Tundra for tender, new plants in short summer and head back South in the winter (conifer forest of the Taiga)

Taiga---most of Canada
1) 2 seasons.... Summer to Winter "no real spring or fall"
   2) Long harsh cold winter---not a lot of snow but what is there does not melt much--it piles up
Plant Life--- **Huge Conifer Forest** (cone bearing evergreen forest)

Physical adaptations of conifer
1) Dark green needles absorb limited sunlight
2) Needles never fall off so they can always be ready to do photosynthesis
3) Pyramid shaped to shed the snow
4) Has a waxy coating on the needles so the plant does not dehydrate---"mother nature's chapstick"

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**Animals of the Taiga**

**Large herbivores---Primary consumers---(eat only plants)**

**Moose:**---**Physical adaptations---long legs** help the moose travel through the snow. Their **digestive system** allows them to get nutrition from pine bark and branch tips
Other large herbivores include---*elk and deer*

Large Carnivores---Cougar --- Wolves--- (secondary consumer and top predators)

Wolves----**Physical adaptations**---sensitive nose...cupped shaped ears...long claws...large sharp canines

    -----**Behavioral adaptations**--- hunt in packs...burrow in dens...they howl---vocalize to share location...they use cover scents to hide their odor---that is why they roll in fish,scat, etc.

***the beaver*** **(Taiga and deciduous forest)**
Mother Natures Engineers---behavioral and physical adaptations to be a "flood specialist"
Beaver:

**Physical adaptations** --- 1. sharp teeth for cutting---they never stop growing 2. Flat tail for swimming 3. Water resistant fur so they do not water log

**Behavioral adaptations** --- 1. slap tail to warn of danger 2. They make dams on any water way---flood area 3. they build beaver "huts"

***When beavers flood an area they make new habitat for many animal populations (single species) which turn into animal communities (many species together)

Animals that benefit---ducks, frogs, turtles, fish, snakes, hawks etc

*Interdependence* --- the other animals depend on the beaver in order to live in that area
Deciduous forest---our biome

Climate:
...4 seasons ---- summer, winter, fall, spring
...6 month growing season--- allows humans to farm
... trees lose and re grow their leaves
... oak maple cherry birch etc... hard woods

Plants
Great variety of grasses, flowers, trees, bushes

Animals
Primary consumers: Caterpillar, rabbit, deer, geese (herbivores)
Secondary consumers coyote, hawk, frog, spiders,( carnivores) raccoons , skunk (omnivores)
Desert
Climate---temperature extremes...hot in day, cold at night
...extremely low precipitation(arid---no moisture on ground or in the air)

*******Low water or moisture level means that area will have low plant life----low plant life means---low animal populations*****
The opposite is also true....a lot of water means...a lot of plants...which results in a lot of animals
Plant life of desert ... Cacti
Physical adaptations... roots either go very deep or they spread out really shallow and far from the plant (in order to get water) They also have waxy covering
Animals of the desert:
Physical adaptation---Leathery skin that holds water inside the animal (reptiles)
    ---- have the ability to store water in their tissues (Camel---stores extra water as a fat hump which it can breakdown and use later when water is scarce)

Behavioral adaptations
Burrow---cool in the day and warm at night
Nocturnal---come out when it is cooler
Basking---cold blooded animals use rocks warmed by the sun to survive
Grassland---plains

1. Very little trees because....
   a. two seasons...growing season where precipitation happens and then there is the dry season(lack of precipitation) very dry grass is set on fire by lightning storms...flash fires---devastating to the trees but not the grass---the dead grass get turned to ash(high in nitrogen) which fertilizes the new grass that pops up during the growing season
   Topsoil of grassland is extreme fertile soil---rich in organic material
Organic Material was once alive but now is dead and decaying---it takes around 100 years to make half inch of fertile soil

***how do you save topsoil from erosion?
1. plant **cover crops**...quick growing grasses or plants that **hold the soil in place with their roots** during the non growing seasons
2. **Contour farming**...plant your crops perpendicular to the way water flows

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DIAGRAM:

- **High ground**
  - **crop rows**
    - Perpendicular to water flow
  - **Low ground**
- **Water flow**
  - *Contour Farming*
The Beast of Plains---Buffalo

Physical adaptations
1. Extremely thick fur to withstand blowing winds
2. huge neck muscles to sweep snow away during the winter so they can get to the grass.
3. horns --- for protection
Behavioral adaptations (poor eye sight)
Herding instinct --- give advanced warning of predators
Migrate---move to areas of richer resources
**Tropic**---most diverse plant and animal habitat on the planet---found as part of the canopy (only 2 percent of light reaches the ground)
Vast amount of water=vast producers(plants) =vast (consumers) (herbivore, carnivores, omnivores, decomposers)
**Climate** High precipitation very humid

**Animals**
Monkeys -- Insects
Parrots
Tiger

Odds and ends---interesting facts
1. Deciduous forest is a **temperate climate** not to hot or cold
2. Temperature zone on the Earth
   - **Arctic**---extremely cold (Tundra and Taiga)
   - **Temperate**---mild (Deciduous/Grasslands)
   - **Tropical**---very humid/hot (Tropic)
   - **Desert**---very hot but low humidity (desert)