



# BIODIVERSITY AT RISK

## YOUR CHOICES MATTER

### Dear Educator,

Biodiversity is the “fabric of life!” This program is designed to introduce students to biodiversity, foster an appreciation for the interconnectedness of life, and explore steps we can all take to address biodiversity loss around the world.

This collaboration from the National Academies of Sciences, Engineering, and Medicine and the curriculum specialists at Young Minds Inspired encourages students to explore the subject of biodiversity, including what it means, what human activities affect biodiversity and how, and what we can do to improve biodiversity.

We hope that you enjoy this program and will share it with other teachers. And please tell us what you think at [ymiclassroom.com/feedback-biodiversity](https://ymiclassroom.com/feedback-biodiversity). We look forward to your comments and suggestions.

Sincerely,  
Dr. Dominic Kinsley  
Editor in Chief  
Young Minds Inspired



Questions? Contact YMI  
toll-free at 1-800-859-8005 or by  
email at [feedback@ymiclassroom.com](mailto:feedback@ymiclassroom.com).

### Target Audience

Grades 6–8

### Program Components

Available at [ymiclassroom.com/biodiversity](https://ymiclassroom.com/biodiversity):

- This teacher’s guide
- Four reproducible student activities
- A curriculum standards chart
- An online feedback form

### Concepts & Skills

Examine the relationships and links between organisms in a biodiverse world	Analytical thinking
Make informed decisions about how to improve biodiversity	Creativity
Raise awareness of the impact of climate change on biodiversity	Reading Comprehension

### About the *Biodiversity at Risk: Today’s Choices Matter* Report

Habitat destruction, resource exploitation, and climate change are among the many stressors that have put 1 million species under threat of extinction and sharply reduced the populations of many plant and animal species. This report, produced by an international committee of experts, provides a publicly accessible overview of the many dimensions of biodiversity and why it’s vital to the health of all life on the planet. It also examines the

causes of biodiversity loss and presents actions that can be taken from the individual to the global level to stop this decline. An interactive version of the report is available at [nap.nationalacademies.org/resource/26384/interactive](https://nap.nationalacademies.org/resource/26384/interactive).

### How to Use the Program

Make photocopies of the activity sheets for each student. Students will need computer access to read sections of the *Biodiversity at Risk: Today’s Choices Matter* interactive report. In addition, they will need art supplies for several of the activities. For Activity 3, students will need access to a large outdoor area.

### Activity 1: BIODIVERSITY 101

To start this activity, ask students to think about the wide array of living organisms that populate our planet — from the people, plants, and animals we see every day to microscopic organisms invisible to the human eye. Explain to students that the relationship of these diverse organisms forms the basis of *biodiversity*. Invite students to share what they know about biodiversity.



Green turtle

**Part 1:** Distribute the activity sheets. Have students read the first two chapters from the *Biodiversity at Risk: Today’s Choices Matter* online report: “What Is Biodiversity?” and “Why Is Biodiversity Important?” (See the link above.) Students should take notes on their reading and complete the lists on the sheet to identify key takeaways. Students might do this activity independently or in small groups.

**Part 2:** Distribute art supplies. Have students create a poster raising awareness about biodiversity and its role in our planet’s survival. Encourage them to focus on key themes mentioned in the article, including their favorite facts or information about biodiversity. Once done, have students present their posters to the class and read their paragraphs explaining why they selected their chosen themes and ideas.

---

## Activity 2: EXPLORING ENDANGERED ANIMALS

To start this activity, ask students to think about the word *endangered*. What does it mean? Explain that scientists have estimated that as many as 1 million species are currently at risk of extinction unless we all take action to do our part to save them.

Ask the students to think about the impact losing animals to extinction would have on the world. Discuss their ideas as a class.

**Part 1:** Distribute the activity sheets. Review the instructions and the meaning of the terms in the word boxes. Have students complete the sheet on their own and then review the answers as a class.

**Answers: Part 1:** 1. African Rhinoceros: grassland grazer (ecosystem benefit), poaching/illegal trade (threat); 2. European Lynx: apex predator (ecosystem benefit), hunting (threat); 3. Coral: provides habitat for other species (ecosystem benefit), climate change (threat); 4. Dugong: maintains marine environment (ecosystem benefit), food loss (threat); 5. Monarch Butterfly: pollination (ecosystem benefit), habitat loss (threat); 6. Hawaiian Ākohekohe: insect control (ecosystem benefit), non-native invasive species such as cats, mongooses, and barn owls (threat)



**Part 2:** Have students select one animal from the list of endangered species to research, focusing on information about the species' ecosystem and its role in it. After completing their research, students will create a presentation that describes the animal, its ecosystem, and why it is endangered. Presentations can be in the form of an image, PowerPoint, or persuasive essay. Students can also develop concrete steps governments and/or individuals can take to protect this animal. Once students have completed their work, have them share their presentations with the class.

