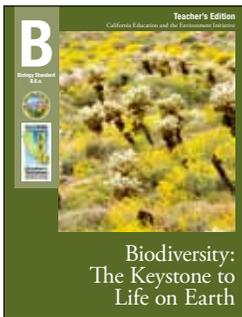




TEACH COMMON CORE STANDARDS WITH THE EEI CURRICULUM

Created with your needs in mind, this document shows the correlation between the EEI Curriculum and the California Common Core State Standards. By teaching the EEI unit lessons in your classroom, you will be simultaneously addressing the Common Core standards depicted in this guide.

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



In this unit, students use their experience living in California, one of Earth’s most biologically diverse regions, as a lens for learning about the biodiversity across the planet. This unit helps students understand that the biodiversity represented by healthy natural ecosystems is the basis for the ecosystem goods and ecosystem services that are required for human survival. Students begin by analyzing a map of California bioregions and developing a definition for the term “biodiversity.” Then they discuss and categorize ecosystem goods and ecosystem services. Students compare current and historical satellite images to evaluate habitat loss and its human and natural causes. They examine case studies showing how human actions can positively 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.

		RST.9–10.2	RST.11–12.2	RST.9–10.4	RST.9–10.5	RST.11–12.7	RST.11–12.9	RST.9–10.10	WHST.9–10.2	WHST.9–10.7	WHST.9–10.8	SL.9–10.1	SL.11–12.1	SL.9–10.4	SL.11–12.4	SL.9–10.5	SL.11–12.5
LESSONS	California Connections	✓		✓	✓		✓	✓	✓								
	1	✓		✓		✓		✓	✓			✓					
	2	✓		✓				✓	✓			✓					
	3			✓		✓			✓								
	4	✓		✓				✓				✓		✓			
	5	✓		✓				✓	✓			✓	✓				
	6	✓		✓		✓		✓	✓			✓					
	Traditional Assessment	✓	✓						✓								
	Alternative Assessment	✓	✓			✓	✓		✓	✓	✓			✓	✓	✓	✓

Note: For your reference, the list of California Common Core State Standards abbreviations is on the following page.

Using the EEI-Common Core Correlation Matrix

The matrix on the front page identifies a number of Common Core standards that are supported by this EEI unit. However, the check marks in the matrix do not necessarily signify that the Common Core standards checked will be taught to mastery by using this EEI unit alone. Teachers are encouraged to select which Common Core standards they wish to emphasize, rather than teaching to every indicated standard. By spending more time on selected standards, students will move toward greater Common Core proficiency in comprehension, critical thinking and making reasoned arguments from evidence. Teaching this EEI unit will provide opportunities for teachers to implement the shift in instructional practice necessary for full Common Core implementation.

California Common Core State Standards Abbreviations

- **CCSS:** California Common Core State Standards
- **RST:** Reading Standards for Literacy in Science and Technical Subjects
- **SL:** Speaking and Listening Standards
- **WHST:** Writing Standards for Literacy in History-Social Studies, Science, and Technical Subjects

Note: Since each Common Core standard includes a breadth of skills, in this correlation, the portion of the standard description that is featured in the Common Core standards applications is cited, using “...” to indicate omitted phrases. For a list of the complete standard descriptions, please see the Common Core Reference Pages located on pages 15–16 of this document.

A Note about Common Core Speaking and Listening Standards

Throughout this unit, students participate in various learning structures and groups to analyze, discuss, and synthesize data, which supports the skill in Speaking and Listening Standard 1 “Participate effectively in a range of collaborative discussions (one-on-one, groups...) with diverse partners.” With prior instruction on collaborative discussions, these various groupings and the materials students examine lend themselves to prime discussion material for collaborative discussions. Learning structures with tasks for pairs and groups are in the following lessons:

- **Lesson 1:** Whole class, pairs
- **Lesson 2:** 5 groups (to become experts), regroup to groups of 5 to share expertise
- **Lesson 3:** 6 groups, whole class
- **Lesson 4:** Whole class, groups of 3
- **Lesson 5:** Whole class, groups of 4 or 5
- **Lesson 6:** Whole class

