



INSPIRING AMERICANS TO PROTECT WILDLIFE FOR OUR CHILDREN'S FUTURE.

Fact Sheet

GLOBAL WARMING

CONFRONTING



Melting Arctic Ice Threatens Arctic Ecosystems

Polar Bear Decline only the Tip of the Iceberg

The polar bear's perilous status due to melting Arctic sea ice is only the tip of the iceberg. Also at risk is the entire Arctic Ecosystem, as we have known it for centuries, including far more species than just polar bears.

The Arctic Ice Ecosystem

Arctic sea ice is a key component of a unique and complex ecosystem that is especially vulnerable to any changes in climate. Unlike the continent of Antarctica which is largely covered in ice that is more than a mile thick in some places, the Arctic is a sea covered by a relatively thin layer of floating ice. The ice pack is in constant motion, drifting at the whim of ocean currents and prevailing winds. Historically, significant ice shelves attached to land (fast ice) were prevalent in the Arctic. Ice has long been present year round (multi-year ice), and expands greatly in extent during the long dark winters and receding during summer melts. Arctic ecosystems are adapted to this icy yet dynamic environment.

Impacts of Climate Change

Climate change threatens to profoundly change the Arctic to an essentially ice-free environment during the summer, with ice-freeze up recurring only in the winter, and to a much lesser extent than historically. Already, much of the fast ice has broken up, including the 300-mile Ellesmere Ice Shelf along Ellesmere Island in northern Canada.

The melt of summer ice in 2007 resulted in a reduction in total area of ice, from the long term average, equivalent to the size of Alaska and Texas, combined. One NASA scientist projected a possible loss of summer sea ice by as early as 2012, much earlier than other recent projections made prior to the record ice loss in 2007.

The Arctic ice serves as a substrate for sea-ice dependent organisms, including various species of phyto- and zoo-plankton, some crustaceans and the seals that feed on them, and the polar bears that feed on the seals. This entire food chain is subject to significant disruption with the disappearance of summer sea ice. However more open water and other climate-related factors are likely to benefit fish stocks like cod, herring, walleye and Pollock.

Polar Bears

The U.S. Fish and Wildlife Service has proposed to list the polar bear as a threatened species because of the rapid melting of Arctic ice. The U.S. Geological Survey projects that two thirds of polar bears will disappear by 2050 as a result of climate change melting the ice.



INSPIRING AMERICANS TO PROTECT WILDLIFE FOR OUR CHILDREN'S FUTURE.

Fact Sheet

GLOBAL WARMING

CONFRONTING



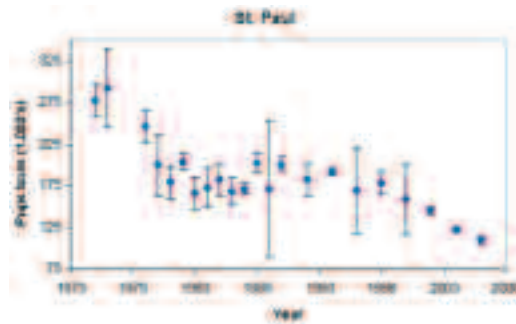
Walrus

Although a marine creature, like the polar bear the walrus is dependent upon land and floating ice for places to rest. As the ice has receded in the Chukchi Sea, walrus have been forced in large numbers on land where they are vulnerable to stampedes if suddenly frightened, causing the death of trampled individuals.

Furthermore, walrus feed on the sea bottom in shallower waters (up to 200 meters). As the ice has receded, ice platforms for resting are now over waters as much as 3,000 meters deep, and much too deep for bottom feeding. Young are being abandoned or forced far out to sea where they have little hope of surviving.

Seals

In Canada's Gulf of St. Lawrence almost no seal pups, which are dependent on sea ice, survived during the ice-free years of 1967, 1981, 2000, 2001, and 2002. In the western Hudson Bay, early break up of sea ice is correlated with decreased ringed seal pup survival.



Although it is difficult to know the exact reason, the northern fur seal population has declined dramatically in the Pribiloff islands, corresponding with changes in climate. In thirty years the population has dropped by more than 50% from more than 275,000 individuals to fewer than 125,000 now.

Fish

Fish adapted to cold Arctic waters will need to consume more prey to sustain their increased metabolism as water temperature increases. Their survival could be in jeopardy unless their available food source (plankton) increases in abundance. Other species normally in warmer waters may expand their range into the Arctic.



INSPIRING AMERICANS TO PROTECT WILDLIFE FOR OUR CHILDREN'S FUTURE.

Fact Sheet

CONFRONTING GLOBAL WARMING



Solutions

There are solutions! Despite the grim projections of potential climate change impacts to our natural world, it is not too late to take action. In fact, it is imperative that we take significant action now to reduce global warming pollution by 2% annually now through 2050 to avoid worst case scenarios of impacts in Arctic ecosystems and around the world.

The National Wildlife Federation supports:

- Mandatory caps on global warming pollution such as carbon dioxide;
- Use of dedicated funds for wildlife conservation from the sale of carbon credits

Sources

http://www.ipy.org/index.php?ipy/detail/ipy_science_sea_ice/
<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1748-7692.2005.tb01212.x>
<http://www.arctic.noaa.gov/detect/marine-bering.shtml>
<http://news.mongabay.com/2006/0413-walrus.html>
http://seattletimes.nwsourc.com/html/nationworld/2004073403_webwalrus14.html
<http://www.biologicaldiversity.org/swcbd/species/polarbear/index.html>
<http://www.cen.ulaval.ca/warwickvincent/pdf/149.pdf>
<http://www.ecology.com/ecology-today/earth-warms/index.html>
<http://www.thearctic.is/articles/overviews/ecosystem/enska/index.htm>
<http://www.arctic.noaa.gov/detect/marine-overview.shtml>
<http://www.reuters.com/article/latestcrisis/idusl14551622>
<http://www.akmarine.org/our-work/address-climate-change/fisheries-and-warming-oceans>

Contacts

Dr. Doug Inkley, Senior Scientist,
National Wildlife Federation.
703-438-6460
inkley@nwf.org

Mr. John Kostyack, Executive Director, Wildlife Conservation and Global Warming,
National Wildlife Federation.
202-797-6879
kostyack@nwf.org