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LESSON

## Eliminating Extinction—It’s Complicated!

Students receive their target species and perform background research. Students learn about working with local populations to protect endangered species and read several conservation success stories. Students engage with two conservation storytellers and apply the power of storytelling to their target species. They then compare two grant proposals to prepare for writing their own proposals. This lesson is part of the *Extinction Stinks!* unit.

**GRADES**

6 - 8

**SUBJECTS***Biology, Ecology, Conservation***CONTENTS**

4 Activities

## In collaboration with



ACTIVITY 1: CHALLENGES FACED BY  
ENDANGERED SPECIES | 1 HR 40 MINS

## DIRECTIONS

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

**1. Introduce the term “conservation” to prepare students to begin planning their conservation plans for their target species.**

- Ask: *What does the word “conservation” mean to you?* Possible responses include:

- Using resources sparingly
  - Promoting environmental initiatives
  - Reducing hunting or fishing in an area
- Show the video [Definitions in the Field: Conservation](#) (0:43).
    - Ask students to reflect on the definition National Geographic Explorer Mateus Mutemba provides: “the careful use of resources...so that the things we need to survive will be around for the future.”
    - Ask: *How is conservation connected to helping endangered species?* Possible responses include:
      - Reducing threats to endangered species and conserving their populations increases biodiversity.
      - Protecting the habitats of endangered species preserves the ecosystem services provided by that area.
      - Conserving resources allows for their use by endangered species.
    - Explain that students will be creating a solution to protect their target species that embodies conservation: the careful use of resources to allow for their target species, other species, and local humans to access what they need from their environment.

## 2. Guide students in collaborating in their project groups to research their species.

- Share students’ project group and species assignments for the [Extinction](#) Stinks! unit project. Explain that students will gather necessary information about their target species and its ecosystem, which will be used to design a strategy to protect their species.
- Ask students to refer back to the class *Know & Need to Know* chart for the driving question. Based on what they have learned about the Sumatran rhino and the conservation efforts to prevent its extinction, ask students to identify what they believe they need to know before designing a solution specific to their assigned species. Some examples might include:
  - The species’ food web
  - Where the species lives and its habitat
  - What other organisms share their ecosystem
  - How humans use the species’ ecosystem
- Distribute the *Species Research* handout to students.

- Review the sections of the handout to ensure that students understand their task for each section.
  - Explain that two articles and one video will be provided to each group (links are included on the handout), but that they can use other web resources to add to their understanding.
- Provide students with ample time to explore those resources and keep track of their research on their *Species Research* handout.

### 3. Assess students' understanding with an exit ticket.

- Before students leave, have them record their answers to the four questions below to assess their current understanding of their target species. Prompt students to note any questions they currently cannot answer so that they can return to them in their subsequent project work.
  - *What would you identify as the top one to three threats to your species' survival?*
  - *What is the relationship between your species and human activity?*
  - *What are three other organisms that interact significantly with your species?*
  - *What is one solution that you think would help your target species?*

## Tip

**Step 2:** Guiding students toward reliable resources can be a complex task that requires training and repetition. Read more about strong strategies for teaching students how to evaluate information they encounter on the internet, including lesson plans to use with your students, in [this article](#) from Edutopia.

## Tip

**Step 2:** Student groups may need help delegating tasks to begin research. Suggest having students write their name near the section they will complete first, or pair students in larger groups to identify information together. Many news organizations require finding reliable information from multiple sources, so you might ask students to cite at least two sources for each piece of information.

# Informal Assessment

Use students' exit tickets to evaluate the depth and thoroughness of their research at this point in the project. Some students may need help navigating the resources to ensure that they get all necessary information, while others may want to deepen their understanding with further research.

## Extending the Learning

Have students identify an organization already working to support their target species. If time is available, have students email an expert for more information about their species and how best to support its survival. They may need guidance on how to write a clear, respectful, and direct email.

## OBJECTIVES

### Subjects & Disciplines

#### **Biology**

- Ecology
- Conservation

### Learning Objectives

Students will:

- Learn the life history of a target species.
- Explain major threats to a target species that have led to it becoming threatened.
- Identify the relationships the target species has with other living things in its ecosystem and the ecosystem services provided by that ecosystem.