National Geographic Resources

- **Biological Diversity** wall map (Lesson 1)

Unit Assessment Options

Assessments	Common Core Standards Applications
Traditional Assessment	
<p>Students answer multiple choice questions. Then they write paragraphs to answer questions about human activities and population growth and their influence on the biodiversity of natural resources.</p>	<p>RST.9–10.2: Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process...or concept; provide an accurate summary of the text.</p> <p>RST.11–12.2: Determine the central ideas...of a text; summarize...information presented in a text by paraphrasing them in simpler but still accurate terms.</p> <p>WHST.9–10.2: Write informative/explanatory texts...</p>
Alternative Assessment	
<p>Students propose an action plan to protect species habitats in California. They research, plan and write the plan, including an introduction, the plan, the justification, and a conclusion.</p>	<p>RST.9–10.2: Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process...or concept; provide an accurate summary of the text.</p> <p>RST.11–12.2: Determine the central ideas...of a text; summarize...information presented in a text by paraphrasing them in simpler but still accurate terms.</p> <p>RST.11–12.7: Integrate and evaluate multiple sources of information...</p> <p>RST.11–12.9: Synthesize information from a range of sources... into a coherent understanding of a...concept...</p> <p>WHST.9–10.2: Write informative/explanatory texts...</p> <ul style="list-style-type: none"> a) Introduce a topic and organize ideas, concepts, and information... b) Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information... c) Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d) Use precise language and domain-specific vocabulary... f) Provide a concluding statement or section that follows from and supports the information or explanation... <p>WHST.9–10.7: Conduct short as well as more sustained research projects to answer a question...; synthesize multiple sources on the subject...</p> <p>WHST.9–10.8: Gather relevant information from multiple authoritative print and digital sources...</p>
<p>Optional: Students can also participate in a peer review at a simulated “California Biodiversity Conference,” where each student reviews three different papers.</p> <p>Alternatively, students could present their plans to the class at the simulated “California Biodiversity Conference,” integrating digital media in their presentations to enhance their findings and add interest.</p>	<p>SL.9–10.4: Present information, findings, and supporting evidence...</p> <p>SL.11–12.4: Present information...conveying a clear and distinct perspective...</p> <p>Optional: SL.9–10.5: Make strategic use of digital media...</p> <p>Optional: SL.11–12.5: Make strategic use of digital media...</p>

Lesson 1: Biodiversity—Earth’s Living Riches

Viewing a map of California bioregions, students determine in which bioregion they live and discuss the types of ecosystems representative of their part of the state. After reading *California Connections: Biological Riches and Rarities*, the class collectively derives a definition of biodiversity.



National Geographic Resources

- **Biological Diversity** wall map

Use this correlation in conjunction with the **Procedures** located on pages 36–37 of the Teacher’s Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p>	<p>RST.9–10.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context...</p>
<p>Steps 2 and 3: Students view and interpret maps and connect the concepts illustrated in the maps with the concepts they will learn in this and the following lessons.</p>	<p>RST.11–12.7: Integrate and evaluate multiple sources of information presented in diverse formats and media...</p>
<p>Steps 4 and 5: In pairs, students read <i>California Connections: Biological Riches and Rarities</i> (Student Edition, pages 3–6), and develop a definition for “biodiversity.” Students share out their definitions and develop a class definition of “biodiversity” which they compare to the one in the vocabulary list.</p> <p>In addition to reading <i>California Connections</i> for content, students should look at several key elements on how the writing is structured. This can be done while they’re reading or during a second reading of the material. Students who have been familiarized with this process can identify these structural elements as they read by themselves and then they can be discussed as a class.</p> <p>Refer to the Reading California Connections Using a Common Core Reading and Writing Focus on pages 11–14 to view specific suggestions for integrating Common Core standards while reading this selection not only for content, but for text structure as well.</p>	<p>RST.9–10.4: Determine the meaning of...key terms and other domain-specific words and phrases...</p> <p>RST.9–10.10: ...read and comprehend science...texts...independently and proficiently.</p>
<p>Step 6: Students read an information sheet about their local region, then conduct a discussion about the types of ecosystems in this bioregion and aspects of human social systems that affect the natural systems.</p> <p>With prior training in collaborative conversations, the discussion could be conducted as a mini-collaborative conversation with student leaders encouraging each other to probe the information with further questions and relationships, especially expanding on the third bulleted question.</p>	<p>RST.9–10.2: Determine the central ideas or conclusions of a text...</p> <p>SL.9–10.1c: Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas...and conclusions.</p>
<p>Step 8: Students complete Bioregion Study Guide (Student Workbook, pages 4–5).</p>	<p>WHST.9–10.2: Write informative/explanatory texts...</p>

