



Arctic Bulletin



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Destined to



Shrink

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Editorial

Are you on board?

Summer in the Arctic sees an explosion of primary productivity, an influx of tourists, and recently a burst of science and politics: International Polar Year plus sovereignty claims, military exercises plus high-minded declarations from coastal states seeking to claim the Last Frontier. A heady mix indeed. The world's interest in the Arctic is growing and remains at unprecedented levels, at least in part ghoulishly driven by the inevitable: the loss of the inherent natural values of one-fifth of the world as a result of climate change.

Not all the world thinks that we should stand by and watch this happen. In June I had the enormous privilege of travelling with a group of young people from nine countries to the Arctic: the Voyage for the Future (see special insert). I came away completely in awe of their power and commitment. These young people will witness, indeed live through, unprecedented change because of the already locked-in effects of climate change. If we do not act quickly, the next generation will face a different world, one that will in all probability be a much worse place than it is for us today.

Who are these people and why are they so important? They are simply smart, engaged, and thoughtful young people who saw an opportunity to make a difference, and grabbed it with both hands. In the words of one of the lecturers who went on the trip, "these are not just intelligent young people, they are scary young people, and the world's leaders had better be ready for them". The most impressive thing, beyond the energy (have you ever tried not sleeping for 10 days?), is their commitment and leadership: these young leaders will not take 'no' for an answer. Ever. Their blogs are the best introduction (see www.voyageforthefuture.org).

For the first time in my professional life, I see young people all over the world stepping up to face

the challenges of climate change. Why? Because they do not see their political leaders making the sort of noises that will lead to outcomes that will secure their future. They feel that it is time for everyone to protect the future of coming generations by calling on governments from around the world to take action on climate change. They are saying that they will not accept failure at the UNFCCC negotiations in Copenhagen in December 2009 and are already making themselves heard in the corridors of power.

'Are you on board?' is their call and its symbol is the Arctic. Ironically, the natural values that have created this icon are more under threat now than ever. But these people's understanding of what those values are, and why they are important, is profound — to the extent that it has the potential to unlock the political deadlock we currently face. This gives me great hope that the climate negotiations over the coming year will not be about wording and textual annotation, but about facing the challenge head on and finding the solutions, then implementing them.

Summer in the Arctic is about bursts of activity in a hostile environment. The Voyage for the Future was a stunning example of how the Arctic can galvanise, inspire, and create new energy in our wider world, given the right mix of people and opportunity. WWF will be working with these young people to expand their influence in the next 18 months, pushing hard for a strong and effective agreement in Copenhagen in December.

And we will try to make another Voyage for the Future as well!



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SHIPPING MAGNATE SKEPTICAL ABOUT INDUSTRY GROWTH IN THE ARCTIC

Norwegian shipping tycoon Fred Olsen is concerned about prospects for expanded international shipping through arctic waters. At a maritime conference in Norway, Olsen pointed out the high risk of accidents due to arctic environmental conditions. Furthermore, emergency response support in the Arctic is non-existent, he said. Olsen doubts that shipping over the North Pole will be profitable because of the costs associated with ice-protected vessels and the short duration of the arctic shipping season. "If I was to decide, the shipping and petroleum investments in the Arctic should be put on ice," said Olsen. (Source: *The Barents Observer*)

ESTIMATING UNDISCOVERED ARCTIC OIL & GAS RESERVES

The Arctic holds 90 billion barrels of oil and 1,670 trillion cubic feet (47.3 trillion cubic meters) of natural gas that have yet to be discovered, according to a new assessment conducted by the US Geological Survey released in July. About 84 per cent are located offshore within the 200 nautical mile Exclusive Economic Zones of arctic countries. The assessment includes "technically recoverable" deposits (those which can be produced using currently available technology and industry practices). The Arctic is already known to hold about 40 billion barrels of oil and more than 1,100 trillion cubic feet (31 trillion cubic meters) of natural gas. (Source: US Department of the Interior, US Geological Survey)

ALCOA TO DOUBLE GREENLAND'S CO₂ OUTPUT

Greenland's CO₂ emissions are poised to double as a result of plans to expand aluminium production. According to Greenland's minister of infrastructure, Alcoa's planned new foundry will produce about 612,000 tonnes of CO₂ from annual aluminium production of 360,000 tonnes. Greenland currently emits 700,000 tonnes of CO₂ per year. News of the 90 per cent increase raised questions from a member of Greenland's parliament about how the government plans to reduce emissions. Josef Motzfeldt, a member of the Environmental and Preservation Committee, asked: "Will they buy quotas abroad, will we contribute to Denmark's CO₂ totals, or will Alcoa provide a solution?" (Source: www.sermitsiaq.gl)

Arctic nations rank lowest among



Weak vehicle fuel efficiency standards were a factor in the Canadian and US rankings.

Global warming is impacting the Arctic at an unprecedented rate, but ironically the three largest arctic nations are the furthest behind in taking action to reverse the destruction taking place in their own backyard. A recent "scorecard" assessment by Ecofys (an independent consultancy) commissioned by WWF and Allianz (a leading global financial services provider), ranks the United States, Canada and Russia at the bottom of G8 member countries on progress toward reducing greenhouse gas emissions.

As the largest emitter with the highest per capita emissions and an increasing trend in total emissions, the US scored the worst of all G8 countries. While substantial activities are emerging at the state level, few substantive federal measures are in

place to curb emissions in the short term.

Canada ranked second-last with a climate performance similar to its southern neighbor: very high per capita emissions and an upward trend in total emissions diverging from its Kyoto target. A national plan to curb emissions has yet to be implemented.

With the largest arctic territory, Russia scored third-last on its climate policies. Emissions have increased steadily since 1999 and there are few measures in place to curb these, with modest plans existing but still needing to be implemented. The country ranked slightly higher than its arctic neighbors due to declining absolute emissions in the early 1990s and its larger use of natural gas, which is less CO₂-intensive than other fossil fuels.

The potential for improved energy efficiency also remains untapped in these three arctic countries — all three ranked last on this indicator, with broadly insufficient or lacking policies. They also lag behind in policies for the future including on transport, industry, and renewable energy.

Released before the July meeting of G8 leaders and based on 12 indicators, the *G8 Climate Scorecards* show that none of the G8 countries is currently on target to reduce greenhouse gas emissions enough to keep the global temperature rise below 2 degrees Celsius. The full scorecards are available at: www.panda.org/climate

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Arctic Marine Shipping Assessment

