

Lesson Five: The Impacts of Deforestation

Objectives:

1. Students will be able to list ways in which deforestation affects each earth sphere.
2. Students will draw connections and list ways in which earth spheres impact each other as a result of deforestation.

Background:

The purpose of this lesson is to use Earth Systems Science to analyze the chain of events which occur due to deforestation. The students will begin to see the interconnectedness of human activity and environmental change. **The teacher will want to be sure to review “Methods for Teaching Earth Systems Science” on pages 1-4 prior to beginning this lesson.**

Materials:

- Computers with internet access
- 3 x 5 index cards
- Tape
- Pens
- Copies of Masters 5.1 and 5.2

Procedure:

1. Divide the students into 4 groups, each representing an earth sphere (note: these can be different than the earth spheres used for their biome study). Each group will need 5 index cards.
2. Each group’s goal is to use information from their Rain Forest Biome Sheets (Master 3.1) and internet resources to find facts regarding how deforestation impacts their assigned sphere. They compose and record on their index cards how deforestation affects their assigned earth sphere. See examples below for note card format and example of student notes.

Event:	Sphere:
E>A:	
Web source:	

*E>A represents event to atmosphere, other groups will be writing E>B, E>L or E>H

Event: *Deforestation*

Sphere: *Atmosphere*

E>A: *When tree stumps are burned particulate matter is released into the atmosphere.*

Web source: *www.....*

*This is an example of an E > A (Event to Atmosphere) interaction, the event being deforestation.

3. Once all groups have completed five index cards, pass out copies of Event Deforestation form (Master 5.1). Using the five index cards just completed, each group will present the five ways their sphere is affected by deforestation. As each group shares, the other students will fill in their worksheet. (Prior to writing on the worksheet, teacher and students will assess the validity of each event to sphere interaction presented).
4. Teacher will model how to write a causal chain. (**An example is given on the next page**) A chain reaction may use as few as 3 spheres or as many as 5 or more. Some spheres may be repeated or not used at all.
5. Assign Homework. Pass out copies of “Causal Chains: Deforestation” (Master 5.2). Students use the information gathered from presentations (Master 5.1) to create 3 possible causal chain reactions as just modeled by the teacher. Homework will be shared the next class and may be collect by the teacher for a grade.

Example of a Causal Chain

Example: The following example is written in the format expected of the students

$E > A > B > B$: Burning of the stumps from cut trees releases particulate matter into the air. The particulate matter clogs alveoli and impedes the breathing of many forest mammals as well as people. As the population of tree frogs decreases from lung damage, the population of pythons also decreases.

A further explanation of the above example follows. This is for teacher use only.

*In the example above $E > A > B > B$ means: **Deforestation** (event) affects **Atmosphere** affects the **Biosphere** affects the **Biosphere***

*Burning of the stumps from cut trees (**event**) releases particulate matter into the air (**Atmosphere**). The particulate matter clogs alveoli and impedes the breathing of many forest mammals as well as people (**Biosphere**). As the population of tree frogs decreases from lung damage, the population of pythons also decreases (**Biosphere**).*

Event: Deforestation

Name: _____

E>A (deforestation effects the atmosphere)

- 1.
- 2.
- 3.
- 4.
- 5.

E>B (deforestation effects the biosphere)

- 1.
- 2.
- 3.
- 4.
- 5.

E>L (deforestation effects the lithosphere)

- 1.
- 2.
- 3.
- 4.
- 5.

E>H (deforestation effects the hydrosphere)

- 1.
- 2.
- 3.
- 4.
- 5.

**Master 5.1
Causal Chains: Deforestation**

Name: _____

Using your event to sphere interactions from class, compose three possible causal chains that occur due to deforestation. Label each by listing the spheres in the order that they are affecting each other using the following example format: E>B>A>B>L

Chain 1: _____

Chain 2: _____

Chain 3: _____