Lesson 2: We Need the Diversity of Life on Earth

Students define ecosystem goods and ecosystem services and categorize some examples. They read short articles describing how ecosystems provide goods or services to human societies. Small groups discuss how biological diversity affects the potential of natural systems to provide goods or services.



Use this correlation in conjunction with the **Procedures** located on pages 72–73 of the Teacher’s Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p>	<p>RST.9–10.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context...</p>
<p>Steps 1, 2, and 3: Students read Ecosystem Goods and Ecosystem Services (Student Edition, pages 27–28) and create a t-chart listing ecosystem goods and ecosystem services. They then use the concepts from this selection as they read descriptions and determine whether it is an ecosystem good or ecosystem service.</p>	<p>RST.9–10.2: Determine the central ideas or conclusions of a text...</p> <p>RST.9–10.10: ...read and comprehend science...texts...independently and proficiently.</p>
<p>Steps 4 and 5: Students are divided into five groups, with each group reading a different section of Benefits of Ecosystem Goods and Ecosystem Services (Student Edition, pages 29–33). They focus their reading and work together to answer specific questions. Each group reviews their answers and develops a consensus explanation of the importance of biodiversity.</p> <p><i>Tip: With prior training in collaborative conversations, student collaboration in answering these questions will be enhanced. In addition, students can review the concepts with each other to ensure each of them is prepared to be the “expert” in the following regrouping of students.</i></p>	<p>RST.9–10.2: Determine the central ideas or conclusions of a text...</p> <p>RST.9–10.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context...</p> <p>RST.9–10.10: ...read and comprehend science...texts...independently and proficiently.</p> <p>SL.9–10.1: Initiate and participate effectively in a range of collaborative discussions...building on others’ ideas and expressing their own clearly...</p> <p>WHST.9–10.2: Write informative/explanatory texts...</p>
<p>Step 6: Students regroup into groups of five students, with each group including at least one student from each of the original five groups. Each student teaches the others about the topic and discussion for which they are experts. While listening to each other, students answer the questions for the other sections they have not yet completed. Groups then synthesize information from all five articles to revise their explanation of the importance of biodiversity to human lives, communities, and societies.</p>	<p>SL.9–10.1: Initiate and participate effectively in a range of collaborative discussions...building on others’ ideas and expressing their own clearly...</p> <p>c) Propel conversations by posing and responding to questions...or challenge...conclusions.</p> <p>WHST.9–10.2: Write informative/explanatory texts...</p>

Student Tasks	Common Core Standards Applications
<p>Step 7: Students use the information they have gained to write a three-paragraph essay that describes how changes in biodiversity can affect ecosystem goods and ecosystem services. They refer to the included scoring tool to guide their writing.</p>	<p>WHST.9–10.2: Write informative/explanatory texts...</p> <ul style="list-style-type: none"> a) Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions... b) Develop the topic with well-chosen, relevant, and sufficient facts... c) Use varied transitions and sentence structures... d) Use precise language and domain-specific vocabulary... e) Establish and maintain a formal style... f) Provide a concluding statement...