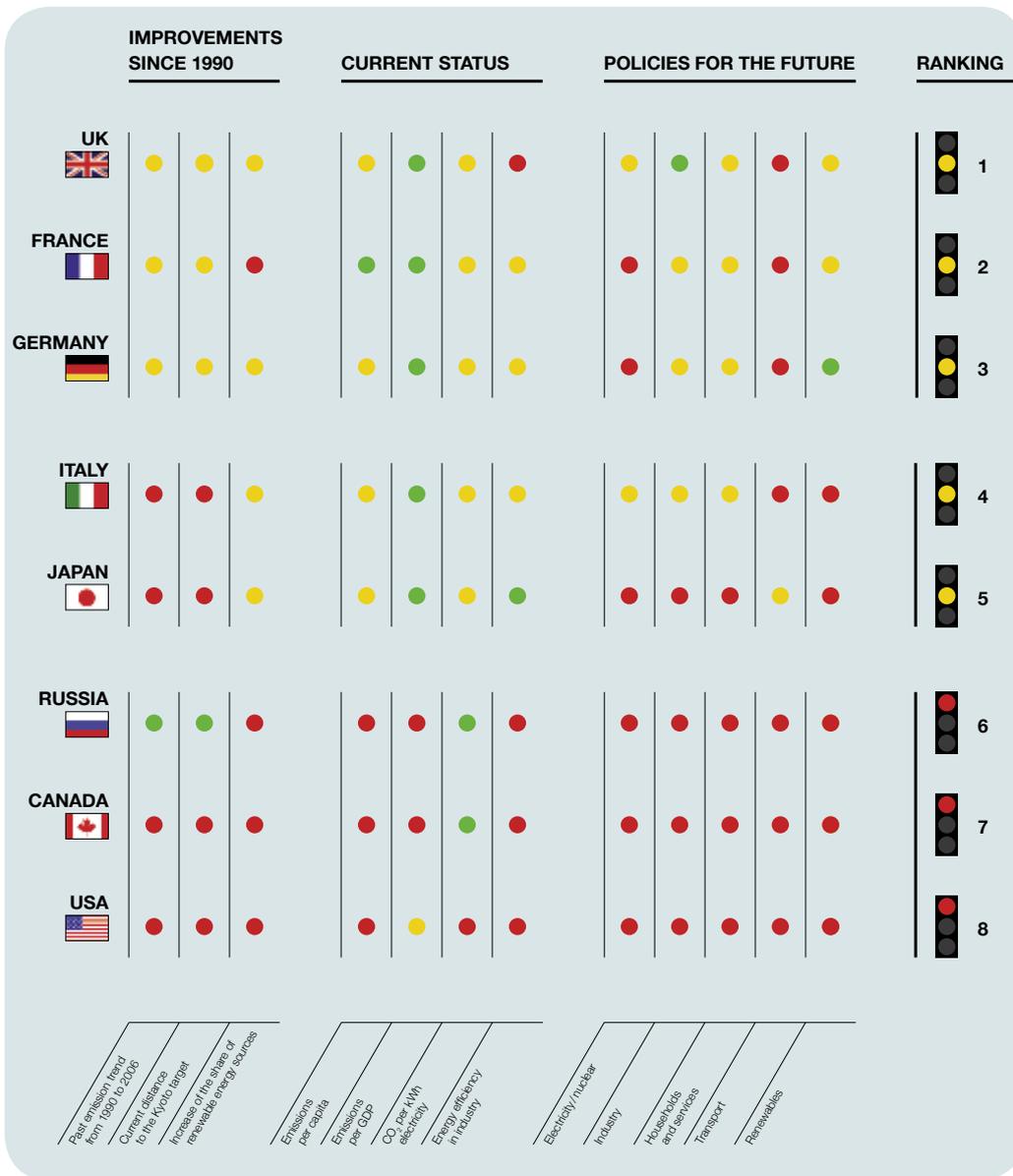
In March, the University of New Hampshire's Coastal Response Research Center hosted the Arctic Marine Incidents Workshop, where more than 60 experts from seven nations discussed the issues and ramifications of five highly plausible marine incidents in the Arctic Ocean. Scenarios included a cruise ship grounding off western

Greenland and a collision of tanker and fishing vessels in the Barents Sea. Participants identified a lack of adequate infrastructure throughout the Arctic Ocean to support today's level of marine traffic.

The workshop was part of a comprehensive Arctic Marine Shipping Assessment (AMSA), requested from

the Protection of the Arctic Marine Environment Working Group (PAME) by Ministers of the Arctic Council in 2004. Led by Canada, Finland, and the US, AMSA is a follow on to the Arctic Climate Impact Assessment and the PAME-led Arctic Marine Strategic Plan. Circumpolar in focus, AMSA also considers

ng G8 on climate performance



regional and local perspectives of expanded Arctic marine activity.

The primary AMSA research areas include: Arctic marine geography and use; the human dimension and indigenous arctic marine use; arctic marine transport history; development of scenarios, or plausible futures, for arctic marine navigation to 2050; a data survey of vessels operating in the Arctic Ocean during 2004 (baseline traffic assess-

ment); an environmental impacts review; and a key review of arctic maritime infrastructure issues.

AMSA is also developing three regional case studies to 2020 on the Bering Strait region, Canadian Arctic, and northwestern Russia/Barents Sea region, as well as a Baltic Sea case study illustrating the international arrangements that have evolved in this seasonally ice-covered sea with year-round shipping.

The findings and research needs from each of the major AMSA topics will be consolidated, and draft recommendations will be passed to the eight Arctic states for review. It is anticipated that the *AMSA 2009 Report* will be ready for the Arctic Council Ministerial Meeting in April 2009.

Dr Lawson W. Brigham
 Chair, AMSA & Vice Chair, PAME
 Deputy Director, US Arctic Research Commission

INDIA OPENS ARCTIC RESEARCH STATION

In July, India's Minister of Science, Technology and Earth Sciences opened a new research base in Ny Aalesund, Svalbard. The Indian Arctic Programme started in August 2007 as a small contingent of five scientists and within a year has expanded to a full-fledged station called "Himadri." The National Centre for Antarctic and Ocean Research based in Goa will manage the facility, which will carry out year-round research on arctic science with a special emphasis on climate change. India is the tenth country to have established a research station on Svalbard. (Source: Indian Department of Science and Technology)

MONITORING SEA-LEVEL RISE FROM SPACE

A new satellite launched in June will gather data to advance knowledge about climate change impacts on the world's oceans. The Ocean Surface Topography Mission (OSTM) is an extension of a project begun in 1992 to record sea-level height using high-precision ocean altimetry. By combining data on ocean currents and heat storage, OSTM will develop a better understanding of global climate change. Partners in the mission include NASA, the National Oceanic and Atmospheric Administration (NOAA), the French space agency Centre National d'Etudes Spatiales (CNES), and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT). (Source: NASA)

RUSSIAN POLAR STATION TO MONITOR SEA ICE

The Russian drifting station North Pole-36 (SP-36) will commence operations in September. Ice conditions in the area where the station is located have already been monitored by satellite since June. "Analysis of satellite data has made it possible to preliminarily define the possible location of multi-year ice masses north of Vrangell Island," said Sergei Balyasnikov of Russia's Hydrometeorology Service. The station will search for ice masses while in the central part of the Arctic basin near the Mendeleev Ridge. Russian drifting stations conduct year-round meteorological, ice and oceanographic observations, monitor environmental conditions, and research climate change effects and ecosystem impacts in the Central Arctic region. (Source: RIA-Novosti)

Graphic: WWF

ILLEGAL OIL DISCHARGES IN CANADIAN WATERS

A new study, *Visualization of spatial patterns and temporal trends for aerial surveillance of illegal oil discharges in western Canadian marine waters*, identifies hotspots of shipping-based oil pollution in the Pacific region of Canada's Exclusive Economic Zone. Using data from the National Aerial Surveillance Programme, the study presents oil spill data as points on a map relative to coastlines, harbours, and the distribution of aerial surveillance. Researchers emphasise the importance of standardising oil spill data by controlling for surveillance effort to provide a better understanding of the distribution of illegal oil spills, and how these results can benefit monitoring programmes. (Source: *Marine Pollution Bulletin*, Vol.56 Issue 5, pp 825–833)