---

## Activity 3: BIODIVERSITY IN ACTION

To start this activity, discuss how biodiversity isn't just found in far-off, exotic places — we can see it all around us. Ask students to think about the different kinds of living organisms they see every day. How are they all connected? How do they interact with and rely on each other to survive? Explain that all living organisms are also linked by food webs and food chains. Ask students to think about which kinds of organisms are *producer* species, and which ones are *consumer* species.

**Part 1:** Distribute the activity sheets. Organize students into groups and take them to an outdoor area where they can

observe a variety of plants/trees, animals, birds, insects, etc. Students should complete the chart on the sheet, listing the names of each type of organism they observe, as well as details describing the ecosystems where they make their observations. If it aligns with your school's policy, students might take photos of the organisms they observe using their phones.

**Part 2:** Using their observations, the groups will create their own food web maps using organisms in the ecosystem they observed in Part 1. As an alternative, students might select another ecosystem.

Once students are done, engage the groups in a discussion about what would happen if all the animals in their food web became extinct.

---

## Activity 4: STAND UP FOR BIODIVERSITY

To start this activity, ask students to think about what impact humans have on our environment. How do our actions negatively impact biodiversity? Can we reverse these changes? Explain to students that to enact change in our local communities to protect the environment, we need the help of individuals, businesses, and local elected officials, like mayors and town leaders.

**Part 1:** Distribute the activity sheets. Have students read the "What Can We Do?" chapter (including the "What You Can Do As An Individual" infographic) from the *Biodiversity at Risk: Today's Choices Matter* online report. Have them take notes on their reading on the back of their sheets.

**Part 2:** Distribute art supplies. Working independently or in small groups, have students create a public service announcement (PSA) in the form of an infographic, video script, or social media image (mock-up only, not to be posted) championing what they've learned about the importance of biodiversity and encouraging individuals and businesses to take action to help protect our world.

Provide students with guidelines and parameters for their PSAs. Once done, have them share their final work with the class. Display visual PSAs in a school hallway to encourage other students to take action to support biodiversity.

As a follow-up, students might also identify and research a local official to contact to express their concerns about biodiversity. Students can work together to create a cover letter that identifies what they've learned about biodiversity in their community, the challenges it faces, and concrete steps they hope their elected officials will take to protect biodiversity.

**Extension Activity:** Have students research one of the biodiversity loss hotspots and discover what is causing the problems in that area.

### Resources

- [ymiclassroom.com/biodiversity](https://www.yimclassroom.com/biodiversity)
- National Academies of Sciences: [nationalacademies.org](https://www.nationalacademies.org)



# BIODIVERSITY 101

**Biodiversity is the vast diversity of life found on Earth.** It includes every living thing, from the smallest microorganisms we can't even see to plants, animals, and humans. All these species rely on each other to survive. They are woven together to support life on Earth, and if anything happens to one species, it has a ripple effect, impacting many other species. To put it simply... biodiversity is the "fabric of life!"



## PART 1.

Learn more about this connectivity by reading the "What Is Biodiversity?" and "Why Is Biodiversity Important?" chapters from the *Biodiversity at Risk: Today's Choices Matter* website: <https://nap.nationalacademies.org/resource/26384/interactive>. Use the back of this sheet or separate paper to take notes as you read. Once done, fill in the facts below.

Write five facts you learned about biodiversity.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

Write five facts about why biodiversity is important.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_



Plate large polyp stony coral

## PART 2.

Using your notes, art supplies, and your imagination, design a poster to celebrate biodiversity. Be sure to identify why it is crucial to our survival, why it makes life livable, and why we should encourage everyone to recognize its importance. On the back of your poster, write a brief paragraph explaining why you chose to highlight the themes you selected.







# EXPLORING ENDANGERED ANIMALS

## Activity 2

Our world is so diverse that scientists have named more than 2 million species, with more being discovered every day. But ecological threats like climate change and the loss of ecosystems such as forests and rivers mean that many living things are in danger of extinction — as many as 1 million of the estimated 7 to 18 million species on Earth are in danger! And because all living things on Earth are interconnected, the loss of these species will have a huge impact on our biodiversity.