Lesson 3: Changes in Biodiversity

Students evaluate habitat loss by comparing land use and vegetative cover depicted in pairs of current and historical satellite images from sites throughout the world. Through class discussion, they brainstorm additional types of changes to natural systems that can affect biodiversity.



Use this correlation in conjunction with the **Procedures** located on pages 96–97 of the Teacher’s Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p>	<p>RST.9–10.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context...</p>
<p>Steps 2–5: In 6 groups, students view satellite images showing two images of locations: one relatively current, and one historical. Students interpret the images to describe land use or vegetation changes that occurred and predict how these changes could take place in California. They complete a chart with their observations, noting that some changes occurred due to natural events, and others due to human influence.</p>	<p>RST.11–12.7: Integrate and evaluate multiple sources of information...</p>
<p>Step 8: Students complete an analysis chart describing a human-induced change and a change due to natural causes.</p>	<p>WHST.9–10.2: Write informative/explanatory texts...</p>

Lesson 4: How People Influence Biodiversity

Working in small groups, students read and summarize California case studies. Each group presents its case to the class; through discussion, the class assembles a list of examples of ways in which individual and collective actions can influence biodiversity.



Use this correlation in conjunction with the **Procedures** located on pages 118–119 of the Teacher’s Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p>	<p>RST.9–10.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context...</p>
<p>Steps 3–6: In groups of 3, students examine their assigned case study to explore human activity and the influence it has on natural systems. They summarize their findings. Then a representative from each group explains the way human actions influenced natural systems in their case study.</p> <p>Tip: <i>With prior training in collaborative discussions, student leaders can enhance the depth of the discussion by encouraging students to probe each others’ answers and extend the concepts to larger ideas. Groups can spend time preparing and organizing their presentation.</i></p>	<p>RST.9–10.2: Determine the central ideas or conclusions of a text...</p> <p>RST.9–10.10: ...read and comprehend science...texts...independently and proficiently.</p> <p>SL.9–10.1: Initiate and participate effectively in a range of collaborative discussions...</p> <p>SL.9–10.4: Present information, findings, and supporting evidence...</p>

Lesson 5: The Implications of Losing Species

Students read and discuss real-world examples highlighting implications of the loss of biodiversity for natural systems and the availability of ecosystem services used by human communities. Students describe an ecosystem service to their community that decreased biodiversity could affect.



Use this correlation in conjunction with the **Procedures** located on pages 136–137 of the Teacher’s Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p>	<p>RST.9–10.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context...</p>
<p>Step 3: Students read the article Wolves in Yellowstone: A Keystone Species (Student Workbook, page 20) and answer questions. Then they discuss what might have happened to the ecosystem once the wolves were reintroduced.</p> <p>Optional: <i>Small to medium-sized groups could lead the discussion and generate other questions or observations in response to the information in the article.</i></p>	<p>RST.9–10.2: Determine the central ideas or conclusions of a text...</p> <p>RST.9–10.10: ...read and comprehend science...texts...independently and proficiently.</p>
<p>Step 6: In groups of four or five, students read four sections of an article that discusses possible implications of losing biodiversity, working together to answer questions in writing.</p>	<p>RST.9–10.10: ...read and comprehend science...texts...independently and proficiently.</p> <p>SL.9–10.1: Initiate and participate effectively in a range of collaborative discussions...</p> <p>WHST.9–10.2: Write informative/explanatory texts...</p>
<p>Step 8: Students discuss questions related to the loss of a keystone species and its effects, connecting the ideas to themselves and their community.</p> <p>The ideas generated by these questions lend themselves to an in-depth collaborative conversation. With prior training in collaborative conversations, student leaders could facilitate the discussion, encouraging students to extend the connections they make related to biodiversity.</p>	<p>SL.9–10.1: Initiate and participate effectively in a range of collaborative discussions...building on others’ ideas and expressing their own clearly...</p> <p>c) Propel conversations by posing and responding to questions...or challenge...conclusions.</p> <p>d) Respond thoughtfully to diverse perspectives...</p> <p>SL.11–12.1d: ...synthesize comments, claims, and evidence...</p>

Lesson 6: Making a Difference

Returning to *California Connections: Biological Riches and Rarities*, students read about effects of human population growth and consumption patterns on the state's biodiversity. Use of maps focuses discussion on challenges and opportunities related to natural system stability in response to change.