ARCTIC EXPEDITION FOR CLIMATE ACTION

The Aspen Institute organized an arctic cruise in July that brought together over 100 leaders representing American business, industry, politics, religion, philanthropy, and journalism, as well as arctic science and environmental experts. On board the *National Geographic Endeavour*, participants spent a week discovering climate change impacts and global threats from the melting Arctic, and formulating solutions. A resulting "framework for action" outlines elements for a more active US role in working internationally to implement climate solutions. "Within 30 days after the November 2008 election, the president-elect should convene a bipartisan group to assemble a set of comprehensive solutions and rapidly propose a plan to cut emissions," the group recommended. (Source: The Aspen Institute)

DECLARATION OF COOPERATION

Representatives from Canada, Denmark, Norway, Russia, and the US met in Ilulissat, Greenland, in May for a conference on the Arctic Ocean. Talks resulted in a declaration of cooperation for the Arctic, necessary as the region "stands at the threshold of significant changes" with vulnerable ecosystems and local communities facing climate change impacts. The "Ilulissat Declaration" affirms the UN Convention on the Law of the Sea (UNCLOS) as a legal framework for arctic governance. It also states the desire to strengthen cooperation with international organisations such as the Arctic Council, International Maritime Organisation, the Barents Euro-Arctic Council, and other fora. (Source: Danish Foreign Ministry)



Photo: Shire Kimmered

Leadership and vision needed for polar bears

Next year's meeting of the parties to the Agreement on the Conservation of Polar Bears is a unique chance to elevate polar bear and arctic conservation efforts to the next level. It gives polar bear range states an opportunity to lead global efforts that truly engage in the most critical issue of our time: climate warming.

Since the Agreement was signed in 1973, the world has changed. Rather than hunting, the biggest threat to the species survival is now receding sea ice and habitat loss due to climate change. At the same time, human pressures on the Arctic are increasing, adding to the challenges facing polar bears and requiring a new approach to polar bear conservation (see "Time for action", *Arctic Bulletin* 1.07).

Last summer, the signatory countries to the Agreement (the parties, all of which are polar bear range states) met for the first time since 1981 and agreed on a number of issues that warrant increased attention if these countries are to fulfill their obligation to protect polar bears. These are: a coordinated circumpolar management effort; better coordination on shared populations; the lack of information and monitoring in regions (data gaps); human-bear interactions; oil and gas development; shipping; and tourism. WWF will prepare a report card for each range state assessing its progress on the 2006 agreements.

While this agreement was a significant step forward, three things were nevertheless noticeably absent: (1) a formal and significant mechanism for information exchange with the IUCN Polar Bear Specialist Group (PBSG); (2) a meaningful discussion of climate change impacts; and (3) measurable conservation objectives. WWF believes PBSG meetings should precede range states meetings in years where they co-occur so that the most current scientific consensus is informing policy. The 2009 party meeting must have climate change and its associated risks to polar bears on the final agenda. Finally, parties to the Agreement must agree on

a tangible, circumpolar conservation plan that clearly addresses the primary threats to polar bears today: habitat loss, harvest, industrial development, and the combined threats of toxic chemicals and disease.

The polar bear range states have an obligation to take immediate, coordinated, and cooperative action. Given current sea ice trends, time is of the essence. Now is the time to provide vision and leadership on arctic conservation and global climate change — a time to make history.

The polar bear range states have an obligation to take immediate, coordinated and cooperative action.

Geoffrey S. York

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US moves to protect arctic fisheries

New legislation is a response to climate change impacts

A US law approved in June requires the country to initiate discussions with other arctic nations to negotiate an international agreement for managing migratory, trans-boundary and straddling fish stocks in the Arctic Ocean.

Alaskan Senator Ted Stevens, who co-authored the joint resolution (S.J. Res 17) with Senate colleague Lisa Murkowski, said: "As ocean temperatures change and fish habitats expand northward, we may see valuable fish stocks migrate north into the Arctic Ocean. Alaskans must act and adapt to confront the impacts of climate change, and this resolution represents an important step forward."

Until recently, commercial fishing in the Arctic Ocean has been restricted by sea ice cover and the lack of infrastructure associated with the ocean's remoteness. As global warming increases ocean temperatures and causes sea ice to retreat, migration of arctic fish stocks may create more favourable fishing conditions in new areas. Recognising the importance of properly managing these emerging fisheries, the North Pacific Fishery Management Council proposed in June that the US close all federal waters in the Arctic Ocean to commercial fishing until a management regime is put in place. S.J. Res 17 is consistent with this effort.

Murkowski said: "We must ensure that there is an international framework for the management of fisheries in arctic waters. Conserving and responsibly managing arctic fisheries must be a priority not only in Alaska, but also internationally."

"Alaskan fishers have worked both at home in our own waters, through the North Pacific Fishery Management Council, and in international regional fisheries organisations to make sure that North Pacific Ocean and Bering Sea fisheries are sustainably managed and that management is based on sound science," said Congressman Don Young who helped speed the bill through the House of

FISHERY ZONES IN THE BERING SEA

Alaska pollock is the second largest fishery in the world and is an important part of US and Russian seafood production in the Pacific region. An area known as the 'Donut Hole' straddles the US Exclusive Economic Zone (EEZ) and international waters.



Representatives. "This resolution makes it clear that the United States wants this track record of sound management to continue into new areas of the Arctic Ocean if they become open to fishing."

The new law also addresses the problem of illegal, unreported, and unregulated (IUU) fishing by calling upon the US to help prevent fishing on the arctic high seas until an international fisheries management plan is developed. The plan would contain measures to combat IUU fishing, which continues to undermine fisheries worldwide.

"With less summer ice in the Arctic, our northern waters will be open for exploitation from pirate fishing fleets. But the passage of this resolution will help protect our marine resources. I will continue to work with the State Department and

United Nations to ban illegal fishing in the Arctic and ensure waters off Alaska remain the healthiest in the world," said Stevens.

"WWF commends the US government for its leadership in responding to climate change impacts on arctic fisheries," said Carter Roberts, CEO of WWF-US. "With the Arctic warming at twice the global average, there is an urgent need to develop new international governance regimes for the region. This is an important first step in protecting vulnerable arctic resources and sets a precedent for developing a broader legal framework for the Arctic."

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Recommendations published for oil & gas activities in the Arctic

Following the release early this year of the Arctic Council's *Assessment 2007 – Oil and Gas in the Arctic: Effects and Potential Effects* (see *Arctic Bulletin* 1.08), recommendations arising from the assessment have now been published.

The assessment is a comprehensive scientific review of the environmental, social and economic, and human health impacts of oil and gas activities in the Arctic. Produced by an international group of experts in response to a request from the Ministers of the Arctic Council, it concluded that oil and gas activity in the Arctic is likely to increase. It identified these activities as major drivers of social and economic change in the Arctic, and highlighted that the region is particularly vulnerable to their effects.

