

# Endangered Species Curriculum – Middle School

## Stage 1 – Desired Outcome

### Established GOALS:

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- Students will understand the definition of “endangered species.”
- Students will understand the interaction between biotic and abiotic parts of an ecosystem.
- Students will choose one of 10 endangered species to read about and research the role it plays in the ecosystem where it currently lives.
- Students will describe the species, its role in the ecosystem, the cause of its endangered status, and what must be done to save this species.
- Students will create a “missing species” report, which is like a “missing persons” report and/or a “missing species” poster, which is like a “missing pet/person” poster.
- Students may share their reports and/or posters with their school or community in a number of ways.

Standards by grade:

[Grade 6](#)

[Grade 7](#)

[Grade 8](#)

[Next Generation Standards](#)

National Arts Standards

### UNDERSTANDINGS

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**Big Idea:** Students will understand that each species plays an important role in an ecosystem. When changes are made to the environment, plants and animals must adapt or move if they are to survive. People will have to change their behavior in order to keep the ecosystem intact.

**Understandings:** Students will understand how one endangered species is connected to the ecosystem where it lives. They will learn what is causing it to be endangered, and how we could change our behavior to save the endangered species.

**Misunderstandings:** Many people think that losing species relates to the idea of survival of the fittest- a 19<sup>th</sup> century concept that says those species which are eliminated in the struggle for existence are unfit- and that if species can't adapt to the changing environment humans don't have an obligation to do what we can to save them.

Sometimes environmental problems are caused by businesses that want to make money quickly for the

### ESSENTIAL QUESTIONS:

Q

#### Questions that foster inquiry:

- What does it mean for a species to be extinct?
- Is land only important to meet the needs (food production, resources for building things, places to live) of human beings? Do we need wild areas in addition to the land used by people to meet their needs? Why? Why not?
- Should people change their behaviors to save an endangered species? Why? Why not?
- What changes are you willing to make in order to save a species? (Examples: Would you be willing to buy fewer material things? Would you have a birthday party and suggest people make donations to save a species in your name rather than give you a gift? Will you consider donating still-usable items so they don't end up in a landfill prematurely? Will you shop at environmentally conscious businesses? Make greater efforts to recycle at home

<p>people who have invested in the business. If we disagree with this motive, we need to educate ourselves and make our voices heard. We can also be more thoughtful of our material consumption and spend money in stores that are helping solve environmental problems.</p>	<p>and at school?</p>
<p><b>Knowledge: K</b>  Students will know that many species of plants and animals are going extinct. They will be able to describe the animal or plant species that they choose to research. They will be know what is causing it be endangered. They will learn about changes we could make in our behaviors to help the species. They will learn that we will need to educate ourselves and make sure our voices are heard.</p>	<p><b>Skills: S</b></p> <ul style="list-style-type: none"> <li>• Students will understand the importance of the different types of relationships that exist in an ecosystem.</li> <li>• Students will describe a species and what it needs to survive using text and visuals.</li> <li>• Students will be able to create an argument for saving a specific endangered species in words and/or images.</li> </ul>
<p><b>Stage 2 – Assessment Evidence</b></p>	
<p><b>Performance Tasks: T</b></p> <p>Students will visit the Endangered Species Coalition Project web site to learn about the species they have chosen to learn about. They may visit other web sites to gain a fuller understanding. Additional sources of information on the ten species are provided in the additional resources sheet.</p> <p>Students demonstrate their understanding of the problem of endangered species by creating a “missing species” report. The reports may be used in a number of ways to draw attention to the problem and its possible solutions. For suggestions on follow–up activities and ways of using these reports please see the OE section.</p> <p>Students demonstrate their understanding of the problem of endangered species by creating “missing species” poster. The posters may be displayed in a number of ways to draw attention to the problem and its possible solutions. For suggestions on follow–up activities and ways of using these posters please see the OE section.</p>	<p><b>Other Evidence: OE</b></p> <p>Students can present their reports and/or posters to the class.</p> <p>Students can display their Missing Species Reports and/or posters in their school as an art installation.</p> <p>Students and teachers can organize a display of the reports and posters at their local library or a community center.</p> <p>Students and teachers can email their Missing Species Reports to their Congressional Representatives and Senators and also to the Endangered Species Coalition to support advocacy for endangered species.</p> <p>Students may hang their posters around their community as if they were looking for a lost pet.</p> <p>Students and teachers can organize with other classes in their community to select one day of action where they hang their posters around town as a guerrilla art installation.</p> <p>Teachers can schedule a class trip to their local US</p>

Fish and Wildlife Service office and also file the reports with them.