### Teaching Approach

- Project-based learning

### Teaching Methods

- Cooperative learning
- Information organization

- Research

# Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
  - Information, Media, and Technology Skills
    - Information, Communications, and Technology Literacy
    - Media Literacy
- 21st Century Themes
  - Environmental Literacy
  - Global Awareness
- Geographic Skills
  - Acquiring Geographic Information
- Science and Engineering Practices
  - Obtaining, evaluating, and communicating information

## National Standards, Principles, and Practices

### COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

- **CCSS.ELA-LITERACY.WHST.6-8.7:**

Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

### NEXT GENERATION SCIENCE STANDARDS

- **Crosscutting Concept 2:**

Cause and Effect

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

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

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

- **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 8:**

Obtaining, evaluating, and communicating information.

## Preparation

# BACKGROUND & VOCABULARY

## Background Information

One of the reasons it is so challenging to protect the many species that are endangered around the world is that each has their own unique needs and life history. Learning about a species' relationships to other living things in its ecosystem and how humans access the ecosystem services is crucial to creating conservation solutions.

## Prior Knowledge

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## Recommended Prior Activities

- [Ecosystems Help Everyone—Even Humans!](#)
- [No Species Lives in Isolation](#)
- [SOS—Saving Our Species](#)
- [The Roots of Extinction](#)

## Vocabulary

Term	Part of Speech	Definition
conservation	<i>noun</i>	management of a natural resource to prevent exploitation, destruction, or neglect.
endangered species	<i>noun</i>	organism threatened with extinction.
extinction	<i>noun</i>	process of complete disappearance of a species from Earth.

Term	Part of Speech	Definition
genetic diversity	noun	difference or variety of units of inheritance (genes) in a species.
habitat	noun	environment where an organism lives throughout the year or for shorter periods of time.
species range	noun	native, geographic area in which an organism can be found. Range also refers to the geographic distribution of a particular species.

## ACTIVITY 2: BOUNCING BACK FROM EXTINCTION I 1 HR 15 MINS

### DIRECTIONS

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

#### 1. Lead an initial brainstorm discussion of potential strategies for helping threatened species thrive.

- Initiate a think-pair-share discussion to elicit students' ideas about strategies that are used to help protect endangered species. Record students' responses in a visible place.
- Students' ideas will likely follow from their prior knowledge and experience, as well as their research in the *Challenges Faced by Endangered Species* activity. Examples of students' ideas could include:
  - Increasing protected land
  - Stricter laws on hunting or fishing, both the target species and what it eats
  - Limits on logging or resource extraction from the ecosystem
  - Relocating animals to a new location
  - Removing invasive/non-native species
  - Reduce pollution
  - Engineer solutions to prevent predators from harvesting livestock
  - Establish or increase captive breeding programs and reintroduce individuals into protected or restored habitats
- Record students' responses, leaving space next to their list for additions specific to the Sumatran rhino in Step 4.
- Note with students that endangered species often require multiple strategies for conservation of the species. Students are working to identify one possible solution to help

protect their species, but ultimately many tactics are helpful to protect the species' survival.

## 2. Highlight the need to consider human needs when working to save species, through a class discussion and video.

- Brainstorm reasons why humans may threaten a species' survival. Some responses may include:
  - Hunting/fishing for food
  - Poaching
  - Habitat loss due to development or climate change
- Show the [Environmental Turnaround](#) video (3:57). After the video, lead a discussion emphasizing how humans threatened and later helped species' survival in and around the Gorongosa National Park in Mozambique.
  - Connect this to the unit project by explaining the need to include local communities when designing conservation solutions.

## 3. Read and analyze an article about conservation success stories.

- Distribute copies of the article [12 animals That Bounced Back From The Brink](#) and have students read individually or in pairs.
- Tell students to make a list of all strategies they find that helped the listed endangered species increase their numbers.
- Return to the list created in Step 1 and add any new strategies from the article.
- Have students think about the design criteria that conservationists need to consider when choosing a path to helping an endangered species.
  - Be sure that they consider and include:
    - Meeting the needs of the target species
    - Affordability/feasibility with the available budget and labor
    - The impacts on other species in the ecosystem
    - Preservation of ecosystem services and human needs
  - Considering these constraints will be important for student groups as they design their conservation plan for their target species.

