

Arctic Legacy



Ocean Conservancy

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Executive Summary

The Arctic region contains vast undisturbed ecosystems and unique species and cultures. Human-induced climate change, however, is disproportionately impacting this region and providing an early warning of profound changes that will affect our planet for many years to come. Urgent action is needed, both globally to reduce carbon dioxide and other emissions that are disrupting our planet's atmospheric, oceanographic, and biological systems, as well as within the Arctic, which is especially vulnerable to these changes. With the United States poised to become Chair of the Arctic Council for 2015-2017, we have an opportunity to take bold action to address this situation.

Ocean Conservancy recommends that the United States focus its leadership of the Arctic Council on an overarching theme of addressing climate change and prioritize immediate actions that reduce carbon dioxide and other emissions. The U.S. should prioritize the enhancement of Arctic resilience through the adoption of a circumpolar network of marine protected areas, starting with protections for multi-year sea ice in places beyond national jurisdiction in the central Arctic Ocean and important areas of the Arctic seas within the U.S. Exclusive Economic Zone. Finally, the U.S. should prioritize the adoption of a regional seas agreement or other instrument to coordinate implementation of Arctic Council recommendations and other circumpolar management measures.

Introduction

The Arctic is home to species and habitats that are found nowhere else on the planet, including unique populations of marine mammals and millions of migratory birds that travel to all corners of the globe. Indigenous peoples of the Arctic continue to practice subsistence ways of life that are central to cultures and traditions that have endured for millennia. The Arctic also provides important ecosystem services to the Earth's oceanographic, atmospheric, and biological systems, helping regulate our planet's climate and support biodiversity.

The Arctic today, however, stands at a crossroads. The choices we make now as a society will largely determine the fate of the region and, in many ways, the planet. As stated by 50 prominent thinkers, including 15 Nobel Prize winners, in the 2011 Stockholm Memorandum:

Science indicates that we are transgressing planetary boundaries that have kept civilization safe for the past 10,000 years. Evidence is growing that human pressures are starting to overwhelm the Earth's buffering capacity... We can no longer exclude the possibility that our collective actions will trigger tipping points, risking abrupt and irreversible consequences for human communities and ecological systems. We cannot continue on our current path.

The Arctic of the 21st century is a paradox. While the northern polar region is located far from population centers and contains some of the Earth's last large and undisturbed wilderness and intact ecosystems, it is also one of the most rapidly changing regions of the planet. The impacts from carbon dioxide and other emissions are disproportionately affecting the region while persistent organic pollutants travel long distances and bioaccumulate in the Arctic food web. Temperatures in the Arctic are rising at twice the global average and sea ice, a dominant feature of the region, is not only disappearing, but becoming thinner and younger in the decreasing area where it remains. This loss of sea ice, caused to a large degree by combustion of oil and gas, is opening new areas for extraction and transportation of these same products, which in turn will fuel further impacts.

Addressing climate change and enhancing the resilience of the Arctic environment is no small task, but with the United States setting the agenda for the Arctic Council for 2015-2017, we have the opportunity to take bold actions to address the most serious environmental issue currently confronting humankind and our planet.



The Arctic Council

In 1989, the government of Finland convened all of the Arctic States (Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States) for a series of meetings that eventually led to adoption of the Arctic Environmental Protection Strategy. The strategy focused specifically on efforts to preserve the environment, accommodate the needs and traditions of Arctic Native peoples, monitor environmental conditions, and eliminate pollution in the Arctic.

Cooperation under the Arctic Environmental Protection Strategy eventually led to the formation of the the Arctic Council, which, as specified in the 1996 Ottawa Declaration, was intended to “provide a means for promoting cooperation, coordination and interaction among the Arctic States, with the involvement of the Arctic indigenous communities and other Arctic inhabitants on common issues, in particular issues of sustainable development and environmental protection in the Arctic.”

The Council operates in two-year cycles, with the different Arctic nations acting as the Chair and setting the agenda. Canada holds this position until spring 2015, when the United States assumes the Chair. The current Council priorities, set by the majority government of Canada's Conservative Party, are centered on the theme of “Development for the People of the North” and include a focus on resource development, shipping, and sustainable communities.

The Council initially focused on assessing the health of the Arctic and its inhabitants and has produced a number of important studies, including the seminal Arctic Climate Impact Assessment. Other assessments have focused on issues such as shipping, pollution, and the marine environment. These assessments, summarized below, all generally acknowledge the rapid change in the Arctic environment and, as a result, the Council has recently prioritized plans for addressing the impacts of climate change.