Use this correlation in conjunction with the **Procedures** located on pages 148–149 of the Teacher's Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p>	<p>RST.9–10.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context...</p>
<p>Step 4: Students view a map showing California Human Population Density (Visual Aid #5), and discuss the implications of this data for land use, consumption, byproducts, and overall effect on natural systems. This can be a student led conversation.</p>	<p>RST.11–12.7: Integrate and evaluate multiple sources of information...</p> <p>SL.9–10.1: Initiate and participate effectively in a range of collaborative discussions...</p>
<p>Step 5: Students revisit <i>California Connections: Biological Riches and Rarities</i> (Student Edition, pages 3–6), now focusing on California as a biodiversity hotspot on a worldwide scale. Students view a map displaying biodiversity hot spots, and connect the visual data with the ideas they have just read.</p>	<p>RST.9–10.2: Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process...or concept; provide an accurate summary of the text.</p> <p>RST.9–10.4: Determine the meaning of...key terms, and other domain-specific words and phrases...</p> <ul style="list-style-type: none"> ■ Hotspots <p>RST.9–10.10: ...read and comprehend science...texts...independently and proficiently.</p>
<p>Steps 6 and 7: Students view several maps that show specific plant and animal hotspots in California, compare them with a map showing human population density in California, and identify any patterns or correlations. They share these patterns and correlations and discuss possible implications of predicted population growth on these species by 2030.</p>	<p>RST.11–12.7: Integrate and evaluate multiple sources of information presented in diverse formats...</p>
<p>Step 8: Students read quotes about human activities and biodiversity, then write paragraphs in response to questions about human activities and biodiversity.</p>	<p>WHST.9–10.2: Write informative/explanatory texts...</p>

Unit Assessment

Refer to the introduction pages at the front of this document for information regarding the Traditional and Alternative Assessments for this unit and their Common Core correlations.

Reading *California Connections* using a Common Core Reading and Writing Focus

Reading

Science teachers can further enhance the teaching of Common Core Reading Literacy Standards by noting the suggestions below and in the following pages while reading the *California Connections* selection for content. Explicitly teach students to pay attention to the structure of the text by noting the following:

- Note how the author cites evidence to support main points; note any gaps or inconsistencies. **(RST.9–10.1 and RST.11–12.1)**
- Note how the author sets up the central ideas or conclusions; trace the text’s explanation or depiction of a process or concept; summarize concepts, processes, and information by paraphrasing the text and the text as a whole. **(RST.9–10.2 and RST.11–12.2)**
- Note how the author explains multi-step procedures. **(RST.9–10.3 and RST.11–12.3)**
- Note how the author explains the meaning of key terms, symbols, domain specific words, and phrases. **(RST.9–10.4 and RST.11–12.4)**
- Analyze the structure of the relationships among concepts in a text, and the relationships among key terms, including categories or hierarchies. **(RST.9–10.5 and RST.11–12.5)**
- Analyze the author’s purpose in providing an explanation, or describing a procedure, and how this defines the question the author seeks to address; identify important unresolved issues. **(RST.9–10.6 and RST.11–12.6)**
- Note how the information in the *California Connections* text integrates with information provided throughout the unit in diverse formats, including tables, charts, maps, and quantitative data. **(RST.9–10.7 and RST.11–12.7)**
- Assess the extent to which the reasoning and evidence in a text support the author’s claim; evaluate the analysis and conclusions in the text. **(RST.9–10.8 and RST.11–12.8)**
- When other documents are included, compare and contrast findings presented in this text to those in other sources, noting when the findings support or contradict previous explanations. **(RST.9–10.9 and RST.11–12.9)**
- Note comprehension strategies for understanding science text. **(RST.9–10.10 and RST.11–12.10)**

Note: Standard descriptions are paraphrased, using terminology that applies to reading a *California Connections* selection.

