

HOW DOES CLIMATE CHANGE AFFECT ANIMALS?

GRADES 3-8

MATERIALS

Computers with internet access

Research materials (books, encyclopedias, etc.)

Art supplies for poster or story option (colored and poster paper, glue, scissors, colored pencils, markers, crayons, old magazines)

BACKGROUND

Animals come in a variety of shapes, sizes, and colors, and live in a variety of climates. Animals living in the wild can be greatly affected by fluctuations in temperature that are outside the norm. This is a serious issue for species that are already threatened or endangered, and according to the Guardian, a British newspaper, could pose a challenge for more common animals species as well. According to the Nature Conservancy, Iowa, along with some other states, may lose their official state birds as the birds seek cooler climates. The Guardian also reports that climate change could affect up to half of all plants, which in turn would adversely affect the animals that use them for food and shelter.

Animals play important roles in keeping ecosystems in balance. Some animals, like the polar bear, are considered keystone species. These animals have a bigger impact on their environment than their populations might suggest. Diminishing numbers or loss of these animals affects predators, prey, and plants in their environment. Some species will flourish, and others may die off. When habitats become warmer or are taken over by human activity, animals are forced to find other places to live. If these displaced animals are not able to find adequate resources in their new habitat, their numbers will decrease due to lack of food and/or water as well as lowered reproduction rates. Whether or not they find the resources they need, they may cause imbalance in their new habitat. All of these changes can affect the availability of some species of plants and animals used by humans for food, building materials, and medicine.

TEACHER PREPARATION

Schedule library and/or computer lab time for student research and/or gather research materials including books and encyclopedias for student research. Decide whether the assignment will be done on an individual or group basis. A suggested list of animals is included on the next page.

1. Gray Wolf
2. Giant Treefrog
3. Tiger
4. African Elephant
5. North American Right Whale
6. Giant Panda
7. Orangutan
8. American Pika
9. Tufted Puffin
10. Green Sea Turtle
11. Polar Bear
12. American Goldfinch
13. Mountain Yellow Frog
14. Staghorn Coral
15. Emperor Penguin
16. Common Clownfish
17. Arctic Fox
18. Dlinza Pinwheel
19. Ringed Seal
20. Frosted Elfin Butterfly

DEFINITIONS

Extinction-When there are no longer any surviving members of a species

Endangered species-Any living group of organisms that is at a high risk for extinction

Threatened species-Any living group of organisms that is likely to become endangered in the near future

Ecosystem services-Services or benefits provided by natural ecosystems, such as clean air, clean water, and pollination

Keystone species-A species that is integral to a certain ecosystem; the loss of this species would greatly alter the ecosystem

Natural resources-Materials found in or on the earth that are used by humans and other living things

INSTRUCTIONS

1. Have students watch the “Climate Change Remix” music video by Water Rocks! and the USEPA’s “Student Guide to Global Climate Change” at <http://www.epa.gov/climatestudents> for an overview of the issues.
2. Assign students an animal to research from the list provided above.
3. Students’ research should focus on the following question: How has climate change affected the animal? Information should include:
 - A. Where does the animal live? Include country, geography, climate, biome.
 - B. Is the animal a carnivore, herbivore, or omnivore? What animals and/or plants does it eat?
 - C. Is the animal a predator, prey, or both? How does it fit into the food web?
 - D. How has its population changed over the last 100 years? Include migration pattern changes, habitat loss or change, food source changes, populations, etc.
4. Have students report their findings in one of the following ways:
 - A. Prepare a written report (two pages for Grades 3-5, four pages for Grades 6-8).
 - B. Create a PowerPoint or Prezi presentation.
 - C. Create a poster to be displayed in the classroom or elsewhere in the school.
 - D. Write and illustrate a story about how the animal is affected by climate change.
 - E. Tell the story of the animal to the class as though you are the animal. Use simple costuming (like a mask, tail, or ears) and/or props for the presentation.

ADDITIONAL RESOURCES

For Teachers:

www.epa.gov/climatechange/basics/ (EPA website provides information on climate change)

<http://ncse.com/climate> (National Center for Science Education - Initiative for Climate Change website with rationale, support and resources for teaching climate change)

<http://climate.nasa.gov> (NASA website-evidence of global warming, interactives, activities and information for students as well)

http://www.ucsusa.org/global_warming/ (Basic background information on global warming)

http://education.nationalgeographic.com/education/encyclopedia/keystone-species/?ar_a=1 (Information on keystone species by National Geographic)

<http://youtu.be/y5a5OBhXz-Q> (Short video about the role of wolves as keystone species)

<http://www.mnn.com/earth-matters/animals/stories/infographic-top-20-countries-with-most-endangered-species> (Endangered species listed by country)

<http://www.mnn.com/earth-matters/animals/stories/more-species-at-risk-from-climate-change-than-we-thought> (Summary of a study done that shows more animals are at risk from climate change than previously thought)

<http://www.guardian.co.uk/environment/2013/may/13/animals-species-climate-change> (Guardian website with information on animals that are and in future might be affected by climate change, including state birds)

<http://www.nature.org/ourinitiatives/urgentissues/global-warming-climate-change/threats-impacts/wildlife-at-risk.xml> (Nature Conservancy website citing adverse impacts on both plant and animal species due to climate change)

For students:

<http://www.epa.gov/climatestudents> (EPA website with activities and information for students about climate change)

<http://youtube.com/watch?NR=1&feature=endscreen&v=5eTCZ9L834s> (Video about the effect of human activities on the environment)

<http://www.montereybayaquarium.org/climate> (Short video on exaggerated animal adaptation to climate change and how students can make small changes)