**Bio.2.1 Analyze the interdependence of living organisms within their environments.**

Bio.2.1.1 Analyze the flow of energy and cycling of matter (such as water, carbon, nitrogen and oxygen) through ecosystems relating the significance of each to maintaining the health and sustainability of an ecosystem.

Bio.2.1.2 Analyze the survival and reproductive success of organisms in terms of behavioral, structural, and reproductive adaptations.

Bio 2.1.3 Explain various ways organisms interact with each other (including predation, competition, parasitism, mutualism) and with their environments resulting in stability within ecosystems.

Bio.2.1.4 Explain why ecosystems can be relatively stable over hundreds or thousands of years, even though populations may fluctuate (emphasizing availability of food, availability of shelter, number of predators and disease).

**Bio.2.2 Understand the impact of human activities on the environment (one generation affects the next).**

Bio.2.2.1 Infer how human activities (including population growth, pollution, global warming, burning of fossil fuels, habitat destruction and introduction of nonnative species) may impact the environment.

Bio.2.2.2 Explain how the use, protection and conservation of natural resources by humans impact the environment from one generation to the next.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Biosphere** | | | | | |
| Biosphere.JPG  **Biotic Factors:**  **Abiotic Factors:** | | | |  | |
| **Species**  An individual organism | | | |  | |
| **Biotic Factors**  **Abiotic Factors** | | | |  | |
| **Examples of Terrestrial Ecosystems** | | | **Examples of Aquatic Ecosystems** | | |
| **Habitat:** Where an organism lives |  | | **Niche:** All the ways an organism uses its environment and  adaptations.  The ROLE an animal plays in its environment | | |
|  | | | | | |
| **Symbiosis**  How organisms live together and interact; Their relationship | | | | | |
| **Relationship** | | **Interaction** | | | **Example(s)** |
| Mutualism | |  | | |  |
| Commensalism | |  | | |  |
| Parasitism | |  | | |  |
|  | | | | | |
| **How does an organism get nutrition?** | | | | | |
| **Autotroph**  Organisms that can convert solar energy into food.  Examples: | | | **Heterotroph**  Organisms that must consumer other organisms for energy.  Examples: | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Types of Heterotrophs:** | | | | | | | | | | | | | | | | | |
| **Herbivore**  Eats:  Such As:  Examples: | | **Carnivore**  Eats:  Such As:  Examples: | | | | | **Omnivore**  Eats:  Examples: | | | | **Scavenger**  Eats:  Examples: | | | | | | **Decomposer**  Eats:  Examples: |
| **Predator/Prey Relationship** | | | | | | | | | graph.JPG | | | | | | | | |
| **Trophic Levels** | | | | | | | | | | | | | | | | | |
| **Producers** | **Primary Consumer** | | | | | **Secondary Consumer** | | | | **Tertiary Consumer** | | | | | | **Quaternary Consumer** | |
| energy pyramid.JPG  **10% Rule**  energy pyramid 2.JPG | | | | | | | | | | | | | | | | | |
| **Laws of Thermodynamics** | | | | | | | | | | | | | | | | | |
| Law #1  Energy is not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, it just changes forms. | | | | | | | | Law #2  At every conversion, some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will be converted to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (less usable energy) | | | | | | | | | |
| **Behaviors** | | | | | | | | | | | | | | | | | |
| **Survival Adaptations:**  Living things have to be able to… | | | | | | | | | | | | | | | | | |
| * **Excrete & Transport:**   + **Xylem:** Vascular tissue in plants that transport \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   + **Phloem:** Vascular tissue in plants that transport \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | **xylem.JPG** | | | | |
| * **Exchange gases (Respiration)** | | | | | | | | | | | | | | | | | |
| * + **Skin** | | | | | * + **Gills** | | | | | | | | | * + **Lungs** | | | |
| **Transpiration:** | | | | | | | | **transpiration1.JPGtranspiration 2.JPG** | | | | | | | | | |
| * **Get Nutrition**   + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ : Make their own food**   + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: Have to Consume their food.** | | | | | | | | | | | | | | | | | |
| * **Reproduce** (can Be…)   **Sexually**  Two Parents  Involves mixing of gametes  Offspring are NOT identical to parents  All siblings look different | | | | | | | | | | | | | | | | | |
| **Asexually**  One Parent  All offspring look identical to parent  Examples: | | | | | | | | **Gametes:**   * Male Gamete: * Female Gamete:   **Can occur:**  External Internal  Examples: Examples: | | | | | | | | | |
| * **Grow & Develop:** In Seeds, In Eggs, & in a Placenta | | | | | | | | | | | | | | | | | |
| **Behavioral Adaptations** | | | | | | | | | | | | | | | | | |
| **Innate behaviors:** | | | | **Examples:**   * Suckling: * Taxis: (Ex. Phototaxis & Chemotaxis) * Estivation: * Hibernation: * Migration: | | | | | | | | | | | | | |
| **Learned Behaviors:** | | | | **Examples:**   * Habituation: * Imprinting: * Trial & Error: * Classical Conditioning: | | | | | | | | | | | | | |
| **Communication Behaviors:** | | | | **Examples:**   * Pheromones: * Territorial Defense: * Courtship dances: | | | | | | | | | | | | | |
| **Population Ecology** | | | | | | | | | | | | | | | | | |
| * Logistic Growth.JPGexponential growth.JPG J-Shaped Graph | | | | | | | | * S-Shaped Graph | | | | | | | | | |
| **Carrying Capacitycarrying capacity.JPG** | | | **What is it?** | | | | | **Density Dependent Factors**   * Only effects a population when it reaches a particular size.   Examples | | | | | | | **Density Independent Factors**   * Can effect a population regardless of size.   Examples | | |
| **Human Impact**  **Human Population Graph.png**  What type of graph is this?    What does this mean? | | | | | | | | | | | | | | | | | |
| **Disease in an Ecosystem** | | | | | | | | | | | | | | | | | |
| **Aids** | **Tuberculosis** | | | | | **Pfiesteria** | | | | **Influenza** | | | | | | **Dutch Elm** | |
| **North Carolina Impact** | | | | | | | | | | | | | | | | | |
| **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:**  Sulfur Dioxide combines with water to produce sulfuric acid. | | | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:**  Sulfur Dioxide combines with water to produce sulfuric acid. | | | | | **Urban Development:** | | | | | | | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:**  An invasive vine plant brought in from Asia for erosion control. | | |
| **Cycles** | | | | | | | | | | | | | | | | | |
| **Carbon Cycle**  **http://eschooltoday.com/ecosystems/images/How-the-carbon-cycle-works.jpg**  Photosynthesis:  Cellular Respiration:  Decomposition: | | | | | | | | **Nitrogen Cycle**  **nc1.gifnc2.gif**  **nc3.gifnc4.gif**  **nc5.gif**  Name 2 ways in which nitrogen gets “fixed”  **1.**  **2.** | | | | | | | | | |
| **Global Warming** | | | | | | | | | | | | | | | | | |
| Greenhouse Effect: | | | | Human Impact: | | | | | | | | Natural Processes: | | | | | |
| Conservation & Good Stewardship Ideas: | | | | | | | | | | | | | | | | | |