While the history of the Council centers largely on these assessments and recommendations for countries to implement domestically and outside the auspices of the Council, the dire findings of these assessments coupled with increasing investment in Arctic resource extraction and transportation have led the Council to begin formalizing its work in binding multilateral agreements. The first two agreements were each finalized at the end of a two-year Chair cycle, first with the 2011 Agreement on Cooperation in Aeronautical and Maritime Search and Rescue in the Arctic, and more recently with the 2013 Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic. It is not clear if the Canada Chair will result in a binding agreement, although agreements memorializing ongoing work to address black carbon and oil pollution prevention are being discussed.



Arctic Ecosystems

Unlike the southern polar region where the ocean surrounds the Antarctic continent, the Arctic Ocean forms the center of the northern polar region and is flanked at lower Arctic latitudes by islands and continental tundra. Arctic terrestrial ecology is largely dominated by permafrost and freshwater features; its marine ecology is marked by the extremes in solar irradiance, ice cover and associated atmospheric exchanges, temperature, and inflow from rivers.

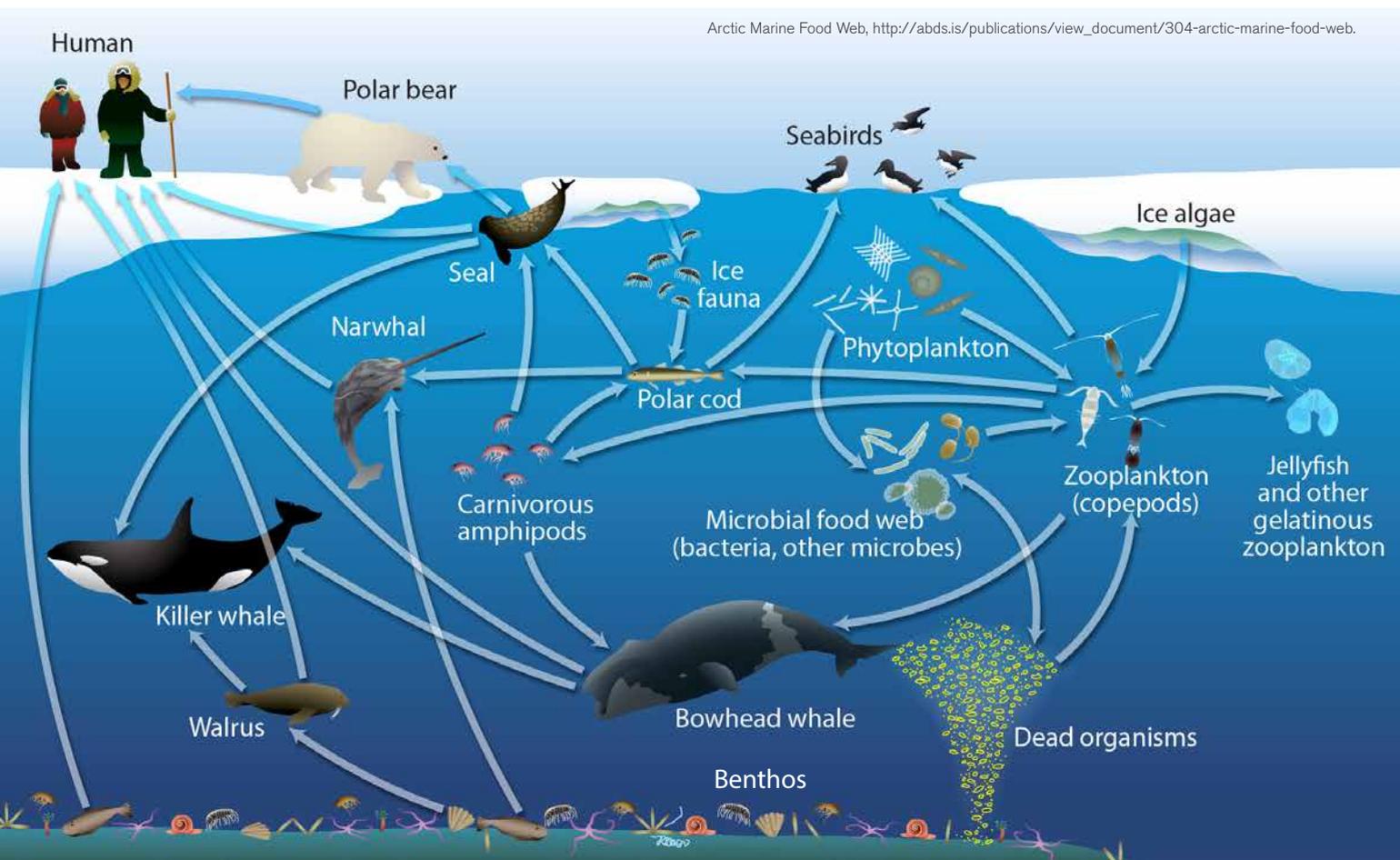
Extreme seasonality drives both marine and terrestrial ecosystems. In the ocean, primary production takes place in spring and summer when light from long days creates highly productive phytoplankton or ice algal blooms. These events feed energy into the higher trophic levels of the Arctic food web [see page 8]. Areas in the central Arctic Ocean with seasonal and multi-year sea ice generally exhibit lower productivity, whereas the polynyas (areas of open water surrounded by sea ice) and outer Arctic seas, such as the Chukchi and Bering seas, are home to some of the most productive marine areas on the planet.