### Stage 3 – Learning Plan

#### Learning Activities:

- **Engage** – Before you start this unit, review what students know about ecosystems and biomes. You can help review what they know using a short video:

For younger students you can use:

<http://studyjams.scholastic.com/studyjams/jams/science/ecosystems/ecosystems.htm>

For all students:

How Whales Change the Climate

<https://www.youtube.com/watch?v=M18HxXve3CM>

Karoo Desert

<http://video.nationalgeographic.com/video/karoo-desert>

TED Talk by Louie Schwartzberg: The Hidden Beauty of Pollination:

[https://www.youtube.com/watch?v=eqsXc\\_aefKI](https://www.youtube.com/watch?v=eqsXc_aefKI)

An interesting primer can be found at: <http://www.actionbioscience.org/environment/esa.html>

After students have viewed the video(s), ask them, “What would it mean for the whale populations to go extinct. If the whales are gone, who suffers?”

“What could happen if we don’t do what we can to save all the different pollinators from extinction?”

We just learned about how pollinators affect our food supplies and the environment, how whales affect climate, and how climate impacts the environment. Do you think we understand everything about the species that have already gone extinct recently? Do you think we understand everything about the species that are currently endangered?

Have your students work in small groups to discuss each section of the Endangered Species Framework page. Prompt them by asking them to consider all the different parts of an ecosystem and how changing any one part of an ecosystem makes survival difficult for all the species in that ecosystem. Ask the groups to report back to the class and as a group decide on suitable responses. Ask each student to fill in each part of her/his [Framework](#) page.

Show students the following quote from the Endangered Species Coalition web site:

“The Endangered Species Act is designed to protect not only large, charismatic wildlife such as grizzly bears and bald eagles, but also species that are more obscure, yet equally unique and critical to the web of life. The Act protects the ecosystems upon which imperiled wildlife and many other species depend, including humans. Through the Endangered Species Act, Americans said it’s not enough that wildlife survive in the sterile confines of zoos, but that these species should also thrive in natural environments.”

You can also share this quote with your students:

“The only way to save a rhinoceros is to save the environment in which it lives. . .”

-David Attenborough

Tell students they are going to learn about endangered species and how they fit into their ecosystem. Show your students the following short video.

Endangered Species:

<http://www.pbslearningmedia.org/resource/idptv11.sci.life.eco.d4kend/endangered-species/>

- **Explore** – Show students the Endangered Species Coalition web site at <http://www.endangered.org/campaigns/vanishing-wildlife/> Explain that students will choose an endangered plant or animal from the web site to learn about. Ask them to explore the site to choose an endangered plant or animal to research. If students would like to see if any of the ten species live in your state, visit <http://www.fws.gov/endangered/>

Students should sign up (you can do this as an individual or group project) to learn about one of the species on the list.

Ask students to fill in the [Information Worksheet](#). They should use the materials provided by the Endangered Species web site as a starting point, but they can also visit many more web sites to gain a deeper understanding if they choose. There are many additional sources of information listed in the additional resources sheet.

- **Explain** – Ask students to meet together as a group again. List the reasons these animals are endangered. Can anyone make any generalizations about what is happening? How are ecosystems changing?
- **Elaborate** – Have students fill out a missing species report. They can fill in the missing species report form using what they have learned from class discussion and additional in/out of class research (online, talking to parents, books or videos). They can draw a picture of the species on the form, cut out a picture from a magazine or print a picture from an online source and use a glue stick to attach it to the form. They can create a collage of different images of the species, if desired.

