

5th/6th Grade

Ecosystems

NYS Standard 4 (Science): Living Environment

- ✓ Key Idea 1: Living things are both similar to and different from each other and from nonliving things.
- ✓ Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.
- ✓ Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.

NYS Standard 4 (Science): Physical Setting

- ✓ Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.
- ✓ Key Idea 5: Energy and matter interact through forces that result in changes in motion.

Major Understandings	Learning Experience/Objectives	Supporting Terms
<p><i>1.1h Living things are classified by shared characteristics on the cellular and organism level. In classifying organisms, biologists consider details of internal and external structures. Biological classification systems are arranged from general (kingdom) to specific (species).</i></p> <p><i>5.1b An organism's overall body plan and its environment determine the way that the organism carries out the life processes.</i></p> <p><i>7.2a In ecosystems, balance is the result of interactions between community members and their environment.</i></p> <p><i>7.2d Since the Industrial Revolution, human activities have resulted in major pollution of air, water, and soil. Pollution has cumulative ecological effects such as acid rain, global warming, or ozone depletion. The survival of living things on our planet depends on the conservation and protection of Earth's resources.</i></p>	<p><u>Invertebrate Population</u>: Students will collect and identify invertebrate samples at the aquatic site and then research the invertebrates identified.</p> <p><u>Dissolved Oxygen</u>: Students will collect weather data of current speed at the aquatic site, use dissolved oxygen kit to measure levels of dissolved oxygen, then analyze data to determine a relationship.</p> <p><u>pH</u>: Student will take pH measurements of mystery liquids then determine the pH at the aquatic site.</p> <p><u>Microscopic Life</u>: Students will research information on possible types of microscopic life at the site and then collect water samples and create slides to look for that life.</p>	<p>Sample, invertebrate, sediment, precipitate, dissolved oxygen, reagent, titration, pH, neutral, acidic, basic, substance, alkalinity</p>
<p><i>3.1a Substances have characteristic properties. Some of these properties include color, odor, phase at room temperature, density, solubility, heat and electrical conductivity, hardness, and boiling and freezing points.</i></p> <p><i>3.1b Solubility can be affected by the nature of the solute and solvent, temperature, and pressure. The rate of</i></p>	<p><u>Density & Salinity</u>: Students will use a hydrometer to measure the salinity of the water sample.</p> <p><u>Sediment Analysis</u>: Students will gather a sediment sample from the aquatic site and then conduct an analysis on the sediment.</p> <p><u>Speed of Water</u>: Students will determine the current speed of the water at the aquatic site and determine the impact the speed of water has on the life at the site.</p>	<p>Salinity, density, meniscus, specific gravity, hydrometer, sediment, clay, analysis, silt, sand, current, speed, upstream, downstream</p>

<p><i>solution can be affected by the size of the particles, stirring, temperature, and the amount of solute already dissolved.</i></p> <p><i>3.1g Characteristic properties can be used to identify different materials, and separate a mixture of substances into its components. For example, iron can be removed from a mixture by means of a magnet. An insoluble substance can be separated from a soluble substance by such processes as filtration, settling, and evaporation.</i></p> <p><i>3.1h Density can be described as the amount of matter that is in a given amount of space. If two objects have equal volume, but one has more mass, the one with more mass is denser.</i></p> <p><i>3.2b Mixtures are physical combinations of materials and can be separated by physical means.</i></p> <p><i>4.2e Temperature affects the solubility of some substances in water.</i></p> <p><i>5.1a The motion of an object is always judged with respect to some other object or point. The idea of absolute motion or rest is misleading.</i></p> <p><i>5.1b The motion of an object can be described by its position, direction of motion, and speed.</i></p>		
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