Writing

Many *California Connections* selections can be used as a model for future student writing tasks applying the Writing Literacy Standards by noting how the author structures the text, organizes the ideas, and provides well-chosen relevant and sufficient facts, extended definitions, concrete details, quotations, or other information and examples.

Using the *California Connections* Selection

The following pages note specific places where the *California Connections* selection provides examples for specific Writing Literacy Standards for Science and Technical subjects, using this selection as a writing model. They also provide suggestions for teaching students to analyze text structure using the Reading Literacy Standards for Science and Technical subjects. Teachers can incorporate more suggestions from the list above.

RST.9–10.4: Determine the meaning of...key terms, and other domain-specific words and phrases...

RST.9–10.5: Analyze the structure of the relationships among concepts in a text, including relationships among key terms...

- Biodiversity
- Hotspots

Suggestion: Note how this article is written from the point of view of a space shuttle crew, moving from one place to another in the landscape using a spatial organization structure.

California Connections: Biological Riches and Rarities
Lesson 1 | page 1 of 4

Biological Riches and Rarities



After dropping supplies at the space station, the shuttle circles Earth once, then twice. Soon the crew will fire the thrusters and return home to California. On the planet below, the Sun rises and sets every 16 minutes. Where it is day, the crew notices areas of brilliant green. The oceans are the deepest blue imaginable. Rivers appear as lines, like veins on the back of a grandmother's hand. From here, Earth seems so fragile, a colorful, spinning globe.

California's Biodiversity
Members of the crew cannot help but think about how rich Earth is. It is home to so many different forms of life. Every living thing depends on another, playing an integral part in its own natural community. Many biological communities exist on Earth. California, for example, has 5,879 species of plants and animals (more than any other state in the United States) and 2,214 endemic species—plants and animals found nowhere naturally beyond its borders.

Biodiversity (biological diversity) is a term used to describe the richness in numbers and variety of species of plants and animals in an area or region.

Climate and Geography
California's Mediterranean climate, with hot, dry summers and mild, wet winters, makes it an ideal place for many species to thrive. Because of its rich biological diversity and the threats to many of its species, biologists have designated California a biodiversity "hotspot."



Mount Whitney, California



Earth viewed from space

Biodiversity hotspots are home to a rich diversity of Earth's plant and animal species. A combination of factors makes them like "magnets" for life. The nation's largest breeding ground for birds, for example, is in California. The state is also home to 20 species of freshwater fish, 17 reptiles, and 17 mammals that are found in no other place on the planet. California's biodiversity can also be explained by its unique geography. The state has both the highest point in the continental United States at the summit of Mount Whitney

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RST.9–10.10: ...read and comprehend science... texts...independently and proficiently.

Suggestion: While reading the text, have students apply reading strategies to aid comprehension of the science content.

RST.9–10.2: Determine the central ideas or conclusions of a text; trace the text's explanation... of a complex process... or concept; provide an accurate summary of the text.

Suggestion: Throughout the text, pause at the end of a concept and have students paraphrase or summarize the concept to a partner. Have students note not only what the author explains, but how it is explained.

WHST.9–10.2b: Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details...or other information and examples...

Suggestion: Note which facts and information the author chooses to include and discuss the reasons for choosing those particular facts as supporting details.

Tip: It may be necessary to begin by giving a brief background regarding NASA's space shuttle program and termination, and explaining the efforts of private industry to develop vehicles to replace the shuttle's functions.

Suggestion: Discuss why these particular photos were selected for this article.

RST.9–10.5: Analyze the structure of the relationships among concepts in a text, including relationships among key terms...

