



10TH GRADE | FOREST MANAGEMENT

Forest in Focus: A Diorama on Sustainable Management

Essential understandings	
<input checked="" type="checkbox"/> Since time immemorial	<input checked="" type="checkbox"/> Identity
<input type="checkbox"/> Tribal government	<input checked="" type="checkbox"/> Lifeways
<input type="checkbox"/> Language	<input type="checkbox"/> Treaties with the United States
<input type="checkbox"/> Sovereignty	<input type="checkbox"/> Genocide, federal policy, and laws
<input checked="" type="checkbox"/> History	
Learning outcomes	<p>By the end of this lesson, students will be able to:</p> <ul style="list-style-type: none">• Students will gain understanding of the Coquille Indian Tribe's sustainable forest management practices.• Students will analyze the connections between human activity and ecosystem health.• Students will design and create a three-dimensional model (diorama) depicting a healthy, managed Coquille forest ecosystem.• Students will develop skills in communication, collaboration, and critical thinking.
Essential questions	<ul style="list-style-type: none">• How can human activities and traditional ecological knowledge be combined to create a sustainable future for the Coquille Forest?• What are the benefits of sustainable forest management practices, as demonstrated by the Coquille Indian Tribe?
Logistics	<ul style="list-style-type: none">• Where does the activity take place? <i>Classroom</i>• How are the students organized? <input type="checkbox"/> Whole class <input checked="" type="checkbox"/> Teams: 3-4 <input type="checkbox"/> Pairs <input type="checkbox"/> Individually
Time required	Three to four 45 min class periods



Oregon Standards

- Oregon Art Standard: VA.1.CR1.HS1 1. Identify and elaborate on themes in the local and global community that could be explored in art making. 2. Use contextual research and direct observation to generate ideas and to produce a work of art that demonstrates understanding of artistic techniques and organizational structures. 3. Individually and/or collaboratively design an object or artwork that is based on a need, theme, or aesthetics that demonstrates developing technical skill.
- Oregon Science Standard: HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
- Common Core Standards for ELA/Literacy: RI.10.3 Analyze supplementary information (e.g., maps, charts, infographics) to understand a text.
 - RI.10.8 Delineate a cause-and-effect relationship between a specific action and its multiple consequences.
 - SL.10.5 Analyze the effectiveness of and refine complex presentations as needed, considering the audience and using clear concise language.

Materials

- Sketch paper and pencils
- Cardboard boxes (shoebox size) or other boxes for the diorama base
- Construction paper or other art materials for creating the forest landscape (trees, plants, animals)
- Natural materials (optional) such as twigs, leaves, moss
- Recycled materials (optional) for creative representations of forest features, such as used magazines, cardboard, etc.
- Markers, colored pencils, paints, paint brushes, water cups, hot glue gun, glue sticks, scissors, rulers, tarps for tables
- Research materials about the Coquille Forest ecosystem and the Tribe's management practices (books, articles, websites)

Vocabulary

- Coquille Indian Tribe: A federally recognized group of indigenous people who have lived on the southern Oregon Coast since time immemorial.
- Forest Management: The practice of planning and directing the use of forest land.
- Sustainable Forestry: Utilizing forests in a way that meets the needs of the present without compromising the ability of future generations to meet their own needs.

- Selective Logging: Harvesting only specific trees based on size, species, or health.
- Traditional Ecological Knowledge – Traditional Ecological Knowledge (TEK), also known by other names including Indigenous knowledge or Native science, refers to the evolving knowledge acquired by Indigenous and local peoples since time immemorial through direct contact with the environment.
- Ecosystem – An ecosystem is a community of living organisms in a particular area. The living (biotic) and non-living (abiotic) aspects of the ecosystem are connected through energy flows and nutrient cycles.
- Forest management – The processes by which humans manage a forest ecosystem to ensure it has the proper care to provide for specific goals and uses. Examples of a goal or use could be protection against fire or to restore habitat for listed birds, which might involve techniques such as restoration thinning or regenerative harvesting. A very important goal for this region related to forest management is forest products (timber) and economic values.
- Conservation – Conservation is a philosophical approach that is intended to preserve or make efficient use of resources. In the context of this lesson, the idea of conservation pertains to how land managers/ caretakers determine what land and natural resources are to be used, by whom, and for what purposes.
- Since time immemorial: refers to a period in the distant past that predates recorded history and even human memory. It signifies a timeframe so far back that there's no documented or cultural recollection of its beginning.