#### 4. Apply conservation lessons to the class focal species, the Sumatran rhino, and extend to students' target species.

- Refer back to the list of possible conservation strategies made in Step 1.
  - Ask students to consider possible conservation solutions for the Sumatran rhino.
    - Ensure students consider a local perspective on different conservation strategies.
    - Prompt students to explicitly connect strategies listed in Step 1 to the Sumatran rhino, recording connections next to their original list.
- Prompt students to meet in their target species groups to discuss which strategies would have the best potential to protect their species.
  - Remind students to consider the criteria and constraints they identified in Step 3 for their local community/ecosystem.
    - Incorporate the perspective of local community members based on students' prior research. *Ask: Would someone living in the area of your target species think differently about conservation strategies than an outsider? Why or why not?*
  - Students can refer to the list on the board to apply conservation strategies to their group's target species.
- Working individually, have students identify what they consider to be the most and least appropriate potential conservation strategies for their focal species. Direct students to support their claims with evidence from their *Species Research* handout from the *Challenges Faced by Endangered Species* activity and reasoning that takes into account species and human needs.

## Informal Assessment

Evaluate students' responses about what solutions would work well for their species and which would not work well to ensure their arguments are logical, clear, and complete. Look for evidence that stems from the research that they completed in the *Challenges Faced by Endangered Species* activity.

## Extending the Learning

Read more about the Endangered Species Act and how it saved many species from imminent extinction. [The U.S. government suggested several changes to the Endangered Species Act in 2019](#), including making it easier for companies to use ecosystems that are important to protected species for development or resource extraction, and taking economic factors into account when deciding which species to protect. Ask students: *Would you choose to make those changes? What are the pros and cons of making such a change?*

## OBJECTIVES

# Subjects & Disciplines

### **Biology**

- Conservation

# Learning Objectives

Students will:

- Brainstorm and identify strategies used by humans to increase the number of specific threatened species in the past.
- Identify criteria and constraints involved in designing conservation strategies to help endangered species.
- Evaluate possible strategies to help protect a target species.

# Teaching Approach

- Project-based learning

# Teaching Methods

- Brainstorming
- Discussions
- Reading

# Skills Summary

This activity targets the following skills:

- 21st Century Themes
  - Environmental Literacy
  - Global Awareness
- Critical Thinking Skills
  - Applying
  - Remembering
  - Understanding
- Science and Engineering Practices
  - Constructing explanations (for science) and designing solutions (for engineering)
  - Engaging in argument from evidence
  - Obtaining, evaluating, and communicating information

# National Standards, Principles, and Practices

## COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

- **CCSS.ELA-LITERACY.RH.6-8.7:**

Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

- **CCSS.ELA-LITERACY.RST.6-8.10:**

By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

## NEXT GENERATION SCIENCE STANDARDS

- **Crosscutting Concept 2:**

Cause and Effect

- **ETS1.B: Developing Possible Solutions:**

There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.

- **LS2.C: Ecosystem Dynamics, Functioning, and Resilience:**

Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health.

- **LS4.D: Biodiversity and Humans:**

Changes in biodiversity can influence humans’ resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on— for example, water purification and recycling.

- **MS. Interdependent Relationships in Ecosystems:**

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

- **Science and Engineering Practice 6:**

Constructing explanations and designing solutions

- **Science and Engineering Practice 7:**

Engaging in argument from evidence

- **Science and Engineering Practice 8:**

Obtaining, evaluating, and communicating information.

## **Preparation**

# BACKGROUND & VOCABULARY

## Background Information

We can learn from past success stories to develop conservation solutions for today’s endangered species, and to plan for the future. The Endangered Species Act of 1973 helped designate funds for species conservation and habitat protection by U.S. federal law. Even earlier, the Migratory Bird Treaty Act of 1918 made it illegal to possess or sell parts of migratory birds to protect the animals that move across borders. Both legislative acts are believed to have stopped the extinction of many species. There are many other creative ways that humans have protected endangered species. For example, people have engineered innovative ways of deterring endangered predators from eating livestock, reducing human-wildlife contact. Local communities may also engage in conservation efforts if they realize that there is value to them, like the Warrior Watch project in Kenya that transitioned Maasai people from hunting lions to protecting them.

