

Changes in the Ecosystems
Aligned Lesson 2

<p>Cjonell Collins Grades 3</p>	<p>About the author/teacher: 3rd grade teacher cjcollins@joliet86.org Taught grades 3, 4,& 5 Joliet District 86 Joliet, Illinois</p>
<p>Related Unit: Earth and Its Environment</p>	<p>Lesson Length: 4-7 days</p>
<p>NGSS Standards: 3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem</p>	
<p>Library of Congress Primary Sources</p>	<p>Materials/Supplies/Resources</p>
<p></p> <p>(picture of the remains of a forest in Virginia being destroyed)</p>	<ul style="list-style-type: none"> ● Science notebooks ● Listed websites ● Claim- Evidence- Reasoning Organizer ● Trade books or other resources ● Computers/ ● Poster board ● Crayons/makers ●
<p>Enduring Understandings</p>	<p>Essential Question(s)</p>
<ul style="list-style-type: none"> ● Populations live in a variety of habitats, and change in those habitats affects the organisms living there. 3-LS4-4. <p>Research on a problem should be carried out before beginning to design a solution. Testing a solution</p>	<ul style="list-style-type: none"> ● How do environmental changes affect a habitat's plant and animal population? (3-LS4-4) ● How can researching a problem help determine how well it performs in the

involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)	design solution? (3-5 EST1-2)
Transfer Goals	
<ul style="list-style-type: none"> ● Developing and using models 3-5 EST1-2 ● Planning and carrying out investigations ● Analyzing and interpreting data 3-LS4-4 ● Using mathematics and computational thinking ● Constructing explanations (for science) and designing solutions (for engineering)3-LS4-4, 3-5 EST1-2 ● Engaging in argument from evidence 3-LS4-4 ● Obtaining, evaluating, and communicating information 3-5 EST1-2 	
Learning Objectives I Can Statements	
<ul style="list-style-type: none"> ● I can describe how plants and animals live in an environment before it changes. ● I can describe a change in an environment. ● I can describe how the change in the given environment causes a problem for the existing plants and animals that live there. ● I can describe the effect of the solution on the plants and animals within the environment. ● I can describe the resulting changes to plants and animals living within that changed environment, after the solution has been implemented. 3-LS4-4 ● I can describe* the evidence to be collected, including: <ul style="list-style-type: none"> ○ How well the model/prototype performs against the given criteria and constraints. Specific aspects of the prototype or model that do not meet one or more of the criteria or constraints (i.e., failure points or difficulties). ○ Aspects of the model/prototype that can be improved to better meet the criteria and constraints. 3-5 EST1-2 ● 	
Engage: How can I get students interested in this?	
<p>Ask students to share what they know about where things live? (They may say ponds, forests, yards, aquariums). Ask: What are some natural events that have major effects on the physical characteristics of a place? (possible answers: fires, tornadoes, hurricanes, tsunamis, floods) Ask: How do these events change a place? Possible answers: (Tornadoes can rip trees from the ground. Tsunamis and floods can wash away and drown plant and animal life. Fires burn and destroy trees and other plants and can clear large areas of land. What kind of fossils might you find in these areas? (have students discuss all options.</p>	

What can we learn from the natural event and the fossils that were found there?

***This may be done on an anchor paper as a T-chart and can be added to as the unit continues.**

During engage have students talk to a shoulder partner or as a group. Question could also be done in a science notebook as a start to a KWL-

Share out to encourage healthy disagreements and encourage curiosity.

***3-D learning occurs**

***This part of the lesson could take 1 class period or 60-90 mins**

Explore: What tasks/questions can I offer to help students puzzle through this?

- Teacher will show Library of Congress photo (remains of a forest) and ask some probing questions to encourage exploration. **Ask: What living things to you see in the picture? What non-living things do you see? Do you see anything that was once living, but is not anymore? Ask students what do they think happened to this forest?** Remind students about the previous lesson on fossils. What could happen to the non-living things?

- Have students share their observations.

- Students will view study jams video- (changes in ecosystems). Have students note what changes they noticed.