One of the key elements of Arctic marine ecosystems is sea ice. This ice is generally defined as seasonal sea ice (ice of not more than one winter's growth) and multi-year sea ice (ice that has persisted over two summer melts). Due to ocean circulation, multi-year sea ice occurs predominantly north of the Canadian archipelago and Greenland. The associated marine habitats are critical for long-lived ice-associated species. This multi-year sea ice, which need not be recolonized every year like seasonal sea ice, supports populations of polar bear, ivory gull, Ross's gull, beluga whale, narwhal and ringed seal. It also supports sea ice amphipods, which are important prey for polar cod, Arctic cod, and ringed seals. Seasonal sea ice and coastal areas support populations of walrus, others species of seals and seabirds.

Due to the extreme seasonality of the northern latitudes, many Arctic species migrate long distances. This includes millions of migratory birds and uniquely adapted marine mammals, all prominent components of the Arctic marine ecosystem. The majority of marine mammals, with the exception of polar bears and most species of seals, migrate to lower-latitude Arctic and subarctic regions during the winter, while seabirds range to all corners of the planet. Although polar regions support a limited diversity of most fauna, they support the highest diversity of seabirds and pinnipeds (true seals, fur seals, sea lions, and walrus) in the world.

Arctic seabirds are primarily found in the peripheral seas of the Arctic Ocean. Of the approximately 300 seabird species worldwide, 30 breed in the Arctic. Seabirds often gather at large colony sites, many of which have remained in the same location for centuries. These colony sites are highly vulnerable to pollution disturbance events, such as oil spills. Furthermore, while the primary threat to Arctic seabirds was previously overhunting, potential impacts from climate change – both direct (earlier break-up and reduction in sea ice volume), and indirect (changes in the food web and habitat modifications from increased industrial development) – are now widely considered the largest threat.

The Arctic is also home to seventeen species of cetaceans, which, unlike many other species of Arctic animals, exhibit high levels of within-species variability. Minke whales, for example, occur as distinct subspecies in different areas, and blue whales, humpback whales, fin whales and sei whales not only occur as different subspecies but also as different subpopulations throughout the Arctic. For whales, as well as pinnipeds and some fish, sound serves critical biological functions and their behaviors are adapted to the relatively quiet Arctic acoustic environment, making them sensitive to industrial activities and shipping operations.



Polar bears range throughout the Arctic. While normally found on sea ice, polar bears also congregate on land in regions where sea ice disappears in summer. Although polar bears eat a variety of foods on land, they use sea ice as their primary hunting grounds. The recent declines in the length of the sea ice season, coupled with reduced sea ice volume, has led to polar bears spending more time on land, which can lead to lower survival and reproductive rates, and population size. Declines in sea ice have also caused an increase in polar bear predation on seabirds.

Recent years have seen dramatic reductions in Arctic Ocean sea ice and 2007-2012 was marked by the smallest extent of sea ice in the 25 years of satellite observations. While climate models predict that seasonal sea ice will largely be absent from the Arctic Ocean before the end of the century, the Arctic multi-year sea ice – the largest of such features on the planet – will likely persist, although in a diminished state. Impacts to ice-associated Arctic marine mammals such as polar bears and seals are considered one of the first identified biological impacts of climate change. Ongoing and rapid reductions in Arctic summer sea ice reduces habitat and can alter the food web through changes in the timing of primary production events. As a result, extinction risks for ice-associated mammals are considered to be high.

The profound changes confronting Arctic ecosystems and recommendations for addressing them are contained in the Council assessments detailed below.

