

Elementary School Lesson Plan – Lesson 3

Theme: Biodiversity

Subject: Physical, Life, and Social Sciences

<p>Objective</p>	<p>Students understand the interconnected relationship between living and nonliving organisms in the River habitat.</p>
<p>Standards</p>	<p>SS 6.1.3 Discuss the climatic changes and human modifications of the physical environment...</p> <p>ES 6.5.b. Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.</p> <p>ES 6.5.e. Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.</p> <p>LS 7.3.e. Students know that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient for its survival.</p> <p>NGSS STANDARDS</p> <p>MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.* <i>[Clarification Statement: Examples of ecosystem services could include water purification, nutrient recycling, and prevention of soil erosion. Examples of design solution constraints could include scientific, economic, and social considerations.]</i></p> <p>MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. <i>[Examples of evidence could include drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, and fish growing larger in large ponds than they do in small ponds.]</i></p> <p>MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.* <i>[Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include... pollution (such as of the air,</i></p>

	water, or land).] (L#3)
Vocabulary	<p>Biodiversity Variety of species of plants or animals in an environment.</p> <p>Habitat A place where something or someone lives.</p> <p>Ecosystem A community of living and non-living things interacting with their environment.</p> <p>Native species A species that is naturally found in that habitat.</p> <p>Non-native species A species that is <i>not</i> naturally found in that habitat. Can be brought into the habitat by animals, people, or naturally (wind, scat).</p> <p>Invasive species A species that is non-native and harmful to the habitat. It takes resources from native species (space, sunlight, water, food).</p> <p>Food Chain A linear transfer of energy within an ecosystem</p> <p>Food web A series of interconnected food chains that show how organisms in an ecosystem transfer energy.</p>
Materials	<ul style="list-style-type: none"> ● Projector ● Lesson 3 powerpoint ● Worksheets ● Web of Life cards and string for activity
Key Points	<ul style="list-style-type: none"> ● Biodiversity was, and still is, affected by changes in the River web of life; this change can be attributed to human impact (cause and effect relationships). ● Human impact has altered the environment and affected organisms' ability to reproduce and survive. Impacted species die or migrate to find resources. Some have adapted, like the native coyote. ● Native species (like the ones on the biodiversity cards) have been replaced by, and have competed for habitat with, non-native and invasive species that adapted to the changing environment. Non-native species were brought into the LA River habitat by humans, spread through scat, or through migration patterns (Canadian Geese).

	<ul style="list-style-type: none">• Food chains connect to form a food web, a system similar to a web of life. Without a single component of the food web, the system may not function.• The web of life of the LA River has been disrupted by human use through loss of habitat, introduction of non-native/invasive species, chemical contamination, and a lack of nature based solutions.• Humans can impact the ecosystem positively.
Possible Extensions	<ul style="list-style-type: none">• Web of Life activity• Understanding Macroinvertebrates activity