## Prior Knowledge

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## Recommended Prior Activities

- Challenges Faced by Endangered Species
- Ecosystems Help Everyone—Even Humans!
- No Species Lives in Isolation
- SOS—Saving Our Species
- The Roots of Extinction

# Vocabulary

Term	Part of Speech	Definition
conservation	<i>noun</i>	management of a natural resource to prevent exploitation, destruction, or neglect.
criteria	<i>plural</i>	set of standards or rules.
	<i>noun</i>	
endangered species	<i>noun</i>	organism threatened with extinction.
extinction	<i>noun</i>	process of complete disappearance of a species from Earth.
extinction	<i>noun</i>	process of complete disappearance of a species from Earth.
habitat	<i>noun</i>	environment where an organism lives throughout the year or for shorter periods of time.

## ACTIVITY 3: THE POWER OF STORY | 50 MINS

### DIRECTIONS

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

1. Introduce the importance of storytelling in conservation through a discussion and video.

- Ask: *How do people tell stories?*
  - Based on their everyday experiences, students' responses may include: sharing stories out loud, writing them down or publishing them in books, creating art, or sharing a photo or video on social media.
- *How might storytelling be used as a tool for conservation?*

- Students may respond by considering the ways stories engage people to think from a new point of view, evoke emotions, or draw them in to learn more.
- Show a short clip of the video [Saving the Creeps](#) with Emerging Explorer and zoologist Lucy Cooke [3:41-7:33].
  - Ask: *How does Cooke use storytelling to protect the “creeps”?*
  - Emphasize how Cooke, the “Amphibian Avenger,” creatively uses social media and humor as important strategies to promote the story of the “ugly” species she works to protect, and how these strategies could help in students’ final projects.
- Explain that this activity will profile two different people using storytelling to support the conservation of endangered species. This will help students design their conservation strategies for their target species in a way that engages their audience.

## 2. Explore two methods of storytelling to help endangered species.

- Introduce one method of storytelling by watching this [Photo Ark video](#) of Joel Sartore’s work.
  - Before watching the video, ask students to pay attention to what feelings arise when watching the video. Afterwards, ask them to share some of their feelings and ideas.
- After the video and discussion, give students time to explore the [Photo Ark](#) gallery on their own or with a partner. Ask students to share new information they learned and describe a species in the Photo Ark. Then, ask them to identify some of the ways the photos drew them in to learn more about the species.
- Next, watch the [Saving the Sumatran Rhino: Behind the Scenes](#) video to learn how National Geographic Explorer Cory Jaskolski is using 3D modeling to help save the Sumatran rhino.
- Generate a discussion by having students compare and contrast Joel Sartore and Cory Jaskolski’s efforts to use media to tell the stories of species at risk of extinction. Guide students to consider the strengths and weaknesses of each method, and ask them to consider if one approach is more compelling than the other.

## 3. As the next step in their project work, prompt students to brainstorm storytelling techniques that they will use when communicating about their endangered species.

- Have students meet with their target species group and brainstorm ways to use storytelling to help promote the conservation of their species.
- After brainstorming, prompt groups to share their ideas with the class for feedback and more ideas about how to share the story of their target species. Collect ideas for later reference when students are preparing their final pitches during the Sharing Our Solutions lesson of the *Extinction Stinks!* unit.

## Informal Assessment

Use students' responses to discussion questions and personal reflections to assess their understanding of the power of storytelling and how it can enhance their final product.

## Extending the Learning

Have students create their own art piece that focuses on their target species or a species they care about. They could use drawings, photos, or a catchy slogan to engage the viewer and capture their attention to learn more about the issues facing that species. Encouraging diverse forms of creative expression reinforces that there are many ways to tell stories that help connect people to nature. This could be used as an extension of their work to support their target species or an independent enrichment activity.