Threats to the terrestrial environment are mainly due to phys-

ical impacts, disturbances, and habitat fragmentation, whereas oil spills have the greatest potential for impact in marine and freshwater environments. Improved technology and use of best practices have reduced environmental impacts, but additional risks may occur as conditions change or new areas are explored and developed. Impacts on people can be both positive and negative.

Arctic Oil and Gas 2007, the recently published report by the Arctic Monitoring and Assessment Program (AMAP*), summarises these key findings and presents 32 policy-relevant recommendations based on the scientific assessment. If followed, these recommendations (many of which are already implemented in some arctic countries) can help to ensure that oil and gas resources in the Arctic are extracted in an environmentally and socially responsible manner.

The recommendations, which will be presented to Ministers of the Arctic Council at their meeting in April 2009, are intended to inform policy decisions in the Arctic countries. For more information, including electronic versions of the assessment reports, visit the AMAP website: www.amap.no

John Calder (Chair), Simon Wilson, and
Dennis Thurston
Arctic Monitoring and Assessment
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Tana Stratton
Arctic Council Secretariat

* AMAP is one of six Working Groups of the Arctic Council. Its primary function is to advise the governments of the eight arctic countries on matters relating to threats to the Arctic from pollution, climate change, and associated issues.



Source: Marine Mammal Council

Walrus facts & figures

- Numbering around 15,000 animals, the Atlantic walrus is found in the Canadian Arctic, in the waters of Greenland, Svalbard and the western portion of the Russian Arctic (Barents Sea).
- The Pacific walrus population is about 200,000 and lives around Alaska and northeastern Russia.
- Walruses need thick sea ice to support their weight and the shallow waters of the coastal zone to feed. As the warming arctic climate reduces the thickness and expanse of the ice, it also reduces the walrus's habitat.
- Walruses migrate with the moving ice floes, but never venture far from the coast as they feed in shallow waters.
- To capture molluscs and other invertebrates, walruses generally swim to a depth of 20–30 metres but can reach as far as 100 metres.
- All male walruses and some females have a large air sac in their throat that researchers believe helps to keep their head above water when they swim.

(Source: www.panda.org)





“I am the walrus”

The last *Arctic Bulletin* issue profiled climate change impacts on the Pacific walrus (*Odobenus rosmarus divergens*) in the Chukchi Sea. Continuing coverage of this iconic arctic species, Aleksey Knizhnikov explains the threats facing its Atlantic cousin and work to limit these threats for one subpopulation.

Photo: WWF-Canon/Wim van Passell

Living in coastal areas from north-east Canada to Greenland to the Barents Sea, the Atlantic walrus (*Odobenus rosmarus rosmarus*) is a flagship arctic species. The subspecies was nearly decimated by commercial harvest, and is listed in the Russian Red Book as “status 2” with a low and declining population.

Global warming impacts on the Atlantic walrus will undoubtedly increase over the course of this century. Scientists expect that in the worst-case scenario, the Arctic will be ice-free in the summer within a decade. And if current levels of greenhouse gas emissions continue, the walrus’ winter sea-ice habitat is projected to decline by at least one-third by mid-century, with any remaining winter sea ice being much thinner and not lasting as long. On top of this, warming sea temperatures and sea-ice loss appear to be reducing the walrus’ bottom-dwelling prey. Habitat and food supply loss of this magnitude will lead to the decline of the Atlantic walrus population and increase the risk of their extinction.

Under these circumstances, any additional human-induced stresses should be avoided or at least minimised. However, growing oil and gas development and the prolif-

eration of shipping routes in the Arctic are further endangering the Atlantic walrus by exposing them to increased risks of oil spills and rising levels of seismic noise pollution and human disturbance.

WWF-Russia is working to limit such threats to the 500 Atlantic walruses in the Karsko-Novozemelskaya subpopulation, which lives in the southeastern region of the Barents Sea known as the Pechora Sea (see map).

In 1999, Russian oil company LUKoil started a project on the coast of the Pechora Sea, in the centre of the habitat of this walrus subpopulation. Oil production from the development has sharply increased in the past few years from thousands of tonnes to hundreds of millions of tonnes. In 2004, LUKoil in cooperation with US-based Conoco began to develop a new offshore oil terminal, “Varandey”. It was only in late 2007 that LUKoil invited WWF to review and evaluate environmental impact assessment (EIA) data for the Varandey terminal. At that time, construction was almost complete, with operations scheduled to commence in 2008.

WWF’s review of the EIA focused on evaluating the impact of the terminal on the Atlantic walrus. However, while the section

titled “Conservation of the environment” contained many recommendations on other species, it made no mention of possible impacts on Atlantic walrus or recommendations on mitigation measures from such impacts.

Earlier this year, WWF wrote to LUKoil expressing concerns regarding specific threats to the Atlantic walrus from the Varandey terminal project and the lack of information in the EIA on these. Considering the rapid pace of project development, WWF also requested to urgently start a dialogue on this issue. LUKoil responded positively and invited WWF representatives for a first meeting in May 2008. The talks resulted in agreement to discuss the development of a joint programme for Atlantic walrus monitoring and mitigation measures. WWF and LUKoil invited the Marine Mammal Council (Moscow) and the Polar Fishery Research Institute (Murmansk) to join efforts to develop and implement the programme. Further discussions are planned for later this year.

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Time and tide

Francis Grant-Suttie, director of oil, gas and international finance at WWF-US, reports on the legal conclusion of the long-running Exxon Valdez case and the pressing need to enact legislation to protect the “Polar Bear Seas” from future oil spills.

For thousands of Alaskan families, the long wait for restitution is over — albeit at a much lower level than they had hoped.

After nearly 20 years of litigation, Exxon Mobil Corporation will have to pay punitive damages for the massive 1989 *Exxon Valdez* oil spill in Alaska. In June, the United States Supreme Court overturned a lower court decision that ordered the company to pay US\$2.5 billion in punitive damages, limiting these

on five criminal charges, with potential penalties totalling US\$5 billion. The company soon agreed to plead guilty to three counts with a fine of US\$25 million, or less than 1 percent of the total potential criminal fine, plus US\$900 million in civil fines to be paid over a 10-year period. In addition, the company paid US\$2.1 billion in cleanup costs, and US\$500 million more to fishers for their lost catch.

The Alaskan Congressional delegation issued a statement saying that the ruling “adds insult to injury to the fishers, communities, and Alaska natives who have been waiting nearly 20 years for proper compensation”. The legislators are pushing for a US federal law that would give the 33,000 victims tax relief and the ability to increase retirement contributions to off-set lost income.

The *Exxon Valdez* spill demonstrated the remarkable longevity of oil spill impacts, and serves as yet another reminder that there are no effective methods for cleaning up oil spills in Arctic waters. Unfortunately, the Supreme Court ruling on the disaster, which dramatically reduced the punitive damages awarded to those affected by the spill, provides the oil industry little incentive to avoid future spills.

The US government’s recent five-year leasing plan for the Arctic Ocean calls for leasing 133,550 square kilometres in the Beaufort Sea and 121,405 square kilometres in the Chukchi Sea to oil and gas companies. These ecosystems are home to walrus, seals, and endangered whales, and serve as staging and moulting grounds for hundreds of thousands of migratory birds. The region’s pristine marine resources and coastal habitats are also integral to the livelihoods and cultures of Alaska Native communities across northern Alaska.