- Endemic

WHST.9–10.2c: Use varied transitions and sentence structures to link the major sections of the text, create cohesion...

Suggestion: Note how the topic sentences move the reader to different locations in the landscape. Note the different transitions where the described landscape is beyond the shuttle's view.

<p>California Connections: Biological Riches and Rarities Lesson 1 page 2 of 4</p>  <p>Joshua trees, Mojave Desert, California</p> <p>(14,494 feet) and the lowest point at Badwater, Death Valley (282 feet below sea level). These distinct elevations are only 80 miles apart, and both are less than 200 miles from the Pacific Ocean. The differences in elevation, combined with California's moderate climate and its 100 million acres, create a mosaic of habitats where life has expanded to take advantage of a multitude of opportunities.</p> <p>Home to Deserts, Forests, Wetlands, and More</p> <p>As the shuttle hears Earth, the crew can see the wedge shape of the Mojave Desert boldly outlined by the mountains and fault lines that define it. It is considered "high" desert, with an average elevation of 3,500 feet, though it also extends into the lowest corners of Death Valley.</p>  <p>Carrizo Plain grasslands, California</p> <p>4 CALIFORNIA EDUCATION AND THE ENVIRONMENT INITIATIVE Unit B.6.a. Biodiversity: The Keystone to Life on Earth Student Edition</p>	<p>California Connections: Biological Riches and Rarities Lesson 1 page 3 of 4</p> <p>relationship between the moth and the Joshua tree allows both organisms to produce new life.</p> <p>As the shuttle drops further, the crew can see beyond the desert to the grasslands of the Carrizo Plain. With the shuttle still far above Earth, the homesick crew talks about how the constant wind plays with sunlight on the natural grasses, tossing them back and forth. Though much of the original grassland of the Great Central Valley has been replaced by agriculture, the protected Carrizo Plain remains largely untouched. It is home to some of California's endangered animals, including the San Joaquin Valley kit fox and the blunt-nosed leopard lizard.</p> <p>Coral Hollow, in the northwestern San Joaquin Valley, provides another example of original grassland habitat. A variety of reptiles and amphibians, including the California red-legged frog and the western pond turtle, live there. Composed of 70% grassland and 30% riparian woodland, Coral Hollow also displays unique vegetation, including the desert olive, iodine bush, and honey mesquite.</p> <p>As they survey the land, crewmembers imagine the wildflowers that must be blooming wherever there is enough water to germinate their seeds. They talk about the vernal pools, seasonal wetlands that occur in the Central Valley and other regions. These pools support numerous plants and animals, some threatened with extinction. Formed in the winter months when rain fills clay and hardpan (dense layers of soil that do not easily absorb water) hollows with rainwater, vernal pools provide a temporary home to fairy shrimp, frogs,</p>  <p>Kit fox cubs</p>  <p>Wildflowers by vernal pool</p> <p>CALIFORNIA EDUCATION AND THE ENVIRONMENT INITIATIVE Unit B.6.a. Biodiversity: The Keystone to Life on Earth Student Edition 5</p>
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WHST.9–10.2b: Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details...or other information and examples...

Suggestion: Note which facts and information the author chooses to include and discuss the reasons for choosing those particular facts as supporting details.

RST.9–10.4: Determine the meaning of...key terms, and other domain-specific words and phrases...

- Vernal pools
- Hardpan

WHST.9–10.2c: Use varied transitions and sentence structures to link the major sections of the text, create cohesion....

Suggestion: Note how the topic sentences move the reader to different locations in the landscape. Note the different transitions where the described landscape is beyond the shuttle’s view.

RST.11–12.9: Synthesize information from a range of sources...into a coherent understanding of a...concept...

Suggestion: Either during or after the reading, have students look at a map of California and identify the areas being discussed in the article, showing the flow from one location to another. Have students discuss how integrating the map along with the text increases comprehension.