Students and teachers can scan and email the report forms to their Congressional Representative (find the contact information here: <http://www.house.gov/representatives/find/> or <http://www.senate.gov/senators/contact/> You can also email the reports to the Endangered Species Coalition for their records **NEED EMAIL ADDRESS HERE**

Students make a missing species poster. Students illustrate the poster using what they learned about ecosystems and their selected species. Students with special needs may use the fliers with line drawings and fill in the drawings based on images from the gallery provided on The Endangered Species Coalition website, other internet sites or the pre-designed missing species posters. In general, students will use the poster template with a blank space to create their own drawing of the species they selected. Be sure they are using the correct template for their species. Encourage students to experiment with different drawing materials than they are used to and to expand their use of the elements of design by employing shading techniques and creating texture in their drawings.

Students can share their work with other classes in their school or in a library or community center by creating an art installation of their posters and /or reports. Signage can encourage visitors to tear off the contact information for Congressional Representatives on the bottom of each flier and call to voice their thoughts. Students can hang butcher paper and gather responses from family and community members to the report/poster imagery for ways that individuals can help protect endangered species.

The class can hang copies their original artwork posters and also copies of the pre-designed posters around their neighborhoods as if they were missing pet posters. The Endangered Species Coalition website has a link to a grant application to cover the costs of color copies.

Teachers and students can coordinate with other classes and schools to schedule a Day of Action (we recommend coordinating around Endangered Species Day-May 20, 2016) and create a guerilla art installation of posters around their neighborhood, town or city. The more posters the better!

Teachers can schedule a field trip to their local US Fish and Wildlife Service office to file the reports with them. (this is a good PR opportunity- see Media Advisory and Event Advisory templates). Find your local office here: <http://www.fws.gov/offices/index.html>

- **Evaluate** – Students fill in the final [Evaluation](#) page to help them think more deeply about what they have learned. Pair up and interview each other about what you have learned. Discuss answers in whole group.

## Grade 6 Common Core Standards and National Arts Standards

### Reading Informational Text Standards

#### *Key Ideas and Details:*

CCSS.ELA-LITERACY.RI.6.1

Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

#### *Integration of Knowledge and Ideas:*

CCSS.ELA-LITERACY.RI.6.7

Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

### Writing Standards

#### *Text Types and Purposes:*

CCSS.ELA-LITERACY.W.6.1

Write arguments to support claims with clear reasons and relevant evidence.

CCSS.ELA-LITERACY.W.6.1.A

Introduce claim(s) and organize the reasons and evidence clearly.

CCSS.ELA-LITERACY.W.6.1.B

Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.

CCSS.ELA-LITERACY.W.6.2

Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY.W.6.2.A

Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.6.2.B

Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.

CCSS.ELA-LITERACY.W.6.2.D

Use precise language and domain-specific vocabulary to inform about or explain the topic.

CCSS.ELA-LITERACY.W.6.2.F

Provide a concluding statement or section that follows from the information or explanation presented.

***Research to Build and Present Knowledge:***

CCSS.ELA-LITERACY.W.6.7

Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.

**National Arts Standards: Visual Arts**

***Visual Arts / Creating:***

Anchor Standard: Organize and develop artistic ideas and work

VA:Cr2.1.6

Demonstrate openness in trying new ideas, materials, methods, and approaches in making works of art and design.

**Grade 7 Common Core Standards**

**Reading Informational Text Standards**

***Key Ideas and Details:***

CCSS.ELA-LITERACY.RI.7.1

Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

***Craft and Structure:***

CCSS.ELA-LITERACY.RI.7.4

Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.

***Research to Build and Present Knowledge:***

CCSS.ELA-LITERACY.W.7.7

Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.

**Writing Standards**

***Text Types and Purposes:***

CCSS.ELA-LITERACY.W.7.1

Write arguments to support claims with clear reasons and relevant evidence.

CCSS.ELA-LITERACY.W.7.1.A

Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically.

CCSS.ELA-LITERACY.W.7.1.B

Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.

CCSS.ELA-LITERACY.W.7.2

Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY.W.7.2.A

Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.