“The Minerals Management Service (MMS), by its own admission, has stated that oil spills are likely from opening up the Chukchi Sea to oil and gas development,” says Mike Daulton, director of conservation policy at the National Audubon Society. “That, combined with findings from the Army Corps of Engineers citing there are no effective methods for cleaning up oil spills in Arctic waters, seems enough reason to halt oil and gas activities until more is known about the migratory birds, marine life, and unique conditions in this very harsh environment.”

Indigenous arctic communities are duly concerned about the potential for future spills on the scale of the *Exxon Valdez*. George Edwardson, president of the Inupiat Community of the Arctic Slope (ICAS) says: “We have a responsibility to our people to stand up against threats to our whaling culture and to protect our way of life. An oil spill in the Chukchi Sea could devastate bowhead whale migration and other animals we have subsisted on for thousands of years. MMS continues to ignore our concerns.”

Some in government are heeding the warnings of community leaders and conservation experts that immediate action is required to protect the Arctic from further spills. The US Congress is deliberating on a number of environmental proposals, including the Polar Bear Seas Protection Act (H.R. 6057). This legislation, which WWF played a role in drafting, would protect much more than polar bears: if enacted, it will halt oil and gas lease sales in the so-called “Polar Bear Seas” until scientists can fully assess the environmental impacts and designate protected critical habitat. It also stipulates that necessary safeguards be in place for cleaning up oil spills before any drilling takes place.

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Photo courtesy of the Exxon Valdez Oil Spill Trustee Council

The Exxon Valdez aground and leaking oil.

to compensatory damages calculated as US\$507.5 million.

Exxon had asked the Supreme Court to reject the punitive damages judgment entirely, arguing that it already has spent US\$3.4 billion in response to the accident, which polluted 1,900 kilometres of Alaskan coastline. The *Exxon Valdez* ran aground in Alaska’s Prince William Sound, spilling 41 million litres of oil — the largest-ever spill in North America.

The Supreme Court ruled that under US federal maritime law, punitive damages should not be larger than the compensatory damages the company had already been ordered to pay. In other words, the company should not have to pay more in punishment than the actual estimated monetary value of the damage it caused.

The decision brings closure to a protracted legal battle. The US federal government indicted Exxon



for a living planet

Voyage for the Future

is a WWF initiative to educate tomorrow's leaders about arctic climate change and prepare them to advocate solutions.

Eighteen young adults from nine countries participated in a ten-day expedition during June 2008 that took them along the coast of Svalbard, an arctic archipelago in the European High Arctic. On-board lessons covered climate change science and the global feedback effects associated with rising temperatures in the Arctic.

Voyage participants now

serve as WWF 'Ambassadors for Change,' sharing their knowledge to stimulate broad public support for measures to radically reduce greenhouse gas emissions. Their mission is to inform government and business leaders, media and the general public that the Arctic is the place where present and future climate change impacts are of urgent global relevance.



Arctic climate impacts – global concern

Temperatures in the Arctic are rising at twice the average global rate. Arctic sea ice coverage hit a record low in September 2007. Rapid and unprecedented melting is producing dangerous feedback effects that are increasing global warming beyond previous predictions. Thawing arctic permafrost is releasing methane – a potent greenhouse gas that is twenty times more powerful than CO₂ in terms of its global warming impact.

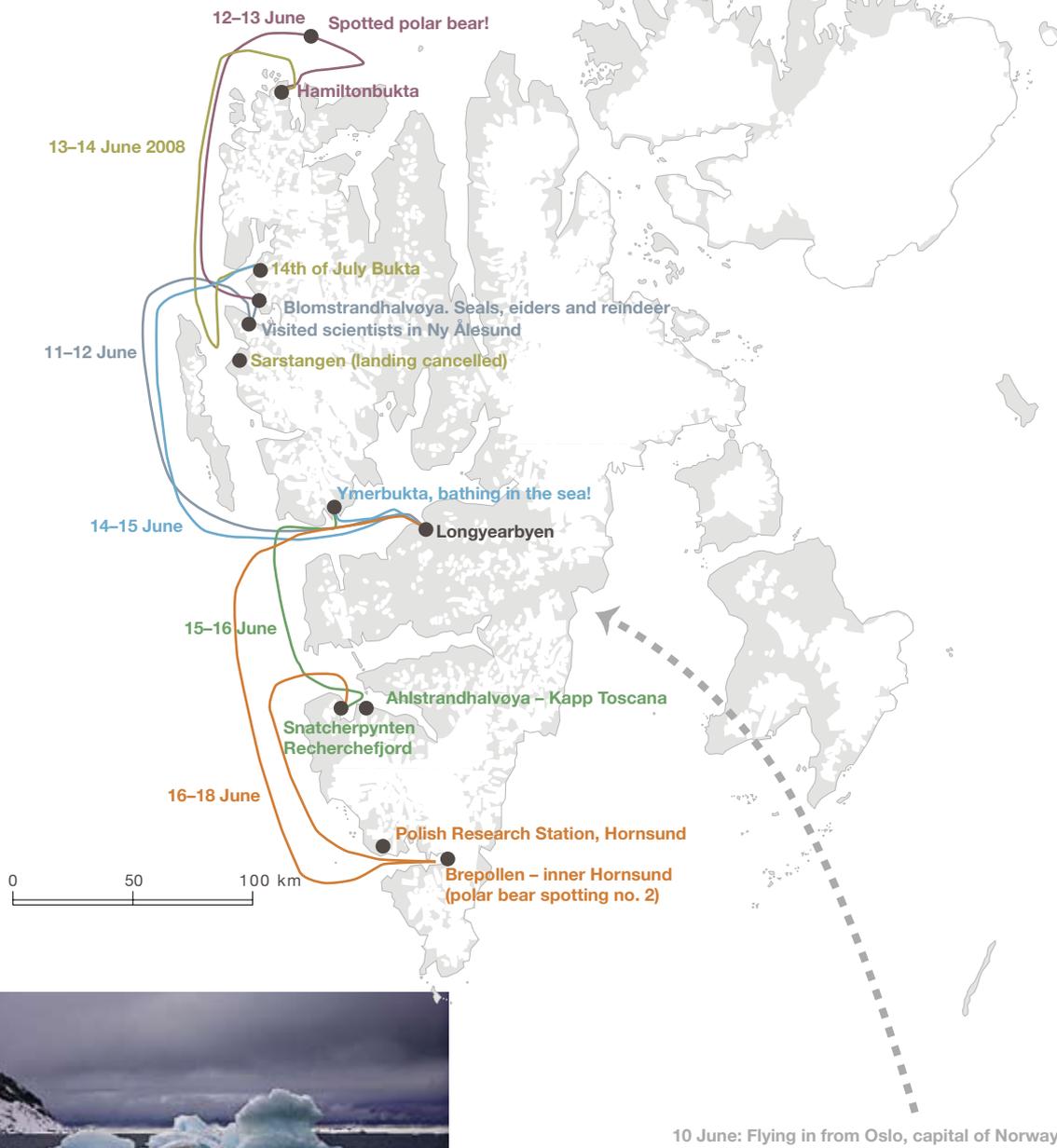




Voyage for the Future took place aboard the MS Aleksey Maryshev, a former research vessel that carried the WWF 'Ambassadors for Change' along the west coast of Svalbard.