### PART 1.

Test your smarts about endangered animals at risk of extinction. Use the words in the boxes to match each animal's name with the benefit(s) it brings to its ecosystem and the threat(s) that are causing its decline. Most animals are under the burden of several of the listed threats.

Endangered Animal	Benefit(s) to Ecosystem	Threat(s)
 <b>African Rhinoceros</b>		
 <b>European Lynx</b>		
 <b>Coral</b>		
 <b>Dugong (sea cow)</b>		
 <b>Monarch Butterfly</b>		
 <b>Hawaiian Ākohekohe</b>		

#### Benefit to Ecosystem

- pollination
- grassland grazer
- insect control
- maintains marine environment
- apex predator
- provides habitat for other species

#### Threat

- climate change
- poaching/illegal trade/hunting
- food loss
- pollution
- non-native invasive species
- habitat loss or degradation

### PART 2.

It's time to dig deeper into the dangers of animal extinction. Choose one animal from the list above and research it. Use the prompts on the right to help you identify details about the animal's plight. Then use the information you discover to create a presentation about the animal and what can be done to protect it.

My animal: \_\_\_\_\_

- What type of ecosystem does the animal live in?
- What are the benefits of this animal to the ecosystem? What would happen in its absence?
- What are the main threats to the animal?
- How can this animal be protected? What steps can we take to help save the animal?

Find out why biodiversity is crucial to our planet's survival and see how you can help!

<https://nap.nationalacademies.org/resource/26384/interactive>



© 2024 YMI, Inc.

NATIONAL  
ACADEMIES

Sciences  
Engineering  
Medicine

Copyright 2024, by the National Academy of Sciences. All rights reserved.



# BIODIVERSITY IN ACTION

**Biodiversity is everywhere** — from faraway lands and oceans to your own backyard. And every living organism contributes to the life cycle of others in their ecosystem.

## PART 1.

You're going on a biodiversity hunt outdoors. Once outside, identify a space that has potential for viewing a wide variety of living things and mark the boundaries of your observation area. Next, look for all the living things in your observation area, including plant life, animals, and insects. Fill out the chart below to record your observations and compile your data.

	Names of Species Observed	Number of Organisms Observed	Description of Habitats/ Ecosystems Observed
Trees			
Plants & Bushes			
Fungi			
Mammals			
Reptiles & Amphibians			
Insects			
Birds			
<b>Total Number of Organisms Observed</b> _____			

## PART 2.

Every living organism is part of a food web. Food webs show the relationship and links of what each organism in an ecosystem or habitat eats. For example, producer organisms like plants are eaten by consumers and predators like animals and humans.

Working with a group, describe the food web between the organisms in the ecosystem you observed. Then, on a separate sheet of paper, create a food web with connecting lines that show which producer organisms generate energy for consumer organisms.

Find out why biodiversity is crucial to our planet's survival and see how you can help!  
<https://nap.nationalacademies.org/resource/26384/interactive>

# STAND UP FOR BIODIVERSITY

Now that you've learned about the importance of biodiversity, it's time to take action!

## PART 1.

Read the "What Can We Do?" chapter and "What You Can Do As An Individual" infographic in the *Biodiversity at Risk: Today's Choices Matter* report at <https://nap.nationalacademies.org/resource/26384/interactive>. Also read the collective actions that governments, industry, and others can take to address biodiversity loss. Look for examples of how humans have negatively impacted our environment and biodiversity and how the situation can be addressed now. On the lines below identify five actions individuals can take to help the situation.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## PART 2.

Think about your community. What unique challenges does it face? Are there endangered ecosystems or animals, or specific areas that need protection?

Create a public service announcement (PSA) encouraging your community to get involved in protecting biodiversity. You might create an infographic, write script for a 30-second video, or design a social media image. Include detailed information about local ecosystems, organisms, and habitats that are endangered, and concrete steps that everyone can take to protect our biodiversity.

To start, plan key elements of your PSA below.

- Target audience (examples: students, adults, small businesses): \_\_\_\_\_
- Medium (your PSA format): \_\_\_\_\_
- Key message (action you want people to take): \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- Slogan: \_\_\_\_\_
- Supporting details (explain the issue): \_\_\_\_\_
- \_\_\_\_\_

Find out why biodiversity is crucial to our planet's survival and see how you can help!

<https://nap.nationalacademies.org/resource/26384/interactive>



NATIONAL  
ACADEMIES

Sciences  
Engineering  
Medicine