

RESOURCE LIBRARY | ACTIVITY : 50 MINS

SOS—Saving Our Species

This activity launches the *Extinction Stinks!* unit. Students watch a video exploring the rising plight of endangered species around the world. They then use the lens of the critically endangered Sumatran rhino to identify what they need to know to answer the unit’s driving question, “How can we prevent a species from going extinct while also meeting the needs of humans and other local species?”

GRADES

6, 7, 8

SUBJECTS

Biology, Ecology, Conservation

CONTENTS

2 Videos, 1 Resource

OVERVIEW

This activity launches the *Extinction Stinks!* unit. Students watch a video exploring the rising plight of endangered species around the world. They then use the lens of the critically endangered Sumatran rhino to identify what they need to know to answer the unit’s driving question, “How can we prevent a species from going extinct while also meeting the needs of humans and other local species?”

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/sos-saving-our-species/>

In collaboration with

DIRECTIONS

This activity is part of the *Extinction Stinks!* unit.

1. Introduce the *Extinction Stinks!* unit with a video and interactive activity on personal thresholds for conservation.

- Show students the *Survival of the Fittest* video, ending at minute 2:25, after “We don’t really know when we are going to cross thresholds.”
 - The video claims that catastrophe doesn’t come with losing a single species, but it can happen once we cross a threshold.
- Ask: *What is a threshold?*
 - Guide students to the idea from the video that a threshold is an amount of species lost that leads to disruptive, irreversible change in that ecosystem.
- Have students imagine that they are in one of their favorite ecosystems (e.g., a rainforest, the ocean, or a local park).
- Ask them to raise their hand if they think that losing one percent of species there would lead to disruptive change.
 - Continue prompting students with higher percentages (e.g., 10 percent of species lost, 25 percent of species lost).
 - Keep increasing the percentage until all students have raised their hand to indicate their personal threshold for species loss that would lead to disruptive change in that ecosystem.
 - Point out that different students’ thresholds were at different levels, indicating differences in opinion on how much species loss is too much.
- Explain that every species that is lost is one step closer to that threshold where an ecosystem experiences irreversible disruption. This unit is about understanding extinction and its many impacts on local ecosystems and humans, and considering options for preventing extinction from occurring.

2. Define different levels of conservation status using an infographic.

- Display the *Endangered Species Categories and Criteria* chart on the board or distribute paper copies to small groups of students.
- As a class, create a working definition for the key vocabulary for the activity: threatened, endangered, extinction, species, and ecosystem.
 - These definitions could be recorded in student notebooks or in a common glossary available to students.

3. Introduce students to the Sumatran rhinoceros and the goals for the unit using an introduction video and a *Know & Need to Know* chart.

- Introduce students to the unit’s driving question and final project:
 - Driving question: “How can we prevent a species from going extinct while also meeting the needs of humans and other local species?”
 - Final project: Students will work together as a class to study the Sumatran rhino, a species at high risk of extinction. This supports their subsequent work in small groups to address issues specific to a different target species. Students’ final products will provide recommendations about how best to protect their target species from going extinct. They will give a pitch to try to secure funding for their conservation project.
- Create a class *Know & Need to Know* chart based on students’ understanding and questions about the unit and its driving question.
 - Use the process below to elicit and record students’ ideas and questions related to the unit, which can be revisited over time.
 - Show the *Saving the Sumatran Rhino* video.
 - Before playing the video, locate Sumatra and Indonesia on a map or globe to give context for where the species lives.
 - Using the video as a springboard to discuss issues pertaining to endangered species in general, prompt students to discuss the following questions with a partner, and then share their responses with the class:
 - *What do we already know about conservation solutions to help prevent endangered species’ extinction, while balancing the needs of other local species and humans?*
 - Examples may include:
 - Endangered species need habitat to live in.

- Endangered species need food and water.
- Humans may have competing needs with endangered species, such as using habitat for industries or providing food or fuel.
- *What do we need to know to develop solutions for how to best protect endangered species and the needs of other local species and humans?*
- Examples may include:
 - Why a particular endangered species is vulnerable
 - How to balance human use with species' use
 - How species are identified as endangered
- Tell students that they will revisit the class *Know & Need to Know* chart over the course of the unit as they learn more to see what they can move from the "Need to Know" to "Know" category.

4. Have students respond to an exit ticket prompt to elicit their initial ideas about strategies to help protect the Sumatran rhino from extinction.

- Ask students to respond individually to the following exit ticket prompt: *At the end of the video, the speaker said that the primary goal is to make "one effort to boost the number of rhino births every year." Based on what you have learned so far, does this seem like a good strategy to save the Sumatran rhino from extinction? Why or why not?*
- Possible responses include:
 - Reproduction is important to increase population numbers.
 - Reproduction alone is not enough. For example, habitat protection must also be in place.
 - Restoring land to currently unprotected rainforests is also important.
 - Understanding the full scope of the Sumatran rhino's life history matters for protection of the species.