## OBJECTIVES

## Subjects & Disciplines

### **Biology**

- Ecology
- Conservation

## Learning Objectives

Students will:

- Explain the importance of storytelling in motivating action to save endangered species.
- Evaluate two different storytelling strategies used to promote conservation.
- Apply storytelling ideas to inject narrative into their strategy for protecting an endangered species.

# Teaching Approach

- Project-based learning

# Teaching Methods

- Discussions
- Multimedia instruction
- 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
  - Learning and Innovation Skills
    - Communication and Collaboration
    - Creativity and Innovation
- 21st Century Themes
  - Environmental Literacy
  - Global Awareness
- Science and Engineering Practices
  - Obtaining, evaluating, and communicating information

# National Standards, Principles, and Practices

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS  
& LITERACY

- CCSS.ELA-LITERACY.RH.6-8.7:

Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

## NEXT GENERATION SCIENCE STANDARDS

- **Crosscutting Concept 2:**

Cause and Effect

- **ETS1.B: Developing Possible Solutions:**

There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.

- **LS2.C: Ecosystem Dynamics, Functioning, and Resilience:**

Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health.

- **LS4.D: Biodiversity and Humans:**

Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on— for example, water purification and recycling.

- **MS. Interdependent Relationships in Ecosystems:**

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

- **Science and Engineering Practice 8:**

Obtaining, evaluating, and communicating information.

### Preparation

## BACKGROUND & VOCABULARY

### Background Information

Joel Sartore has used his work as a photographer to capture portraits of many of the world's endangered species. His "Photo Ark" project aims to photograph every species in captivity in the world. Another creative way that individuals have used to capture the essence of species that are too protected or threatened to be practical for the public to encounter firsthand is 3D modeling. By using 3D scans, virtual reality can bring anyone around the world up close

and personal with some of the most threatened species, like the Sumatran rhino. Technology can be an excellent way to connect people with species around the world and inspire their protection.

## Prior Knowledge

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## Recommended Prior Activities

- [Bouncing Back from Extinction](#)
- [Challenges Faced by Endangered Species](#)
- [Ecosystems Help Everyone—Even Humans!](#)
- [No Species Lives in Isolation](#)
- [SOS—Saving Our Species](#)
- [The Roots of Extinction](#)

## Vocabulary

Term	Part of Speech	Definition
<b>captivity</b>	<i>noun</i>	confinement or imprisonment.
<b>conservation</b>	<i>noun</i>	management of a natural resource to prevent exploitation, destruction, or neglect.
<b>digital story</b>	<i>noun</i>	fictional or nonfictional narrative told through the use of media such as photos, maps, video, and audio recordings.
<b>endangered species</b>	<i>noun</i>	organism threatened with extinction.
<b>extinction</b>	<i>noun</i>	process of complete disappearance of a species from Earth.
<b>species</b>	<i>noun</i>	group of similar organisms that can reproduce with each other.

## ACTIVITY 4: HELPING THE SUMATRAN RHINO

### I 50 MINS

## DIRECTIONS

*This activity is part of the [Extinction Stinks!](#) unit.*

**1. Introduce the concept of a grant proposal.**

- Tell students to imagine they are part of an organization that has funds to support projects trying to help conserve the Sumatran rhino. Ask: *How might you identify what to do next?*
  - Ideas might include asking local experts, having a competition, running an experiment, looking at other similar species' successes/failures.
- Explain to students that when organizations or governments set aside funds to fix an issue, they request grant proposals from groups or individuals who think they have solutions to the problem.
- Student groups will be writing their own grant proposals and sharing them with the class to advocate for their solution to the threats faced by their target species.
  - Distribute the Grant Proposal handout that students will use to draft their group's grant proposal.
  - Review each section of the proposal together, explaining each piece and answering any questions students have about what is required.

## **2. Have students collaborate to evaluate two sample proposals using a provided rubric.**

- Explain that as experts in Sumatran rhino conservation, students are now authorized to review two proposals for conservation measures trying to protect the species.
- Distribute hard copies of Sample Grant Proposals and the Proposal and Pitch Rubric. Inform them that this is the same rubric that will be used to evaluate their final projects.
- Direct students to work in their project groups to track their ratings on both the rubric and the grant proposals by annotating where they found each piece of information required, if present, and then determine whether to fund each project.