Extension Activities

- Research a specific forest ecosystem and create a diorama showcasing its unique features and management challenges.
- Debate the pros and cons of different forest management practices.

Overview

This lesson blends the concepts of sustainable forest management with the traditional ecological knowledge of the Coquille Indian Tribe. Students will gain an understanding of the Tribe's successful approach and its relevance to modern forest management practices.

Background for teachers

- Forests are vital ecosystems that provide a multitude of benefits. Sustainable forest management practices are crucial to ensure these benefits are available for future generations.
- The Coquille Indian Tribe has lived in harmony with the forest since time immemorial, developing traditional ecological knowledge that promotes forest health and sustainability. Their approach serves as a valuable example for modern forest management.
- **Sustainable Forestry: A Balance for Future Generations:** This means that we harvest trees from the forest, and we do so carefully, ensuring the forest remains healthy and strong. We only take what we need, and we make sure there are always enough young trees growing to replace the older ones. It's like borrowing from the forest, but always making sure they repay that debt by planting new trees for the future.
- **Selective Logging: Choosing Trees Wisely:** When we harvest trees, we don't simply take any that come along. We use selective logging, which means carefully choosing specific trees. We consider factors like size, species, and overall health of the forest. This ensures a diverse forest with a healthy mix of young and old trees, providing a strong foundation for future generations.
- **Learning from the Past: Traditional Ecological Knowledge:** The Coquille Indian Tribe has a deep understanding of the forest, passed down through generations. This knowledge, called Traditional Ecological Knowledge (TEK), is like a library of wisdom about the forest. By studying TEK, we learn how fire management, plant use, and other practices have traditionally maintained the forest's health. This knowledge guides us in our sustainable forestry practices today.

To prepare for this lesson teachers should

- Research different forest management practices (selective logging, prescribed burns, etc.)
- Gather examples of dioramas related to forests (or create a sample diorama)



Forest Diorama Example

- Prepare a rubric (included in lesson) for assessing student dioramas
- Research the Coquille Indian Tribe and their forest management methods
- Consider inviting a guest speaker from the Tribe (if possible)

References

- National Forest Foundation: <https://www.nationalforests.org/who-we-are>
- The Nature Conservancy: <https://www.nature.org/en-us/what-we-do/our-priorities/protect-water-and-land/land-and-water-stories/how-we- conserve-forests/>
- Animal and Plant Species: <https://www.inaturalist.org/places/coos-county>

Resources

Coquille Indian Tribe- SB13- 10th Grade- Lesson 1- Forest Management

Considerations for teachers

Assessment

Use the rubric below to assess students' on their diorama and presentation.

Forest Diorama Assessment Rubric:

Criteria	Excellent (4 points)	Good (3 points)	Progressing (2 points)	Needs Improvement (1 point)
Understanding of Key Concepts	Student demonstrates a clear understanding of sustainable forest management practices and the Coquille Indian Tribe's traditional ecological knowledge (TEK).	Student demonstrates a general understanding of sustainable forest management practices and mentions the Coquille Indian Tribe's TEK.	Student demonstrates a limited understanding of sustainable practices and makes minimal mention of the Coquille Indian Tribe.	Student demonstrates little to no understanding of sustainable practices or the Coquille Indian Tribe's TEK.
Diorama Representation	The diorama visually depicts a forest managed using sustainable practices, with elements	The diorama depicts a forest with sustainable practices, but lacks clear elements inspired by the Coquille	The diorama depicts a forest, but sustainable practices are not well-represented and there's minimal	The diorama lacks a clear forest scene and does not showcase sustainable practices or the Coquille Indian Tribe's

