



WILD CLASSROOM

TEACHING TOOLS ABOUT THE

ARCTIC



EDUCATOR'S RESOURCE GUIDE



ARCTIC

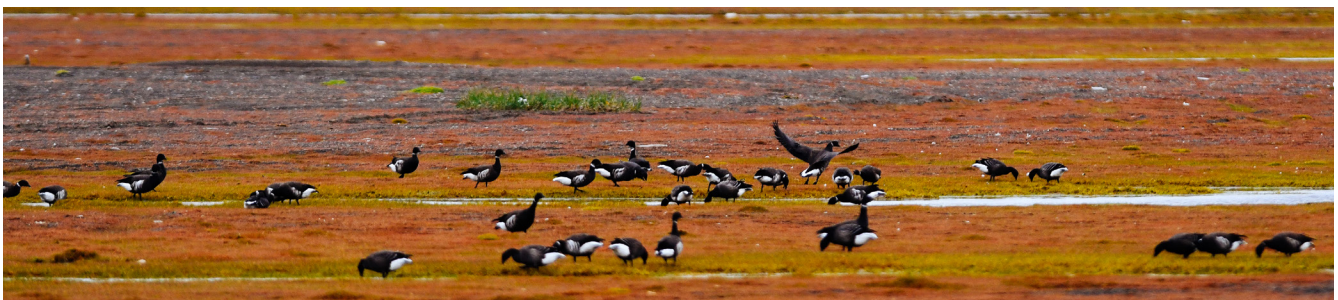
The Arctic sits at the top of the world and is known for its ice and extreme cold. But the Arctic is much more than just ice; it has diverse landscapes that support animals, people, and the natural world. Keep reading to learn more about the unique ecosystems of the Arctic and how they support life on Earth.

What is the Arctic?

The polar region that surrounds the Earth's North Pole is known as the Arctic. While the Arctic has certain characteristics in common with the Antarctic at the South Pole (such as cold temperatures, ice, and snow), these two polar regions differ in many ways.

The area known as the Arctic consists almost entirely in water. Most of the water in the Arctic is frozen and takes the form of glaciers, icebergs, and frozen sea ice.

- The ocean surrounding the region is called the Arctic Ocean, and it spans an area of 5.4 million square miles. That's one and a half times as big as the United States! While this ocean may seem big, it is the smallest ocean in the world.
- In addition to the ocean, snow, and ice, the Arctic is also made up of wetlands, mountains, rivers, glaciers, and tundras—treeless areas with frozen ground known as permafrost. Together, these elements form a dynamic and diverse landscape.
- The Arctic is considered to be a cold desert because there is little rainfall each year. When it rains, the precipitation usually freezes as it covers the ground.
- The Arctic gets its name from the ancient Greek word for bear, *arktos*, due to two very familiar constellations that are seen in the northern sky: Ursa Major, "the Big Bear" and Ursa Minor, "the Little Bear" (also commonly known as the Big Dipper and the Little Dipper).



A flock of brants (geese) on autumn tundra near Utqiagvik, on Alaska's North Slope



Where is the Arctic?

The Arctic is positioned at the very top of the Earth and stretches into eight different countries: Canada, Greenland, Iceland, Norway, Sweden, Finland, Russia, and the United States.

- Because the Arctic is located in so many different countries, there is a special governing unit, called the Arctic Council, that makes rules and decisions regarding the region. Even if different countries have conflicting interests concerning the Arctic, this council ensures that the entire area stays protected and looked after.
- Because the Arctic is positioned on the very top of the Earth, its relationship to the sun results in the area having only two seasons: summer and winter. The amount of sunlight that the Arctic receives is very different from most other places; during the summer, the sun in the Arctic never sets, whereas there is hardly any sunlight in the winter.

What lives in the Arctic?

Even though the Arctic is one of the coldest places on the planet, many species call it home. These species have adapted to the harsh temperatures and climate conditions, and they play important roles in the rich food webs that exist there.



Pacific walrus spend spring and summer feeding over the shallow continental shelf in the Chukchi Sea.



- The ground of the Arctic is a layer of permafrost. It stays frozen all year long, which means that anything that grows or lives on it must thrive in cold environments. Plants that can survive in harsh conditions and grow in the Arctic are typically considered “tundra vegetation” and include shrubs, mosses, and grasses. These plants are low to the ground, where there is plenty of snow and moisture to help them grow.
- Animals that spend their time strictly on land in the Arctic need thick fur coats to help them survive the cold. These animals include reindeer, caribou, and the Arctic wolf. Although they remain on land, these and other terrestrial animals depend on the nearby ocean and its ecosystem both above and below the water.
- Below the surface of the ocean, there is a variety of marine life—including narwhals and other species of whales—that feed on small species such as phytoplankton, krill, and fish. Some whales migrate in and out of the Arctic each year while others live there year-round. These whales in the Arctic can dive as deep as 1,000 meters to find food and then resurface between the cracks of ice on the water.
- The Arctic is also home to many animals that spend time both in and out of the water. Polar bears, seals, and walrus live above water on sea ice and land, but they will frequently dive into the water to cool off, find food, and swim.