WWF gratefully acknowledges the following arctic environmental and communications experts who contributed to the Voyage for the Future educational curriculum:

- Olav Mathis Eira, Saami representative and WWF Climate Witness
- Dr. Appy Sluijs, paleo-climatologist, University of Utrecht
- Dr. Michael Roleda, marine biologist, University of Kiel
- Dr. Kit Kovacs, marine biologist, University of Svalbard
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- Marc Cornelissen, European Space Agency's CryoSat programme
- Solitaire Townsend, Futerra Communications
- Polish Polar Station, Hornsund Fjord, Svalbard
- Norwegian Polar Institute



10 June: Flying in from Oslo, capital of Norway

“There's no shortage of solutions”

The technologies and sustainable energy resources known or available today are sufficient to meet the growing global demand for energy and protect the Earth's climate. There is still enough time to build up and deploy them, but only if the necessary economic and policy decisions are made within the next five years. Radical and immediate greenhouse gas reductions are needed to prevent the Arctic from disintegrating. Visit www.panda.org/climate to discover WWF's vision for 2050 in the report, Climate Solutions.





In 2007, the sea ice cover dropped off the charts. Even the most pessimistic predictions of the IPCC did not predict such a dramatic change ... With less ice and higher temperatures, the Arctic that I am seeing will soon fade away.

Jeremy Brammer

The beauty of the Arctic is in its fragility. I hope that we realize that climate change is, and will be, the change that upsets this fragile system.

Jayne Collins

This is not just about polar bears and ice in some faraway place that we can put up on a shelf and save for that mysterious time called 'later'.

Ben Wessel

It is so difficult to image how a few rises in tenths of degrees can have such an immense effect not only on ice melting here (in the Arctic) – but what that means in terms of flooding, droughts, mass immigration, disease, and geo-politics.

Casper ter Kuile

The dangers are a problem of the present just as much as a problem of the future. We can no longer pass the burden onto other generations.

John Monaghan

The Arctic is such a powerful place, you'd think it was untouchable. But it's not.

Emma Biermann

The ambassadors

Nanny-Maja Anderbäck (Sweden)
 Johannes Barthelmeß (Germany)
 Emma Biermann (UK)
 Jeremy Brammer (Canada)
 Jayme Collins (Canada)
 Greta Hamann (Germany)
 Sven Heijbel (Sweden)
 Michiel Jansen (Netherlands)
 Casper ter Kuile (UK)
 Ekaterina Levitskaya (Russia)
 John Monaghan (USA)
 Yuriko Murakami (Japan)
 Evanne Nowak (Netherlands)
 Shunta Takagi (Japan)
 Karl Oskar Teien (Norway)
 Dmitry Vladimirov (Russia)
 Maria Waag (Norway)
 Ben Wessel (USA)



MORE BLOGS AND VIDEO AT: www.voyageforthefuture.org



“Are you on board?”



“Take action now to avoid dangerous climate change!”

There is no time to lose and no reason to wait. Climate change solutions exist today. The Voyage for the Future Ambassadors call on the world’s governments and business leaders to:

“ TAKE RESPONSIBILITY FOR CREATING A SECURE FUTURE FOR THE NEXT GENERATION

Today’s leaders have a moral obligation to leave future generations with a stable environment. Handing down the global warming problem is not a viable option. ”

“ INITIATE ACTION TO REVERSE CLIMATE CHANGE

Political leaders must work to deliver a new global deal for a stable climate at the Fifteenth Conference of the Parties to the UN Framework Convention on Climate Change in Copenhagen in 2009. ”

“ COMMIT TO CUT EMISSIONS AND MOVE BEYOND PETROLEUM

Commit to mid-term reductions of between 25–40% by 2020, as agreed between Kyoto Parties in Bali. Moving beyond a carbon-based economy is possible using existing technologies to create jobs and provide clean energy. We have the solutions! Check out WWF’s views on this at: www.panda.org/climate ”

Follow the Voyage for the Future

In coordination with WWF offices in their home countries, the Voyage for the Future ‘Ambassadors for Change’ will engage with politicians and the media to advocate for action to reduce greenhouse gas emissions. They will campaign both virtually and in

person at a variety of international fora including the G8 summit and the UN Conference of the Parties to the Framework Convention on Climate Change. For campaign updates, visit: www.voyageforthefuture.org

Destined to shrink

Beyond the hype of arctic sea ice minima

Last year saw a record minimum in the extent of arctic sea ice. At 4.3 million square kilometres, this minimum was more than 40% below averages in the 1980s and more than 20% below the previous record minimum seen in 2005. This huge scale of sea-ice loss — which was more than 30 years ahead of model predictions — sent shock-waves through the scientific community. The most recent models now predict an ice-free Arctic Ocean in summer — a state not seen for more than 1 million years — between 2013 and 2040.

Within the next couple of weeks the Arctic Ocean will reveal its 2008 minimum sea ice extent. Many people can't wait for this date and figure, motivated by emotions ranging from sheer interest to genuine concern and, in some cases, maybe even sensationalism. Many motivations stem from environmental interest and concerns for the Arctic, some also strive to translate arctic climate impacts into political action on climate change. My aim here is to explain the arctic sea ice situation in context, so that we can move past the noise of reaching yet another arctic sea ice minimum in 2008 and focus instead on the underlying situation of the arctic sea ice pack and what causes it to shrink.

Does it matter?

Will this year provide us with a new record?