Criteria	Excellent (4 points)	Good (3 points)	Progressing (2 points)	Needs Improvement (1 point)
	inspired by the Coquille Indian Tribe's methods (e.g., selective logging, dead trees for habitat).	Indian Tribe's methods.	connection to the Coquille Indian Tribe's methods.	methods.
Creativity and Use of Texture	The diorama uses multiple examples of real and implied texture, is, well-constructed, and uses creative elements to effectively communicate the message.	The diorama uses examples of at least one real and one implied texture, is, well-constructed, and communicates a message.	The diorama uses real or implied textures and forest elements, but the construction and/or message is inconsistent or unclear.	The diorama does not demonstrate the art element of texture and/or is unstable or unfinished in its construction.
Presentation	The team delivers a clear and informative presentation that highlights the sustainable practices in	The team delivers a presentation that explains the sustainable practices in their diorama, but the	The team's presentation is unclear or lacks information about the sustainable practices or the Coquille	The team does not present or their presentation is poorly delivered.



Criteria	Excellent (4 points)	Good (3 points)	Progressing (2 points)	Needs Improvement (1 point)
	their diorama and explains how they connect to the Coquille Indian Tribe's TEK.	connection to the Coquille Indian Tribe's TEK is unclear.	Indian Tribe's TEK.	

Total Points: (Possible: 16 points)

Grading Scale:

- 14-16 points: A
- 10-13 points: B
- 8-9 points: C
- 6-7 points: D
- Below 6 points: F

Teacher Notes:

- Use this rubric to assess student understanding, diorama construction, creativity, and presentation skills.
- Consider providing feedback throughout the lesson to help students improve their learning.
- You can modify this rubric to fit the specific needs of your students and the lesson objectives.

Practices

- *Small/paired groups* – Students will need to have norms for group discussion. For group work, students will be assigned roles. The teacher will need to be prepared to assign and explain group roles.

Learning targets

- Define key terms related to forest management (sustainable forestry, selective logging, conservation, etc.)
- Explain the importance of sustainable forest practices for maintaining healthy ecosystems.

- Create a diorama including real and implied textures that depicts a forest managed using sustainable practices, incorporating elements inspired by the Coquille Indian Tribe's methods.
- Analyze the impact of human activities on forest ecosystems and biodiversity.
- Recognize and appreciate the Coquille Indian Tribe's traditional ecological knowledge and its contributions to modern forest management.
- Advocate a position on forest management that balances human needs with minimal impact on the environment.

Appendix

Materials included in the electronic folder that support this lesson are:

- Lesson 1 Forest Management:
 - Background Reading for Teachers.pdf
 - Traditional Ecological Knowledge Article (USFWS).pdf
 - CIT Forest Management Slide Deck.pptx
 - 02.1 K-W-L Graphic Organizer.docx
 - 03.1 Kwen Garden of Our Ancestors (June-2018).pdf
 - 03.1 Scientific Essay Criteria.docx
 - 03.2 Native American Forestry Combines Traditional Knowledge.pdf
 - 03.3 Top Timber Forest Balances Business-Culture.pdf
 - Forest Management Grade 10 Forest Management 9
 - 03.99 Bubble Map Graphic Organizer.docx
 - 03.99 Note-Taking System.docx
 - 04.1 Forest Interactions and Disturbances Graphic Organizer.docx
 - 04.2 Forest Interactions and Disturbances Packet.pdf
 - 04.99 Environmentalism's Racist History_The New Yorker.pdf
 - 04.99 Forest Fact Break Forest Management.mp4
 - 04.99 National Forest Timber for Sale.pdf
 - 04.99 Oregon Timber Industry.pdf
 - 04.99 Three Views on Forest Conservation (OFRI).pdf

Activity 1.

Forest in Focus - A Diorama on Sustainable Management | 180 minutes

Overview. This lesson challenges students to create a diorama that depicts a forest managed using sustainable practices, incorporating elements inspired by the Coquille Indian Tribe's traditional ecological knowledge. Students will research different forest management techniques, explore the Coquille Indian Tribe's methods, and utilize creative skills to bring their vision to life.