Who lives in the Arctic?

In addition to plants and animals, a large community of people with rich cultures call the Arctic home.

- There are 4 million people currently living in the Arctic, of whom about 400,000 are Indigenous (native to the land).
- Because of the extreme temperatures, living in the Arctic can be challenging. For generations, Indigenous peoples have survived in the area by hunting for food, clothing, and other items necessary for survival. For many people, hunting for food is healthier and less expensive than purchasing food in this area.
- Indigenous peoples have lived in the Arctic for thousands of years but, as more people began migrating to the Arctic, they were forced out of their native lands. However, in recent years, these Indigenous peoples have been working hard to reclaim their land and continue their cultural traditions.
- Indigenous communities play a critical role in protecting the Arctic. Their knowledge of and expertise on the land, the ocean, and everything connected between them provides important perspectives on how to care for the region.



Why is the Arctic important?

The Arctic's unique ecosystem supports hundreds of plants, animals, and people that have adapted to its icy, cold environment. Even species that do not live in the area for the entire year, such as birds and whales, migrate great distances to the Arctic to feed or raise their young.

- The Arctic works to keep the Earth's climate balanced. The ice reflects the sun's rays and ensures that the climate is regulated and maintains a comfortable temperature. Just like natural air conditioning, the ice in the Arctic protects the land surrounding it and keeps sea levels constant. If the ice in the Arctic were to melt, then the sea levels would rise and could affect other areas around the world.
- Glacier ice is the largest reservoir of freshwater on the planet, storing an estimated 75% of the world's supply. Alaska alone is estimated to have more than 100,000 glaciers, and about 10% of Earth's glacier ice is found in the Greenland ice cap.
- As ocean water moves into the Arctic, it becomes colder, which causes it to become denser and sink. This change in water flow helps circulate the oceans around the world and ensures that biodiversity flows in and out of the region.
- Half of the fish caught in the United States are caught in the Arctic, which means that people's choices and consumption habits all over the country can affect this ecosystem. A simple act such as ordering fish from a restaurant connects a person to this region.



Denali (the tallest peak in North America) in Denali National Park & Reserve, Alaska



Why is the Arctic at risk?

The Arctic is a sensitive place that is being altered quickly. As its climate continues to warm, it presents new and continued challenges for the animals and people that live there. Several factors are currently causing the Arctic to be at risk:

- *Climate change:* The Arctic is warming nearly three times as fast as the rest of the planet. As global temperatures increase, a chain reaction of effects occurs in the Arctic, beginning with the rapid melting of the ice. As the amount of ice diminishes, polar bears and other animals are forced to move closer to human communities. This may result in animals and humans competing for space, which puts both the animals and human communities at risk. The melting of sea ice also opens up more ocean space for boats to travel through the Arctic. With an increase in ship traffic is an increased risk that ships will collide with the land, harm animals, or spill oil into the water, all of which can have disastrous impacts on the natural ecosystems. Ships also create underwater noise, which can confuse ocean animals and make it harder for them to communicate with each other.
- *Resource extraction:* The Arctic holds many valuable natural resources, including oil, gas, copper, gold, and coal. However, obtaining these resources might mean disrupting nature in the Arctic. Mining or drilling for oil and gas is an unpredictable process, and it may pose serious threats to nature and wildlife. These activities often result in the release of toxic chemicals into the ocean and the destruction of marine habitats. Ships may also spill oil into the water, harming nearby animals, including fish and other marine life.
- *Unsustainable fishing:* Almost half of the fish caught in the United States come from the Arctic, and that puts a lot of pressure on the Arctic Ocean. If the ocean is overfished, then the natural ecosystem will change. Many animals in the Arctic rely on fish to survive, and the more that humans take these fish for themselves, the fewer fish there will be for other animals to eat.



A traditional hunter drives his sled dogs through Walrus Bay, Ittoqqortoormiit, East Greenland.



What is World Wildlife Fund doing to help?

WWF is working diligently to make sure that the Arctic stays protected and safe for future generations.

- **Governance:** WWF works as part of the Arctic Council to ensure that activities in the Arctic are being monitored and reported. Through engaging with the Arctic Council, WWF can ensure that people, animals, and the land are protected.
- **Sustainable development:** WWF aims to promote sustainability within the Arctic by advocating for safer oil drilling, mining, and tourism practices. Additionally, WWF tries to prevent new oil drilling in the area.
- **Ecosystem protection:** To increase biodiversity in the region, WWF strives to protect wildlife by establishing marine protected areas. These are areas within the ocean in which species are protected from human threats such as overfishing.

How can you help?

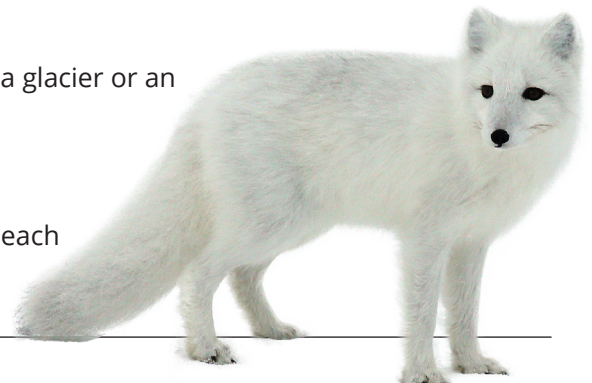
There are things that can be done every day that can help the Arctic by reducing the demand for the region's resources and ensuring that life there remains protected. Share these ideas with your students.