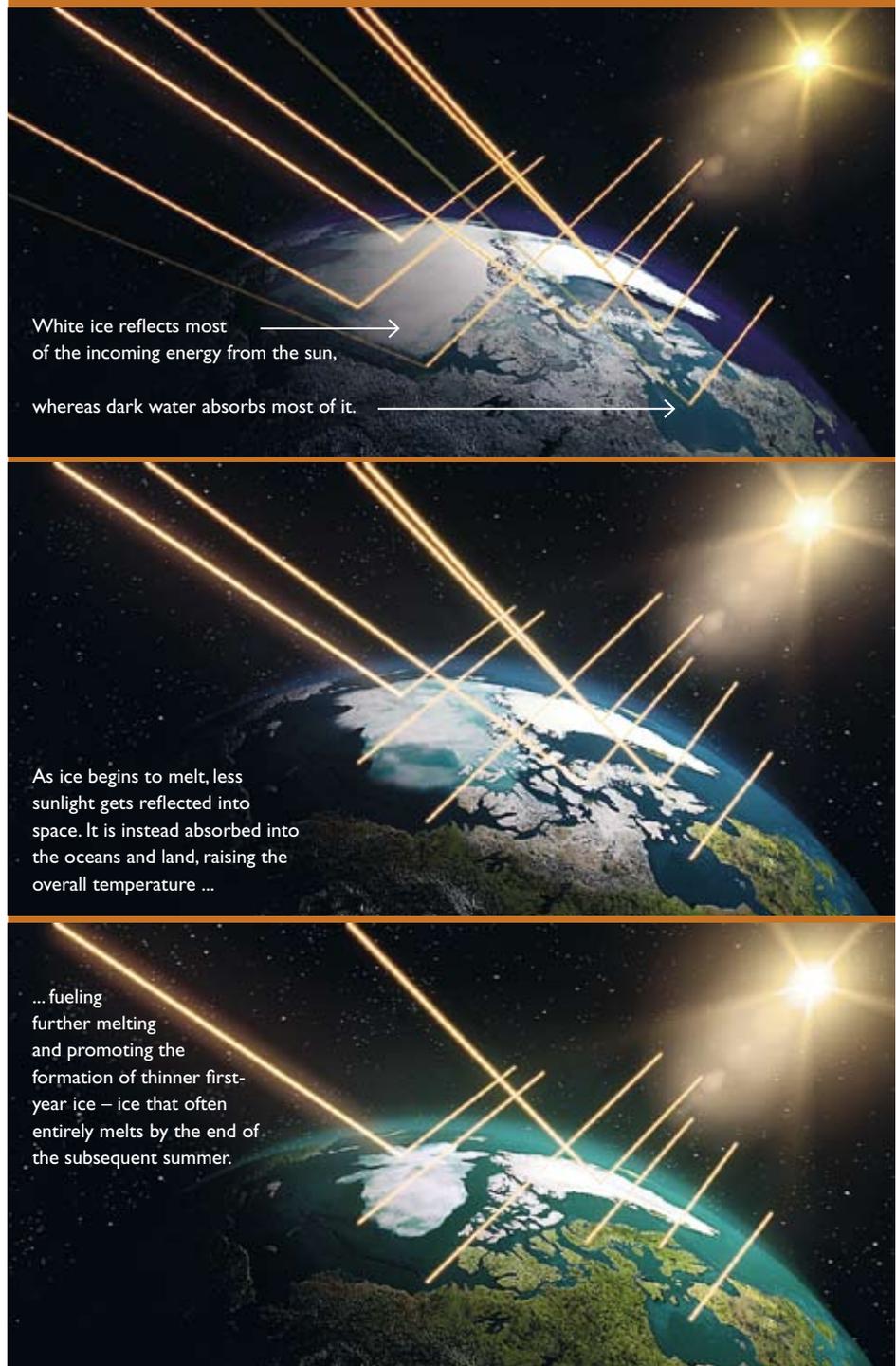
The quick answer (as I write this in late July) is maybe, but the real question is: does it matter? I do not mean does arctic sea ice extent matter for taking action against climate change and for preserving one of the most beautiful places on Earth. I also do not mean does it matter for our climate, as clearly the extent of arctic sea ice is crucial for keeping our planet cool.

What I mean is, does the 2008 minimum extent matter for a fundamental understanding of arctic sea ice and its future?

The answer to this is no. ➤ 16

Ice-Albedo-Feedback

A conceptual illustration showing how polar ice reflects light from the sun. Least to greatest warming conditions are shown top to bottom.



► 15 Media reports may make us believe that the occurrence (or not) of yet another sea ice minimum this year will make the difference as to when the Arctic Ocean will be ice-free in the summer.

It will not. The dramatically reduced arctic sea ice minima of 2005 and 2007 are not the *cause*, but the *effect*, of the real problem. What *caused* the problem occurred over the second half of the 20th century and manifested itself 15–20 years ago. Presented below is the argument for the underlying cause of arctic sea-ice loss and its intimate link to its future.

What the scientific community agrees on

In 2004 and 2005, before the first record-breaking sea ice minimum but after three decades of gradual sea-ice decline, four scientists based

at the University of Washington, Seattle, published their conclusions from data and modelling of arctic sea ice. Their main finding was that the observed ongoing loss of arctic sea ice was due to a precipitous reduction in the overall thickness of the arctic sea ice pack during the late 1980s and early 1990s. Their reasoning for this conclusion had three components.

The scientists found that what ultimately caused the thinning of the sea ice pack was the formation of thinner-than-usual first-year arctic sea ice. This was due the gradual increase of autumn, winter, and spring air temperatures over the Arctic Ocean over the last 50 years caused by rising atmospheric greenhouse gas concentration.

During the late 1980s and early 1990s, this situation was then exacerbated by several years of a weaker-

than-usual high pressure system over the Arctic due to changes in an atmospheric circulation pattern. In this situation (referred to as a “positive index of the Arctic Oscillation”), low pressure systems can advance further north, driving warmer and wetter air masses into the Arctic. Additionally, the prevailing winds don’t allow first-year ice to persist in areas of the Arctic Ocean where it would otherwise survive the next summer’s melt, thus prohibiting the development of multi-year, thicker ice. The same wind pattern, assisted by a Pacific atmospheric circulation pattern, also drives more old and thick ice out of the Arctic.

Finally, and crucially, the researchers argued that only the accelerating effects of a third process could have caused the observed loss of sea ice — a ‘positive feedback’ process that origi-

Klima X

Put on your rubber boots and prepare to get drenched. WWF Barents Sea officer Mark Burnett takes a tour of a popular Oslo science exhibit that explores impacts of arctic melting.

Science museums have a reputation as engaging centres of learning. Often geared towards children, their educational focus places them at the heart of many communities. The Norwegian Museum of Science, Technology, and Medicine (NTM) in Oslo has set a new standard for innovation with its highly interactive exhibition on climate change, *Klima X*.

Museum designers came up with an original way to illustrate the physical impacts of unabated global warming — by placing the entire exhibition under 10 centimetres of water.

Visitors enter the *Klima X* exhibit via a room where they exchange their shoes for bright yellow, waterproof rubber boots. Continuing down a corridor, a metal handrail is temperature controlled so you can feel the climate during the last ice age (10 degrees Celsius), warming further along the handrail to today’s average (14 degrees).

As you feel the temperature rising, you walk further down the corridor into deeper water. Upon entering the main exhibit hall, the handrail temperature is 18 degrees and the water depth reflects sea level if average temperatures rise 4 degrees Celsius above today’s level. Before presenting any information, the exhibit cleverly conveys its key message through the senses.

Special effects are not the only tools used to engage visitors (although simulated rain, clouds, wind, and ocean currents inside the exhibit send a compelling message about climate change impacts). A lively mixture of pictures, videos, graphs, and text provide visitors with essential scientific facts about global warming causes, impacts, and solutions. NTM collaborated with outside experts including the Centre for International Climate and Environmental Research (CICERO), the Norwegian Meteorological Institute, the



2007 Nobel Peace Prize winner Rajendra K. Pachauri and the Norwegian Prime Minister speak with students at the exhibit opening.



Remote-controlled boats activate WWF Climate Witness videos

nated in the loss of sea ice itself had accelerated its own decline. See conceptual illustration on page 15 with explanation of this process known as the “Ice-Albedo-Feedback”. The international sea ice research community is now at “near consensus”, to quote a recent report (www.arcus.org/search/seaiceoutlook), on this sequence of reasoning. Many voices also refer to the point at which the positive feedback process started to control the rate of arctic sea ice loss as the “tipping point” of the sea ice system. This tipping point coincided with the time when the observed sea-ice decline accelerated markedly compared to the predictions in the IPCC’s 4th Assessment Report, which was made using models that did not adequately consider the full extent of consequences triggered by the Ice-Albedo-Feedback.

