

"Animals at Risk from Climate Change"

A 24" x 30" full colour educational poster covering the fundamental causes, effects and risks of climate change to ecosystems, animals and humans.

AMPHIBIANS AT RISK

60% of the world's known amphibian species (2,027 of 3,332) have been assessed as vulnerable to climate change. Amphibians are particularly vulnerable to climate change because they live in both aquatic and terrestrial environments. They are also highly sensitive to changes in water quality and temperature.

THUNDERBOLT SALAMANDER
The thunderbolt salamander is a small, dark-colored salamander that lives in the mountains of the Pacific Northwest. It is highly sensitive to changes in water quality and temperature.

GOLDEN ROBO
The golden robo is a small, bright yellow salamander that lives in the mountains of the Pacific Northwest. It is highly sensitive to changes in water quality and temperature.

BIRDS AT RISK

50% of the world's known bird species (10,000 of 10,000) have been assessed as vulnerable to climate change. Birds are particularly vulnerable to climate change because they are highly dependent on their environment for food and shelter.

WHOOPIER CRANE
The whooper crane is a large, white crane that lives in the wetlands of the Great Plains. It is highly sensitive to changes in water quality and temperature.

BLACK-FOOTED ALBATROSS
The black-footed albatross is a large, dark-colored albatross that lives in the coastal areas of the Pacific Northwest. It is highly sensitive to changes in water quality and temperature.

ARCTIC FOOD WEB

A food web is a complex network of plants and animals in an ecosystem. The Arctic food web is particularly vulnerable to climate change because it is highly dependent on the Arctic environment for food and shelter.

POLAR BEAR
The polar bear is a large, white bear that lives in the Arctic. It is highly sensitive to changes in water quality and temperature.

ARCTIC FOX
The arctic fox is a small, white fox that lives in the Arctic. It is highly sensitive to changes in water quality and temperature.

Key

Biological Traits that Increase Species Susceptibility

- Range Size:** Species with a small range size are more vulnerable to climate change.
- Life Span:** Species with a long life span are more vulnerable to climate change.
- Reproduction:** Species with a low reproduction rate are more vulnerable to climate change.
- Adaptability:** Species with low adaptability are more vulnerable to climate change.

Effects on Ecosystems

- Sea Level Rise:** Sea level rise will cause coastal areas to be submerged, leading to the loss of habitat for many species.
- Warming Oceans:** Warming oceans will lead to the death of many marine species.
- Acidification:** Ocean acidification will lead to the death of many marine species.
- Ice Melt:** Ice melt will lead to the loss of habitat for many species.

Animals at Risk from Climate Change

Earth has a history of climate change. The climate is changing now. Today's climate change is from human causes.

Carbon Dioxide Levels

Global Surface Temperature

Arctic Sea Ice

Other Threats Caused by Humans

Habitat Loss: Humans are destroying natural habitats, leading to the loss of many species.

Pollution: Humans are polluting the environment, leading to the death of many species.

Overfishing: Humans are overfishing the oceans, leading to the depletion of many fish species.

Introduction of Invasive Species: Humans are introducing invasive species to new environments, leading to the death of many native species.

REPTILES AT RISK

70% of the world's known reptile species (1,000 of 1,000) have been assessed as vulnerable to climate change. Reptiles are particularly vulnerable to climate change because they are highly dependent on their environment for food and shelter.

SKINK
The skink is a small, lizard-like reptile that lives in the mountains of the Pacific Northwest. It is highly sensitive to changes in water quality and temperature.

ROCKY MOUNTAIN SNAKE
The rocky mountain snake is a large, venomous snake that lives in the mountains of the Pacific Northwest. It is highly sensitive to changes in water quality and temperature.

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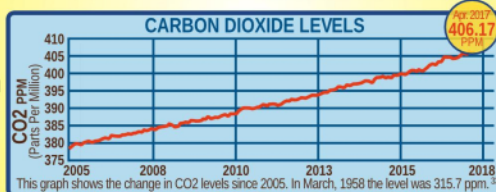
Animals at Risk from Climate Change

Earth has a history of climate change

Changes in the sun, the Earth's orbit, ocean currents and volcanic eruptions are natural effects on climate. Studies of tree rings, glacial layers, ocean sediment, pollen remains, sedimentary rocks, coral reefs and air trapped in bubbles in ice cores, reveal a climate record going back hundreds of thousands of years. Fossil records show that in the past 490 million years dramatic changes in climate have caused at least five mass extinctions. Some studies estimate that the current rate of extinction is 100 times faster than what would occur without human impact.

The climate is changing now

Indicators that the climate is changing include: rising mean temperatures; rising ocean temperatures; increased ocean acidity; sea level rise; decrease of ice in the Arctic and Antarctic; and retreat of almost all alpine glaciers. Recent studies show that the paths and speed of the northern jet stream (large rivers of wind high in the atmosphere) are shifting because of warmer temperatures in the Arctic—bringing colder winters south and warmer winters to the north.