Arctic Council Assessments and Reports

In developing our recommended priorities for the U.S. Chair, Ocean Conservancy undertook a review, both of the Council's current projects and its rich history of assessments and other studies. These are described below, with an emphasis on the key findings and recommendations that support taking immediate actions to address climate change and enhance the resilience of the rapidly changing Arctic environment.

Arctic Climate Impact Assessment

At the October 2000 Barrow Ministerial Meeting, the Arctic Council established the Arctic Climate Impact Assessment (ACIA), tasking it with synthesizing the science of climate change; identifying environmental, human health, social, cultural and economic impacts; and making policy recommendations. The ACIA represented the most comprehensive regional assessment of impacts from climate change. It concluded that the rapid warming of the Arctic climate has worldwide implications and will cause potentially dramatic impacts to biological diversity, indigenous communities, Arctic infrastructure, and ecological risks associated with activities such as increased resource extraction and shipping.

In 2004, at the Reykjavik Ministerial Meeting, the ACIA was formally adopted and the policy recommendations, including reducing greenhouse gas emissions and increasing renewable energy, were endorsed.

The Council also intended the ACIA to support the efforts of the United Nations' Intergovernmental Panel on Climate Change (IPCC), which recently issued the IPCC's Fifth Assessment Report. It builds upon previous assessments, concluding that human influence has been the dominant cause of warming our planetary climate and the resultant warmer oceans, rising sea levels, diminished snow and ice, and increased concentrations of greenhouse gases.

The IPCC Fifth Assessment Report included the following specific findings:

- Atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased to levels unprecedented in at least 800,000 years;
- Ocean warming accounted for more than 90% of the energy accumulated between 1971 and 2010;
- The ocean has absorbed about 30% of the emitted anthropogenic carbon dioxide, causing ocean acidification;
- The global ocean will continue to warm, and heat from the surface flowing to the deep ocean will affect ocean circulation.

The IPCC, echoing the ACIA, concludes that limiting climate change requires “substantial and sustained” reductions in greenhouse gas emissions.

Arctic Marine Shipping Assessment

At the 2004 Reykjavik Ministerial Meeting, the Arctic Council, building on the ACIA finding that reduced sea ice would likely lead to increased marine transport and access to natural resources, commissioned the Arctic Marine Shipping Assessment (AMSA), a circumpolar review of the environmental and human impacts of existing and future marine transportation in the Arctic Ocean. The AMSA recommended that Arctic nations take action to mitigate impacts from increased shipping, including protection of areas of ecological or cultural significance and specifically addressing impacts to marine mammals, reducing pollution from oil spills and air pollutant emissions, and increasing infrastructure in the circumpolar region.

Subsequent reports built on the AMSA recommendation for protecting ecologically significant areas – identifying the drifting pack ice and unique ice-associated biota as an area of heightened ecological significance – and concluded that additional protections from shipping are necessary, with an emphasis on preventing oil spills. These findings have been echoed by workshops conducted under the United Nations Convention on Biological Diversity, which defined the multi-year pack ice as ecologically sensitive, threatened by climate change, and eventually providing the only refugium for globally unique ice-dependent species.

Arctic Ocean Review

The 2013 Arctic Ocean Review (AOR) was initiated in 2009 to strengthen Arctic governance through an integrated approach to management of the Arctic marine environment. The report documented significant changes in the Arctic marine environment, including dramatic lows in minimum Arctic sea ice extent, increasing ocean temperatures on the



ice margin, the melting of the Greenland ice sheet, and lower than expected biological productivity. The AOR recommends integrated ecosystem-based management, the conservation of ecologically significant areas, urgent reductions in global greenhouse gas emissions, and increased research into ocean acidification in Arctic waters.

Arctic Biodiversity Assessment

In 2013, the Arctic Council's Conservation of Arctic Flora and Fauna Working Group released its Arctic Biodiversity Assessment (ABA), a seven-year project featuring contributions and peer reviews from hundreds of scientists. The ABA synthesizes and assesses the status and trends of biodiversity in the Arctic and presents science-based suggestions for addressing major pressures on Arctic biodiversity.

The ABA documents the ongoing Arctic biodiversity degradation from climate change, industrial development, pollution, local disturbances, and invasive species, warning that the full ecological impacts of current disturbance may take decades to fully manifest. The ABA identifies climate change as by far the most serious threat, but it warns that climate change also interacts with other stressors to yield greater risks that cannot be addressed in isolation from each other. Despite this finding, however, the ABA concludes that due to the remoteness and extreme climate of the region, there remains a “unique and urgent opportunity to conserve large, undisturbed ecosystems” in the Arctic.