California Connections: Biological Riches and Rarities
Lesson 1 | page 4 of 4

and many aquatic plants. In the spring when the water begins to evaporate, colorful wildflowers spring up, lining the pools with chains of goldfields, creamy Johnny tuck, and lacy meadowfoam.

One crewmember recalls traveling through California to the “land of the giants,” the deep old-growth forest that adds so much to biodiversity. Although old-growth redwood forests are wonderful ecosystems, they are known for their remarkable lack of California’s biodiversity compared with other forests. Except for a 14-mile extension into Oregon, the coast redwood forest belongs only to California. Redwoods, Earth’s tallest trees, sometimes stand 300 feet tall and have trunks that reach 25 feet in diameter at their bases. The average redwood is 600 years old, though many are much older. When they fall, redwoods act as their own “nursery logs,” nurturing rows of new seedlings that eventually grow into mature trees. Because of their incredibly thick bark, old-growth redwoods are very fire resistant.

Under the shade of the giant redwood canopy, several trees provide a tall secondary layer of growth. Tanoak, California bay, Douglas fir, hemlock, and sometimes big leaf maple grow with filtered sunlight. Wild

rhododendron, poison oak, salal, and huckleberries fill in the next colorful layer. The ground level is rich with redwood sorrel and wood ferns. They provide a safe hiding place for many animals, including the banana slug, Pacific giant salamander, and the red-legged frog.

It is almost time to land, and the crew directs its attention to the desert below. Their high altitude tour of California’s biodiversity is nearing an end, and so many places remain to visit! Rogers Dry Lake is now directly in front of the shuttle, its drawn runways clearly marked on hard clay.

As the shuttle touches down, the crew looks to the north, where sunlight illuminates the Sierra Nevada Mountain Range. They take deep breaths, glad to

be home. Earth from a distance, though stunning, is nothing compared to the rich beauty and diversity that surround the astronauts when their feet finally touch the ground.



Coast redwood, California



Sierra Nevada range

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WHST.9–10.2f: Provide a concluding statement or section that follows from and supports the information or explanation...

WHST.9–10.2b: Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details...or other information and examples...

Suggestion: After reading the text, determine if the technique of using the perspective of the space shuttle crew is effective in presenting the information. If not, suggest another technique.

California Common Core State Standards Descriptions for Grades 9–10

Reading Literacy Standards in Science and Technical Subjects

- **RST.9–10.2:** Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
- **RST.9–10.4:** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics*.
- **RST.9–10.5:** Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., *force, friction, reaction force, energy*).
- **RST.9–10.10:** By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

Speaking and Listening

- **SL.9–10.1:** Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 9–10 topics, texts, and issues*, building on others’ ideas and expressing their own clearly and persuasively.
 - c) Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
 - d) Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
- **SL.9–10.4:** Present information, findings, and supporting evidence clearly, concisely, and logically (**using appropriate eye contact, adequate volume, and clear pronunciation**) such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose (**e.g., argument, narrative, informative, response to literature presentations**), audience, and task. **CA**
- **SL.9–10.5:** Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

Writing Standards for Literacy in History-Social Studies, Science, and Technical Subjects

- **WHST.9–10.2:** Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
 - a) Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - b) Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.
 - c) Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.
 - d) Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.
 - e) Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
 - f) Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

Common Core Reference Pages

- **WHST.9–10.7:** Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- **WHST.9–10.8:** Gather relevant information from multiple authoritative print and digital sources (**primary and secondary**), using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. **CA**

California Common Core State Standards Descriptions for Grades 11–12

Reading Literacy Standards in Science and Technical Subjects

- **RST.11–12.2:** Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
- **RST.11–12.7:** Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
- **RST.11–12.9:** Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

Speaking and Listening

- **SL.11–12.1:** Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 11–12 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively.
 - d) Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
- **SL.11–12.4:** Present information, findings, and supporting evidence (**e.g., reflective, historical investigation, response to literature presentations**), conveying a clear and distinct perspective **and a logical argument**, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **Use appropriate eye contact, adequate volume, and clear pronunciation. CA**
- **SL.11–12.5:** Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.