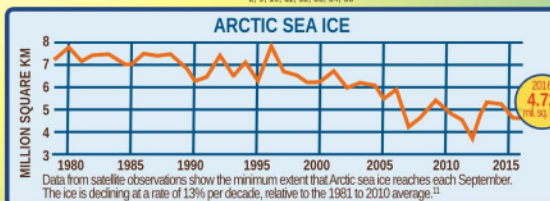
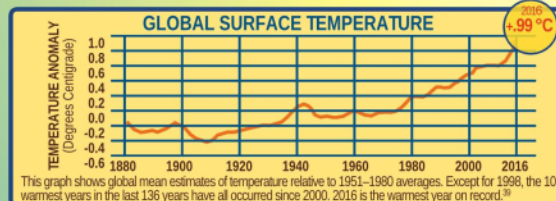
Today's climate change is from human causes

The dominant cause of present-day climate change is the increase in carbon dioxide, methane and other greenhouse gases emitted into the atmosphere by human activities.* Higher concentrations of greenhouse gases are the predominant cause of warming temperatures—geological history shows that as levels of greenhouse gases increased, the earth warmed. Climate change will likely be one of the main drivers of extinction in the 21st century because of the speed at which average temperatures are warming—faster than at any time in the last 15,000 years.

* 97% of active climate scientists agree that today's climate change is caused by human activities.

Species are at risk of extinction

A global mean temperature rise of 2 to 3 °C will greatly increase the percentage of species at risk and amplify the dangerous impacts on biodiversity and ecosystems. If an ecosystem is already degraded from other causes not related to climate, such as pollution, a species is less resilient or likely to adapt. The animals shown here illustrate the wondrous diversity of life on Earth, and also highlight the many ways climate change puts all forms of life on the planet, including humans, at risk of extinction.



RINGED SEAL
Pusa hispida

Ringed seals are the smallest of all seals and live primarily in the Arctic Ocean. They are able to dive as deep as 300 feet and stay under for up to 45 minutes. They blow bubbles before surfacing to check for Polar Bears, their main predator. The seals use their sharp claws to make breathing holes in the thick ice.

All populations of Ringed Seals are expected to be adversely affected by climate change because of dependence on sea ice and snow dens for breeding, protecting pups, moulting and resting. Early warming causes pups to separate prematurely from their mothers. As sea ice declines, other threats are fisheries by-catch, increased shipping, tourism and development. Seals are vulnerable to disease from heavy concentrations of pollutants that have accumulated in the Arctic food web.^{4,2,5}

RUSTY PATCHED BUMBLE BEE
Bombus affinis

Bees have existed on the planet for at least 40 million years. There are 250 species of bumblebees and seven species of honeybees. Fatter and funnier than honeybees, bumble bees make only a small amount of honey for their own food.

The Rusty Patched is the first bee to be listed as endangered in the US. Populations have declined as much as 87% from habitat loss, disease and pesticides. Climate threats include: warming and precipitation, early snow, late frost and drought. Bees and butterflies are important agricultural pollinators. In 2016, 40% of invertebrate pollinators (bees and butterflies) were listed as threatened with extinction.^{4, 18, 20}

“Animals at Risk from Climate Change” is an attractive and colourful 24”x 30” poster featuring 25 animals that highlight the fundamental impacts of greenhouse gases—causes, effects and risk of extinction—on all forms of life on the planet. The complex interaction of biological traits and environmental conditions that cause a species to be susceptible to climate change, the basics of the carbon cycle, and the impact of greenhouse gases are made simple and understandable through beautiful illustrations, symbols and brief explanatory text. Comprehensive and thoroughly documented to reliable sources, the poster is a timely and relevant educational aid for educators, parents and students.

To see the additional components of the poster in detail, or to order, please visit:

www.theglobaleducationproject.org/climate-change

For more information, contact Melanie at: mm@theglobaleducationproject.org Phone: 206 261 1453

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Retail orders online at: www.theglobaleducationproject.org/climate-change

The poster is supplied two ways:

Folded to 8" x 10" (Retail: US \$10.00 plus shipping)

or **Flat Laminated** (24" x 30") (Retail: US\$ 18.95 plus shipping)

Wholesale/Sponsorship orders: mm@theglobaleducationproject.org or phone 206 261 1453

Folded (not laminated) — Suggested retail: US\$10.00

Qty.	Unit cost
0-25	@6.50
26-50	@6.00
50-100	@5.50
over 100	@5.00

Plus shipping

Flat Laminated — Suggested retail: US \$18.95

All Quantities @11.40

Plus shipping

US Vendor:

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