

# Ecosystem Services

## Primary Levels: Ages 6 – 10

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### Standards

- Common Core Standards for English Language Arts/Literacy and Mathematics
- Next Generation Science Standards for Interdependent Relationships in Ecosystems: Ecosystem Dynamics, Functioning and Resilience

### Concepts

- Rainforests are highly interdependent. In addition to the thousands of species of plants and animals that live in rainforests, rainforest ecosystems provide countless benefits to our planet and to us. A scientist might call these incredibly important and free services provided by nature “ecosystem services”.
  - What are some “ecosystem services” the rainforest provides? What ecosystem services does nature provide where you live?
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### Part I: Making connections

Idea –Students will think about one important element of their environment that must be protected in order to maintain the health of the ecosystem. They will focus on the important role of pollinators in providing invaluable ecosystem services.

### Materials –

- Access to the internet and/or natural history field guides
- Art supplies
- Poster board

### Procedure –

- Have students research different pollinators that live in their local area using the internet or field guides. Insects like bees and butterflies, as well as hummingbirds and bats are examples they could use.
- Students will create posters that describe their pollinator and show its connection to plants in their area. Show the relationship between the pollinator and the different plants it visits.
- Display student posters.
- Next, imagine removing the pollinators one by one. What impact would this have on the ecosystem? Have students think about the ways the removal of a pollinator would affect the plants, animals and people in their local environment.
- Discuss what might happen without this seemingly small and insignificant pollinator around. How could the loss of the pollinator and the service it provides impact other parts of the ecosystem?

## Part II: Reading and Discussion

Idea – Read the classic children’s book *The Lorax* by Dr. Seuss to discuss the theme of environmental services provided by nature and the dangers of taking those services for granted in the pursuit of individual self-interest. This classic story is a parable of the threat corporate greed poses to the natural world.

Materials – The children’s book *The Lorax* by Dr. Seuss

Procedure –

- Read the book with the students and ask them to identify some environmental services hinted at in the book. How were the services that nature provided for free used by the Once-ler? How did the destruction of the truffula trees affect other creatures in the story? In the end, how did it affect the Once-ler? What do you think the lorax meant when he wrote “unless”?

## Part III: Math and geography

Idea – Students will learn about tipping points in an ecosystem.

Materials –

- A block stacking game like Jenga per group of students
- Small white label stickers for blocks

Procedure –

- Review the food web exercise from earlier. Clearly ecosystems, especially rainforest ecosystems, are complex but somehow this diversity creates balance. How many pieces have to be taken out of the system for the system to upset that balance though?
- Have students write down and label different plants, animals and insects found in the rainforest. Labels might include things like orchids, butterflies, birds, monkeys, jaguars and other creatures in the rainforest. Have students also label pieces for mature trees, rivers, humidity, rainfall and warm temperatures.
- Use the labeled Jenga blocks to create a rainforest tower. Taking one block out at a time have students make guesses about how many blocks (species) will have to be pulled out before the whole tower (ecosystem) crashes down.
- Use the game as a metaphor for rainforest ecosystems. Discuss the game with the class and ask them questions.
  - How do the different blocks support each other?
  - What happens when a block is removed?
  - Why can some pieces be removed without causing problems?
  - Why can’t we keep building higher and higher?
  - How does this relate to a rainforest ecosystem?

## Part V: Create

Idea – Create a rainforest mural together as a class incorporating the rainforest ecosystems, species and interactions you have learned about.

Materials –

- A good wall or surface for your mural
- Paints, brushes, pencils and other drawing supplies

Procedure – As a class draw a mural of the rainforest to decorate your classroom, school or community. Discuss with one another what to include in your mural and make drafts of what you want it to look like. Include plants, animals, interactions, ecosystem services and other important aspects of the rainforest. Envision what the rainforest means to you and create it!

**Part IV: Present**

Idea – Present your mural to your school or community and have students give a lesson to their audience on what they have learned and why rainforests are special environments worth protecting.