- Students will work with a partner/ or small group to research different ecosystems using following website:
- <http://www.kidsgeo.com/geography-for-kids/0164-ecosystems.php> (Have students focus on a particular ecosystem) Tundra, Desert, Grassland, Tropical Rain Forest, Deciduous Forest, Coniferous Forest.

- Have students note the following for their assigned ecosystem
 1. Type of Climate
 2. Location
 3. Animals present
 4. Plants present
 5. Possible threats to the ecosystem

Using the following website have students answer the following questions. Teacher may start with reading the first section: So What if the Earth gets a bit warmer? <https://climatekids.nasa.gov/climate-change-evidence/>

1. Why is the Earth getting warmer, does this affect your ecosystem? If so, how?
2. What could happen if t sea level rises due to warmer conditions? Could this affect your ecosystem? If so, then how?
3. How could the possible problems above affect the plants and animals in your ecosystem? Give at

least one example of each from your ecosystem.

4. List two ways you could help save your ecosystem? How could you make sure other people were aware of ways to help?

Students may also use trade books or other websites/resources to find out more information about their ecosystem.

* A good movie to show would be Ice Age to show the relationship between animals and plants and the change that occurs to an environment.

*3-D learning occurs in this section

*This part of the lesson could take 1-3 days

Explain: How can I help students make sense of their observations?

- Have the students reflect upon their experiences and the Primary Source(s).
- Have the students write down questions they wondered about and want more information on.
- Include questions* and/or strategies teachers can utilize to help students connect their experiences to the essential question(s) and enduring understanding(s).
- Approximate how long this portion of the lesson should take.
- Students can create a poster/PowerPoint explaining their findings from the explore section.
- Have students present posters/ PowerPoints to the class. Use rubric to grade (this could also be their final evaluation to show understanding. *Rubric included in folder
- Draw students back to the LOC picture and have students identify what ecosystem it is. (the group that presented this one may have more information.)
- Using a Claim- Evidence-Reasoning graphic organizer, have students list possible issues that could have caused the destruction of the ecosystem. *Claim Evidence Reasoning graphic Organizer included in folder
- Discuss a class
- Teacher can either give the real explanation or have students continue researching to find out.

***Disciplinary Core Ideas and Cross Cutting Concepts learning occurs**

*This part of the lesson could take 1-3 days

Extend/Elaborate: How can my students apply their new knowledge to other situations?

- Describe how the students will apply their new knowledge to new or similar situations.
- Include how the teacher can help the students make relevant connections to their observations, address misconceptions, and extend students' learning.
- Approximate how long this portion of the lesson should take.
- Have students extend the lesson by researching what happened to the destroyed forest (the original picture from the engage section of the lesson LOC picture) Students could report out for extra credit or as another part of their learning.
- Have students discuss what possible solutions could have prevented the destroyed ecosystem.
- Students could extend their research to other ways we hurt ecosystems. Have students use the following website to note the problem humans cause and how they can prevent it.
<https://climatekids.nasa.gov/acid-ocean/> (students could also use the tabs on the side of the website to further their research).
 1. Students can create a T-chart (see below) showing their research.
 2. Students could write a research paper

3. Students could create a presentation to share with other classrooms or a pamphlet that could be distributed in their community.

Problem human cause	What we could do instead.
---------------------	---------------------------

* This part of the lesson could be take 1 to 2 days.

Evaluate: How can I help my students self-evaluate and reflect on the learning?

- Identify how students and the teacher can assess understanding.
- Describe how the lesson activities can help students demonstrate achievement of the learning objectives.
- Include examples (or descriptions) of evidence related to each learning objective.
- Approximate how long this portion of the lesson should take.

The evaluation part can be identified by the presentation in the explain section.

Students could also come up with a plan that could be implemented to save their ecosystem.

Teacher could pose the following question: What do you or your family do every day that could cause problems to an ecosystem. Create a plan that you could do to be a solution to the growing problems in our ecosystem. Teacher could create or have students create a family/community pledge.

*This could take 2 class periods, 2 hours, or longer depending on how extensive you want them to be.

*3-D learning occurs in this section