- **Limit energy consumption:** Reduce the amount of energy you use by unplugging electronics when you aren't using them, turning off lights, and turning off your computer and other electronic devices as much as possible.
- **Limit water usage:** Saving water is another great way to reduce your energy use. It is easy to save water by turning off the faucet when brushing your teeth and by taking shorter showers.
- **Eat sustainably:** While going food shopping or dining out, check or ask where your food comes from and try to support your local farmers and fishers. Some seafood brands and restaurants that serve fish are more sustainable and responsible than others, and such practices will help to protect the fish species in the Arctic.
- **Plant trees:** Trees absorb carbon dioxide (CO₂) from the air, which in turn helps the Earth stay cool and reduce the impacts of climate change. When there is less CO₂ in the air, our climate will remain more regulated and Arctic ice coverage will stay consistent, benefiting the animals and communities that live there.
- **Raise awareness:** A huge part of protecting nature is helping other people understand its importance. By writing a letter to your local representatives, starting a club at your school, or sharing information with people in your community, you can help protect the Arctic from anywhere in the world.



Relevant Vocabulary

- **Algal blooms:** a rapid and excessive growth of microscopic algae or bacteria in a freshwater or marine ecosystem
- **Biodiversity:** all the different kinds of life found in one area, including animals, plants, fungi, bacteria, and genetic material
- **Climate change:** a change in climate over time due to natural causes or human activity
- **Consumer:** a plant or animal that obtains food by preying on other living things or eating particles of organic matter
- **Decomposer:** an organism (such as a bacterium or fungus) that feeds on and breaks down dead plant or animal matter
- **Ecology:** a branch of science concerned with the relationships between living things and their environments
- **Ecosystem:** the living (e.g., humans, polar bears, fish) and nonliving (e.g., air, ice, water) components of an area that interact with each other in an interconnected way
- **Energy:** the capacity for doing work; a basic unit in nature that is transferred between parts of a system and results in a physical change
- **Food insecurity:** being unable to consistently access or afford adequate food
- **Fossil fuels:** fuels (such as coal, oil, and natural gas) formed in the Earth from fossilized plant or animal remains and burned to generate energy; the biggest drivers of climate change
- **Freshwater:** Naturally occurring water that does not have much salt
- **Glacier:** a slowly moving mass or river of ice framed by the accumulation and compaction of snow on mountains or stretches of land near the poles
- **Greenhouse gases:** gases such as water vapor, carbon dioxide, methane, and nitrous oxide that absorb some of the sun's heat energy and trap it in the atmosphere, making Earth warmer
- **Habitat:** a natural environment in which plants and animals live, breed, and get their food, water, and shelter
- **Iceberg:** a large floating mass of ice that has detached from a glacier or an ice sheet and has been carried out to sea
- **Indigenous:** native or local to a particular area
- **Interdependence:** the reliance that all living things have on each other in order to survive





- **Marine:** of or relating to the sea
- **Matter:** the substance that physical objects are made of
- **Migrate:** move from one region to another
- **Natural resource:** something (e.g., water, a mineral, a forest, a type of animal) that is found in nature and is valuable to humans
- **Noise pollution:** annoying or harmful noise in an environment
- **Permafrost:** a permanently frozen layer below the ground found in very cold regions of the planet
- **Photosynthesis:** the process by which plants make chemical (food) energy from water, carbon dioxide, and light
- **Polar:** refers to the regions at the very north and very south of the Earth
- **Producer:** a living thing (such as a green plant) that makes its food from nonliving things (such as carbon dioxide and nitrogen) and may be a food source for other organisms
- **Scavenger:** an organism that usually feeds on dead or decaying matter
- **Sea Ice:** frozen sea water that floats on the ocean's surface
- **Species:** a group of organisms able to interbreed and produce viable offspring



Children of commercial fishers outside a cabin in Ekuk, Bristol Bay, Bering Sea, Alaska



- **Sustainable:** a method of harvesting or using a natural resource so that the resource is not depleted or permanently damaged; being effective and innovative in efficiently using natural resources and ensuring their continued supply
- **Tundra:** a treeless plain of the Arctic region that has a permanently frozen layer below the surface of its soil
- **Wetlands:** areas of land on which water covers the ground for extended periods of time throughout the year

References and Resources

- Webpage: [WWF Places—Arctic](#)
- Web story: [How big is the Arctic Ocean? And eight other Arctic facts](#)
- Web story: [How would offshore oil and gas drilling in the Arctic impact wildlife?](#)
- Web story: [Five species that stand to lose the most if the US allows drilling in the Arctic refuge](#)
- Webpage: [WWF Arctic—Threats: Underwater Noise](#)
- Webpage: [Arctic Regions](#)



An aerial view of landscapes in the Bristol Bay watershed in Bristol Bay, Alaska