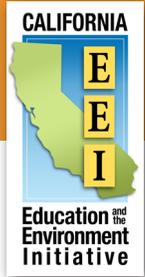


California Education and the Environment Initiative

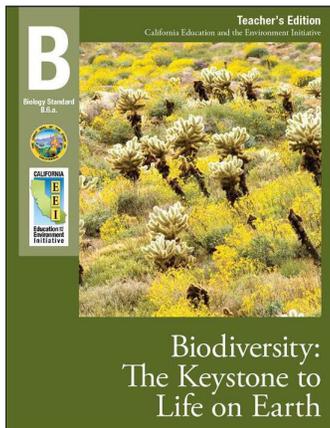
The EEI Curriculum cohesively integrates science and engineering practices (SEPs), content (disciplinary core ideas/DCIs), and crosscutting concepts (CCs) within its lesson procedures. This preliminary analysis intentionally teases apart the individual SEPs, DCIs, and CCs as a means of correlating the EEI unit with specific performance expectations; however, the EEI lessons weave these components back together.



High School Biology/Life Science

B.6.a.—Biodiversity: The Keystone to Life on Earth

“Biodiversity: The Keystone to Life on Earth” uses California, one of Earth’s most biologically diverse regions, as a lens for learning about the biodiversity across the planet. This unit allows students to examine case studies showing how human actions can influence biodiversity and then study the implications of losing species. Finally, students read information and analyze maps related to the effects of human activities on the state’s biodiversity.



Next Generation Science Standards\* Correlation with the California Education and the Environment Initiative (EEI) Curriculum

By teaching this unit, students work towards mastery of the performance expectations for the standards in the summary chart below: HS-LS2 Ecosystems: Interactions, Energy, and Dynamics, HS-LS4 Biological Evolution: Unity and Diversity, and HS-ESS3 Earth and Human Activity.

	Next Generation Science Standards								
	HS-LS2			HS-LS4			HS-ESS3		
California Connection		✓	✓		✓				
Lesson 1 - Students analyze a map of California bioregions and define “biodiversity” based on a reading.									
Lesson 2 - Students read about, discuss, and categorize ecosystem goods and ecosystem services.		✓	✓		✓	✓			✓
Lesson 3 - Students compare current and historical satellite images to evaluate habitat loss.		✓			✓	✓		✓	✓
Lesson 4 - Students read and summarize California case studies, and list individual and collective actions that can influence biodiversity.	✓			✓				✓	✓
Lesson 5 - Students read, discuss, and describe implications of the loss of biodiversity for natural systems and the availability of ecosystem services.						✓		✓	✓
Lesson 6 - Students read about and analyze maps related to effects of human activities on the state’s biodiversity.		✓	✓		✓	✓		✓	✓
Traditional Unit Assessment	✓	✓	✓	✓	✓	✓		✓	✓
Alternative Unit Assessment	✓	✓	✓	✓	✓	✓		✓	✓
	SEP	DCI	CC	SEP	DCI	CC	SEP	DCI	CC

Correlation Chart Key

SEP (Science and Engineering Practices)
DCI (Disciplinary Core Ideas)
CC (Crosscutting Concepts)

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**Unit B.6.a Biodiversity: The Keystone to Life on Earth**

**Performance Expectations**

**HS-LS2: Ecosystems: Interactions, Energy, and Dynamics**

**PE 6:** Evaluate the claims, evidence and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. Suggestion: Use the unit to have students study and discuss changes in California’s biodiversity, evaluate the effects that both natural and human activities have on biodiversity in natural systems, and then present and write about how resulting conditions may affect the existing ecosystems.

**HS-LS4: Biological Evolution; Unity and Diversity**

**PE 5:** Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. Suggestion: Use the unit to have students study how habitat alterations affect biodiversity and predict the effects of those alterations on species populations.

**HS-ESS3 – Earth and Human Activity**

**PE 4:** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. Suggestion: Use the unit to expose students to the efforts that humans are making to reduce the impacts of human activities on natural systems and evaluate the effectiveness of those efforts. Have students research and develop a potential solution to a local environmental stewardship concern.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p><b>Engaging in argument from evidence:</b> Suggestion: Using multiple case studies, engage students in a discussion of the effects human intervention (either conservation or preservation) has had on natural systems in California (Lesson 4). Based on their analysis, have students develop and present an action plan to help protect species or habitats in California (Alternative Unit Assessment). (HS-LS2-6, HS-LS4-5)</p>	<p><b>LS2.C Ecosystem Dynamics, Functioning, and Resilience:</b> Suggestion: Have students analyze how extreme fluctuations in conditions can challenge the functioning of an ecosystem’s biodiversity (Lessons 2, 3, and 6). (HS-LS2-6)</p> <p><b>LS4.C Adaptation:</b> Suggestion: Give students the opportunity to evaluate how changes in the environment have contributed to changes in biodiversity within natural systems, including the effects those changes have on species populations (Lessons 2, 3, and 6). (HS-LS4-5)</p> <p><b>ESS3.C Human Impacts on Earth’s Systems:</b> Suggestion: Have students study and analyze how human society impacts Earth’s natural systems and discuss the technologies and social regulations that help mitigate those impacts (Lessons 3, 4, 5 and 6). (HS-ESS3-4)</p>	<p><b>Cause and effect:</b> Suggestion: Give students the opportunity to study how changes in human activity affect the availability of ecosystem goods and services (Lesson 2). Using information about the wolf population in Yellowstone National Park, have students identify the causal relationship between changes to the overall ecosystem and the loss of a keystone species (Lesson 5). (HS-LS4-5)</p>

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
		<p><b>Stability and Change:</b> Suggestion: Ask students to describe how the changes to natural systems that result from human activity affect the availability of ecosystem goods and services (Lesson 2). (HS-LS2-6, HS-ESS3-4)</p> <p><b>Influence of engineering, technology, and science on society and the natural world:</b> Suggestion: Give students the opportunity to study how humans use science and technology to help manage resources and create public policy that impacts biodiversity in California (Lessons 4, 5 and 6). (HS-ESS3-4)</p>

*Note: Each EEI unit highlights a small number of performance expectations, science and engineering practices, disciplinary core ideas, and crosscutting concepts. It is assumed that by the end of a school year, students will have had multiple opportunities to engage in all appropriate science and engineering practices, disciplinary core ideas, and crosscutting concepts and to achieve the performance expectations.*