## **3. Lead a class discussion to debrief the evaluation process of the sample grant proposals.**

- After each group has completed their evaluation, lead a class discussion comparing the strengths and weaknesses of each proposal.
  - When considering the second proposal, highlight some of the alternative conceptions listed; for example, the act of making something illegal does not mean it will not occur.
- Then have students consider an authentic constraint faced by those funding scientific grants:

- *If you could fund only one proposal, which would you choose?*
- *What would you add or change about the existing grant proposals?*

## Tip

**Steps 2-3:** The second sample grant proposal was intentionally written to include common alternative conceptions about endangered species and conservation. See “Other Notes” for details; be sure to review these with students.

## Informal Assessment

Collect and use students’ rubric responses to the sample proposals to evaluate how well they understand each component of the grant proposal, which connects to each prior portion of the unit’s lessons: biodiversity, food webs, and ecosystem services. The second proposal also has common alternative conceptions about the concepts taught in the unit so far. These help to spark conversations with students who need guidance to better understand the concepts before diving into their final assessment. See “Other Notes” for more information about things to look for in student responses.

## Extending the Learning

Have students explore real grant proposals used by projects that received funding. Explore web resources like these [Field Conservation](#) grants or ask a local scientist or conservation agency if they would be willing to share past grant proposals with your class for educational use. Seeing the amount of work and detail that goes into a successful grant proposal can be daunting, but it’s how conservation gets done!

## OBJECTIVES

## Subjects & Disciplines

### **Biology**

- [Ecology](#)
- Conservation

## Learning Objectives

Students will:

- Explain why grant proposals are an important part of funding conservation projects.
- Take on the authentic role of expert funders to evaluate the validity of competing grant proposals using a rubric.

## Teaching Approach

- Project-based learning

## Teaching Methods

- Modeling
- Reading
- Reflection

## Skills Summary

This activity targets the following skills:

- 21st Century Themes
  - Environmental Literacy
  - Global Awareness
- Critical Thinking Skills
  - Analyzing
  - Applying
  - Evaluating
  - Remembering
  - Understanding
- Science and Engineering Practices
  - Obtaining, evaluating, and communicating information

## National Standards, Principles, and Practices

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS  
& LITERACY

- **CCSS.ELA-LITERACY.RST.6-8.5:**

Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

## NEXT GENERATION SCIENCE STANDARDS

- **Crosscutting Concept 2:**

Cause and Effect&nbsp;

- **ETS1.B: Developing Possible Solutions:**

There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.

- **MS. Interdependent Relationships in Ecosystems:**

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

- **Science and Engineering Practice 8:**

Obtaining, evaluating, and communicating information.

### Preparation

## BACKGROUND & VOCABULARY

### Background Information

Grant proposals are a common way that nonprofit organizations secure funding for important projects that support causes like protecting endangered species. The first sample grant proposal in this lesson outlines the major strategies designed by Sumatran Rhino Rescue to address the unique challenges faced by the Sumatran rhino. The second sample describes several common alternative conceptions about conservation that should be addressed before students begin their work identifying their top choice for conservation strategies for their final project.

### Prior Knowledge

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### Recommended Prior Activities

- [Bouncing Back from Extinction](#)
- [Challenges Faced by Endangered Species](#)

- [Ecosystems Help Everyone—Even Humans!](#)
- [No Species Lives in Isolation](#)
- [SOS—Saving Our Species](#)
- [The Power of Story](#)
- [The Roots of Extinction](#)

# Vocabulary

<b>Term</b>	<b>Part of Speech</b>	<b>Definition</b>
<b>conservation</b>	<i>noun</i>	management of a natural resource to prevent exploitation, destruction, or neglect.
<b>endangered species</b>	<i>noun</i>	organism threatened with extinction.
<b>extinction</b>	<i>noun</i>	process of complete disappearance of a species from Earth.
<b>grant</b>	<i>noun</i>	money given to a person or group of people to carry out a specific project or program.
<b>grant writing</b>	<i>noun</i>	process of applying to a person, business, or other organization for money or other funding.