Day 1:

Introduction (10 minutes):

- **Teacher:** *"Good morning everyone! Today, we're diving into the fascinating world of forests. Forests are like the lungs of our planet, providing clean air, water filtration, and homes for countless species. But with a growing population, it's important to manage these ecosystems responsibly."*

Introducing the Coquille Indian Tribe (15 minutes):

- **Teacher:** *"Let's shift our focus to the Pacific Northwest. Since time immemorial, the Coquille Indian Tribe has thrived in the forests of southwest Oregon. Through generations of living in harmony with the land, they've developed a deep understanding of forest ecosystems. **Since time immemorial** refers to a period in the distant past that predates recorded history and even human memory. It signifies a timeframe so far back that there's no documented or cultural recollection of its beginning."*
- **(Show pictures or videos of the Coquille Indian Tribe and their forest)**

- **Teacher:** "The Coquille Indian Tribe's traditional ecological knowledge, or TEK for short, is a treasure trove of wisdom about sustainable forest management practices."

Research and Brainstorming (20 minutes):

- **Teacher:** "Now, we'll combine what we've learned about general forest management with the wisdom of the Coquille Indian Tribe. We'll be working in teams to research both topics. Use these resources to explore sustainable forestry practices and the Coquille Indian Tribe's methods."
- **(Distribute research materials)**
- **(Show a brief presentation highlighting key aspects of the Coquille Indian Tribe's forest management)**
- **Teacher:** "Remember, your mission is to become experts! Define key terms like 'sustainable forestry' and 'selective logging.' Also, research how the Coquille Indian Tribe manages their forest for long-term health."
- **(Offer guidance and support to teams as they research)**
- **Teacher:** "Once you've delved into the research, brainstorm ideas for your dioramas. Imagine a forest scene that reflects sustainable practices, incorporating elements inspired by the Coquille Indian Tribe's methods. What plant and animal species would be present in the forest you are designing? What message are you trying to send with your artwork?"
- **(Encourage students to sketch ideas and discuss options within their teams)**

Day 2:

Diorama Background (40 minutes):

- **Teacher:** "Yesterday, we explored sustainable forest management and the wisdom of the Coquille Indian Tribe. Today, let's bring those ideas to life through dioramas! To do this we are using the art element of texture. Consider how you can use different real (physical) or implied (visual) textures to depict your forest. Use your creativity and teamwork to construct a stunning and informative scene that shows your learning about sustainable forest management."



- *(Point out examples of real texture and implied texture in the model diorama(s). Describe to students how they were created)*
- *(Circulate around the classroom, offering help and answering questions)*
- *(As you notice student work, point out examples of the Coquille Indian Tribe's methods that students can incorporate, such as prescribed burns or leaving dead trees for wildlife habitat)*

Day 3:

Diorama Details (30 minutes):

- ***Teacher:*** *"Yesterday, we worked on the base and background of our dioramas. Today, let's bring those ideas to life by adding details and creativity! Use your creativity and teamwork to add additional details and textures to your dioramas. Make sure that your diorama sends a message about sustainable forest management practices, and consider what details could help communicate your message more clearly."*
- *(Circulate around the classroom, offering help and answering questions)*
- *(Highlight examples of the Coquille Indian Tribe's methods that students can incorporate, such as prescribed burns or leaving dead trees for wildlife habitat)*

Presentation Planning (10 minutes):

- ***Teacher:*** *Work with your team as you clean up, to discuss your presentation for our next class time. What will you highlight in your diorama? What did you learn about TEK and sustainable forestry – and how did you communicate it through your artwork?*
- *(Distribute paper, notebooks etc. so students can record notes for their presentation)*

Day 4:

Presentations and Discussion (40 minutes):

- **Teacher:** *"Fantastic work everyone! Now, each team will present their diorama to the class. Explain the sustainable practices you've depicted and how they connect to the Coquille Indian Tribe's traditional ecological knowledge."*
- **(Facilitate presentations, encouraging questions from the class)**
- **Teacher:** *"Let's discuss what we've learned. Why is sustainable forest management important? How can we learn from the Coquille Indian Tribe's wisdom? How can we advocate for a future where human needs and forest health are balanced?"*
- **(Encourage students to share their opinions on responsible forest management)**

Conclusion (5 minutes):

- **Teacher:** *"The Coquille Indian Tribe's story is an inspiring example of living in harmony with nature. By combining traditional knowledge with modern science, we can ensure healthy forests for generations to come. Thank you for your participation and effort!"*