Tip

Step 1: Although the video is correct in saying that individual species loss does not always lead to major ecosystem disruption, “keystone species” are critical to an entire ecosystem’s normal functioning. It would be very hard to recover from losing an ecosystem’s keystone species, such as wolves in the Yellowstone ecosystem.

Tip

Step 1: You may choose to distinguish between human-driven extinction and the natural rate of extinction. Without human influence, extinction would still be occurring at a rate 100-1,000 times slower than what scientists currently observe. The goal of this unit is to focus on preventing human-driven extinction.

Tip

Step 2: In the classification chart, the differences between “endangered” and “critically endangered” are listed. Though it is not required for the purpose of this unit, you may want to discuss the differences between those two classifications so that students understand the different levels of urgency that each designation represents. The Sumatran rhino, the class focal species, is critically endangered.

Tip

Step 3: A *Know & Need to Know* chart is an excellent way to draw out student thinking and create a desire to uncover more information. Read more about this tool in [Opening Paths](#).

Tip

Step 3: You might choose to play the *Saving the Sumatran Rhino* video twice: once for understanding, and the second time for students to take notes on what they know or need to know to answer the driving question for this focal species.

Informal Assessment

Use students’ responses to the videos and creating the class *Know & Need to Know* chart to evaluate their prior knowledge and initial thinking about endangered species and extinction. This information can be used to leverage and build on students’ ideas in subsequent activities.

Extending the Learning

Explore a local species using the [U.S. Fish and Wildlife Service's Endangered Species Finder](#). You could choose to learn more about these species as one or more of the target species in Lesson 2, *Eliminating Extinction—It's Complicated*, if you can find grade-appropriate resources.

OBJECTIVES

Subjects & Disciplines

Biology

- [Ecology](#)
- Conservation

Learning Objectives

Students will:

- Understand the differences between major categories that describe species' conservation status, including vulnerable, endangered, and extinct.
- Identify the Sumatran rhino as a species at risk of extinction.
- Share what they already know and what they need to know to protect endangered species without compromising the needs of other species, including humans.

Teaching Approach

- Project-based learning

Teaching Methods

- Brainstorming
- Discussions
- Visual instruction

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
 - Information, Media, and Technology Skills
 - Information Literacy
 - Information, Communications, and Technology Literacy
 - Media Literacy
- 21st Century Themes
 - Global Awareness
- Critical Thinking Skills
 - Analyzing
 - Applying
 - Understanding
- Geographic Skills
 - Acquiring Geographic Information
- Science and Engineering Practices
 - Asking questions (for science) and defining problems (for engineering)
 - Constructing explanations (for science) and designing solutions (for engineering)
 - Obtaining, evaluating, and communicating information

National Standards, Principles, and Practices

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

- **CCSS.ELA-LITERACY.SL.7.1:**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on Grade 7 topics, texts, and issues, building on others’ ideas and expressing their own clearly.

NEXT GENERATION SCIENCE STANDARDS

- **Crosscutting Concept 2:**

Cause and Effect

- **Disciplinary Core Ideas LS2.A: Interdependent Relationships in Ecosystems:**

- **MS-LS2: Ecosystems: Interactions, Energy, and Dynamics:**

MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem

- **Science and Engineering Practice 1:**

Asking questions and defining problems

• **Science and Engineering Practice 8:**

Obtaining, evaluating, and communicating information

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Blank paper
- Writing surface

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, Projector, Speakers

PHYSICAL SPACE

- Classroom

GROUPING

- Large-group instruction

OTHER NOTES

When making their *Know & Need to Know* chart, students may want to have a place to put questions they have about the Sumatran rhino or other topics, but that are not directly connected to the driving question. Consider having an “I Wonder” board in your classroom or designating a space in students’ notebooks specifically for questions that are not directly tied to the driving question, but that students want to remember and return to later.

BACKGROUND & VOCABULARY

Background Information

Scientists estimate that the rate of species extinction today is tens to hundreds of times higher than before humans lived on the planet. In addition to habitat protection and restoration and minimizing exploitation, humans can use technology and creative problem-solving to protect threatened species. Humans are working to understand how best to conserve many species, including the Sumatran rhino, through studying their ecological and reproductive needs and minimizing pressures on their ecosystems.

Prior Knowledge

["Students should be familiar with the basic definitions of an ecosystem and a species, although these will be reviewed during the activity."]

Recommended Prior Activities

- None

Vocabulary

| Term | Part of Speech | Definition |
|--------------------|-----------------------|--|
| ecosystem | <i>noun</i> | community and interactions of living and nonliving things in an area. |
| endangered species | <i>noun</i> | organism threatened with extinction. |
| extinction | <i>noun</i> | process of complete disappearance of a species from Earth. |
| species | <i>noun</i> | group of similar organisms that can reproduce with each other. |
| threatened species | <i>noun</i> | organism that may soon become endangered. |
| threshold | <i>noun</i> | point in a process that must be met to start a new stage in the process. |

For Further Exploration

Interactives

- [National Geographic: See a Different Endangered Animal in Every U.S. State](#)

Websites

- [U.S. Fish and Wildlife Service: Endangered Species Finder](#)



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