The ABA highlights that Arctic ecosystem protection requires comprehensive solutions achieved through international cooperation and specifically recommends:

- Reducing greenhouse gas emissions and emissions of black carbon, methane, and tropospheric ozone precursors;
- Implementing ecosystem-based management and application of long-term risk management and best international standards to natural resource development;
- Identifying and protecting a network of large areas important to Arctic biodiversity, including marine habitats that best safeguard Arctic biodiversity under changing environmental conditions, such as the loss of sea ice.

Ocean Conservancy Recommended Priorities

Based on these assessments and dialogue with other Arctic Council participants, including scientists, non-governmental organizations, and indigenous peoples, Ocean Conservancy recommends three priorities for the 2015-2017 United States Chair of the Arctic Council. While these priorities should not preclude the continuation of ongoing Council activities, it is our belief that they represent the best chance to address climate change and to enhance the resilience of the rapidly changing and largely unmanaged Arctic.

1. Focus on the overarching theme of climate change while negotiating reductions in carbon dioxide emissions and short-lived climate forcers.

The unequivocal warming of the planet from carbon dioxide and other greenhouse gas emissions merits immediate attention. As documented by the Arctic Council and others for decades, reductions in emissions may be the only way to slow and prevent potentially irreversible changes to both the Arctic environment and the planet as a whole. While efforts domestically and internationally have yielded some positive results, there is much more to be done; and the United States has an opportunity to provide leadership among the Arctic States, which are on the frontlines of climate change and have compelling scientific data and impact stories that preview what is coming to much of the rest of the planet. Furthermore, the recent addition of new Observers to the Council, including China and India, offers an opportunity to expand Arctic Council work on emissions to include growing economies that will be essential in negotiations over targeted reductions and long-term sustainability.

2. Designation of a network of ecologically significant Marine Protected Areas to enhance the resilience of the Arctic Ocean, starting with both the drifting multi-year pack ice and ice-associated biota of the central Arctic Ocean high seas and domestic Arctic seas.

Enhancing the resilience of the rapidly changing Arctic requires protection of important ecological areas, including the globally unique multi-year drifting pack ice of the central Arctic Ocean. Multiple projects at the Arctic Council and under the auspices of the United Nations have documented the importance of this habitat both to species such as polar bears that currently depend upon it and, as refugia, to species that rely on the rapidly disappearing seasonal sea ice. Concurrently, the U.S. should show leadership in the development of a circumpolar Arctic network of marine protected areas by implementing appropriate management measures for important ecological areas in the U.S. Arctic.

3. Adoption of a Regional Seas Agreement or other instrument to implement Arctic Council agreements and recommendations as well as to coordinate integrated management of the high seas and areas within national jurisdictions.

Although the Arctic Council continues to be strengthened as an institution, a Regional Seas Agreement or other instrument would provide a mechanism through which to implement Arctic Council agreements and recommendations as well as separate agreements on issues that the Arctic Council does not address, such as fisheries. Furthermore, it would provide a mechanism through which to coordinate scientific research and actions taken with national jurisdictions, such as the development of a connected circumpolar network of marine protected areas.

Conclusion

The Arctic Council has undertaken a lengthy analysis of the causes and impacts of climate change. Arctic Council assessments and the reports associated with them point to the urgent need for action to reduce carbon dioxide and other emissions. They also establish the rationale for specific measures, such as protecting the multi-year sea ice of areas beyond national jurisdictions as the last potential refugia for ice-associated biota of the northern marine environment.

With a recent record of adopting multilateral binding agreements to protect the Arctic environment, the Arctic Council has a unique opportunity to continue moving this process forward during the 2015-2017 U.S. Chair. While negotiating reductions in carbon dioxide and other emissions and adopting protections for the multi-year pack ice will ultimately require global cooperation, the logical place to start is with the Arctic States and Indigenous Permanent Participants at the Arctic Council. Similarly, it is this body that should develop a Regional Seas Agreement or other instrument as an implementation and coordination mechanism for both Arctic Council recommendations and other protections, such as provisions of multi-lateral agreements on fisheries and protection of ecologically and biologically significant areas.

These actions are a logical outgrowth of U.S. domestic policies, which have increasingly focused on adaptation to and mitigation of climate change in the Arctic region and across the country. The 2015-2017 U.S. Chair of the Arctic Council offers this Administration the opportunity to address the most urgent environmental and social issue currently facing our planet while establishing a legacy that benefits the Earth and its inhabitants for generations.



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