CCSS.ELA-LITERACY.W.7.2.B

Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.

CCSS.ELA-LITERACY.W.7.2.D

Use precise language and domain-specific vocabulary to inform about or explain the topic.

CCSS.ELA-LITERACY.W.7.2.F

Provide a concluding statement or section that follows from and supports the information or explanation presented.

***Research to Build and Present Knowledge:***

CCSS.ELA-LITERACY.W.7.7

Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.

**National Arts Standards: Visual Arts**

***Visual Arts / Creating:***

Anchor Standard: Organize and develop artistic ideas and work

VA:Cr2.1.7

Demonstrate persistence in developing skills with various materials, methods and approaches in creating works of art or design.

## Grade 8 Common Core Standards

### Reading Informational Text Standards

#### *Craft and Structure:*

CCSS.ELA-LITERACY.RI.8.4

Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.

#### *Integration of Knowledge and Ideas:*

CCSS.ELA-LITERACY.RI.8.7

Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.

### Writing Standards

#### *Text Types and Purposes:*

CCSS.ELA-LITERACY.W.8.1

Write arguments to support claims with clear reasons and relevant evidence

CCSS.ELA-LITERACY.W.8.1.B

Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.

CCSS.ELA-LITERACY.W.8.1.E

Provide a concluding statement or section that follows from and supports the argument presented.

CCSS.ELA-LITERACY.W.8.2.B

Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.

CCSS.ELA-LITERACY.W.8.2.D

Use precise language and domain-specific vocabulary to inform about or explain the topic.

CCSS.ELA-LITERACY.W.8.2.F

Provide a concluding statement or section that follows from and supports the information or explanation presented.

#### *Research to Build and Present Knowledge:*

CCSS.ELA-LITERACY.W.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.

### National Arts Standards: Visual Arts

#### *Visual Arts / Creating:*



Anchor Standard: Organize and develop artistic ideas and work

VA:Cr2.1.8

Demonstrate willingness to experiment, innovate and take risks to pursue ideas, forms and meanings that emerge in the process of art-making or designing.

## Middle School Next Generation Standards

**These NextGen Standards are not specifically addressed in this project, but knowing these concepts would be very helpful in fulfilling the requirements.**

### **LS2.A: Interdependent Relationships in Ecosystems**

- Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)
- In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. (MS-LS2-1)
- Growth of organisms and population increases are limited by access to resources. (MS-LS2-1)
- Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared. (MS-LS2-2)

### **LS2.B: Cycle of Matter and Energy Transfer in Ecosystems**

- Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)

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

- Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)
- 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. (MS-LS2-5)

### **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. (secondary to MS-LS2-5)

### **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. (secondary to MS-LS2-5)

## Endangered Species Framework (whole group)

What do we already know about endangered species? What is a species? What does “endangered” mean?

What does it mean for a species to go extinct? What are some possible consequences or effects that could occur when a species goes extinct?

**How do Living Parts (Biotic) function in an ecosystem?**

**Plants**

**Animals**

**Decomposers**

**How do Nonliving Parts (Abiotic) function in an ecosystem?**

**Sunlight**

**Air**

**Water**

**Soil**

What do we already know about how impacting one element of an ecosystem impacts the entire ecosystem?

What do we want to learn more about?

Name \_\_\_\_\_

**The species I have chosen is:** \_\_\_\_\_

Describe the plant or animal you have chosen? What does it look like?

What does my plant or animal need to survive? What kind of shelter? What kind of food? What environmental conditions?

Where does my plant or animal live? Describe the ecosystem.

What are the things that are threatening the survival of my plant or animal?

What changes could we make to our behaviors and actions to help this species survive?

What relationships within the ecosystem or habitat might be damaged or destroyed without my plant or animal present?

# Evaluation

1. What did I learn about Endangered Species?

2. How did I share my information?

3. Since we cannot save all the endangered species, what are three criteria you think we might use to choose the endangered species we want to spend money and effort to save?

4. What changes are you willing to make to help save any endangered species? Now that you know more about the species are you willing to do more to protect them than you were before? Why? Why not?