Arctic sea ice — destined to shrink

The age and thickness of the arctic sea ice pack has not recovered since the 1990s despite the fact that the second trigger in the sequence of events that initially caused its loss — the weak arctic high pressure system — was stronger again for almost a decade. In fact, the sea ice has deteriorated much further. Older and thicker ice continued to be driven out of the Arctic and also increasingly thinned. The majority of the first-year ice that formed each winter was thinner and thawed each summer. As a result, the total area of sea ice and its overall thickness has decreased from year to year. The area of ice that is at least five years old decreased by 56 per cent between 1985 and 2007.

Because so little of the arctic sea ice pack is now multi-year ice

and because the majority of first-year ice melts each summer — and will increasingly as arctic warming continues — scientists agree that there is no reversal in sight for the current trend of summer sea-ice loss, no return to the pre-1980s minima averages, and no return to decline rates of -7.4% per decade predicted in the IPCC’s 4th Assessment Report. This strongly supports the reasoning that the feedback effect dominates the current rates of sea ice loss.

The entire sea-ice research community agrees that the current and future trend of sea ice decline is foremost determined by the thickness distribution. Consequently, they predict a 2008 sea ice minimum that is within the year-to-year variability around the record low 2007 minimum. On top of the thickness distribution of the sea ice pack, the 2007 minimum was caused by wind, sun, and cloud conditions over the Arctic Ocean that triggered very high movement of ice out of the Arctic and even higher-than-usual melt of first-year ice. Whether these or similar conditions will occur this year will decide whether we see another record minimum.

But this is beside the point. Right now, in early summer, sea ice scientists summarise arctic sea ice conditions as “indicate[ing] a continuation of dramatic sea ice loss” where the “thin young ice is vulnerable to melting completely this summer, reinforced by the large areas of low-concentration ice” and “the multi-year ice in 2008 appears to be much thinner than in the last two years.” And they conclude that “perhaps the most important point is that, whether or not arctic sea ice sets a new record low, this year continues the pattern of well-below-average ice extent seen in recent years.” (<http://nsidc.org/arcticseaicenews/>)

So whether or not 2008 sets another record, we are rapidly accelerating towards an Arctic Ocean that is increasingly covered by one-year-old ice that disappears each summer. In the much warmer Arctic of tomorrow, even more of it will disappear each year, and earlier in the season.

Dr Martin Sommerkorn

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Norwegian University of Science and Technology (FAROS), and environmental groups Bellona and WWF.

Arctic meltdown

A centrepiece of the exhibit is a four-tonne block of melting ice, symbolizing arctic climate change impacts. On a wall next to the giant ice cube is an animation showing the rapid pace of melting arctic summer sea ice. The adjacent section of the exhibit describes global warming effects in Greenland including the challenges facing indigenous populations. WWF contributed to the exhibition with videos of participants in its Climate Witness project to document stories of Greenlanders experiencing changes to their livelihoods and culture due to global warming.

Safe harbour

Visitors can use a remote-controlled boat to navigate through various geographical areas of the exhibit. The boats must manoeuvre through strong currents to safely dock inside pillars located throughout the hall. The docking motion activates a video monitor inside the pillar that explains climate change impacts on people in different parts of the world. WWF Climate Witnesses from Australia, Nepal, Kenya, Brazil, Fiji, and the US testify to their global warming experiences. In another room, short films on climate change (including one nominated at the

Toronto Worldwide Short Film Festival) challenge visitors to think creatively.

Climate solutions

The exhibit does a superb job of informing the public about technologies that can reduce greenhouse gas emissions. Familiar alternatives to petroleum such as hydro, geothermal, wind and nuclear energy are presented alongside recent innovations such as biofuels. Norway is a world leader in developing carbon capture and storage (CCS) technology, which *Klima X* explores from both technical and policy perspectives.

By focusing on the potential of applying a mix of existing technologies, the exhibit designers give visitors a sense of hope that the climate crisis can be solved. Sloshing through the current toward the exit, I felt inspired and invigorated by the creative way that *Klima X* explains the impacts of global warming and by the technical knowledge it delivers. For the thousands of children who visit, the exhibit surely must stoke their imaginations and motivate them to get involved in advocating solutions.

Klima X is open to the public through December 2009. For more information: www.tekniskmuseum.no

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Arctic change: new management challenges

International law of the sea expert Dr Tatiana Saksina explains why the time has come for a fresh approach to arctic governance.

Accelerated melting of arctic sea ice will drastically alter the fundamental conditions of life in the Arctic over the next few decades — as well as present new opportunities for the development of the region's plentiful natural resources.

Many arctic species are already under stress from changes related to climate change. Expansion of economic activities in the region will increase pressure on these and further endanger their existence, to the point that they could be lost permanently. In particular, the prospects of new shipping routes, expanded oil and gas development, and growing commercial fishing have the potential to trigger negative environmental impacts such as overfishing, illegal, unreported, and unregulated (IUU) fishing, pollution from ships and offshore extraction of oil and gas, oil spills, and invasion of alien species carried by ships' ballast water.

Inadequate governance structures

This expansion of economic activities made possible by climate change creates new management

challenges for the arctic nations, with current governance mechanisms being fragmented and ineffective for protecting the marine environment.

Significant portions of arctic waters are subject to national jurisdictions. National marine environmental protection regimes comprise a fragmented governance system for the Arctic with large gaps in jurisdiction, implementation, and notably in effectiveness.

The main international framework for arctic governance is the UN Convention on the Law of the Sea (UNCLOS); however this convention alone cannot address the special problems and growing threats facing the Arctic. UNCLOS provides the same rules for environmental protection of all ocean waters without differentiating between them, and fails to provide special rules for environmental protection of ice-covered waters in the Arctic that clearly require different and stricter rules due to their uniqueness and vulnerability.

Several gaps exist in arctic fisheries management. These include an absence of agreements for the

regulation of shared and straddling fish stocks, as well as for international or regional agreements covering the shift of fish stocks to the high Arctic. There is no regional fisheries management organization for the entire region. The retreat of sea ice and the absence of a regional fishery management regime are already leading to overfishing and IUU fishing in the Sea of Okhotsk and the Bering Sea.

Large-scale offshore oil and gas exploration is about to start in the Arctic, with extensive exploration already underway in Russian, Canadian, Norwegian and US northern land and offshore regions. Russia, for example, recently decided to develop the Stockman gas field — the world's largest offshore gas field — in partnership with StatoilHydro and Total. Petroleum development in the Arctic has already resulted in substantial environmental impacts, and the Arctic is particu-



larly vulnerable to oil pollution. However, there is a significant gap in the arctic environmental legal regime with respect to petroleum extraction. Currently there is inadequate control of environmental impacts and no internationally binding rules to regulate operational pollution from offshore installations. Strict standards for oil transportation in the Arctic are also urgently needed.

Climate change will enable shipping shortcuts via the Northern Sea Route (over Eurasia) and the Northwest Passage (over North America), saving shipping companies and navies both distance and time. The private sector is already investing billions of dollars in a fleet of ice-class ships. However, both of these arctic sea routes are among the most hazardous in the world and the arctic marine environment is particularly susceptible to the effects of marine pollution (as demonstrated by the *Exxon Valdez* oil spill; see article on page 10). The same conditions that contribute to high oil spill risks in the Arctic (including lack of natural light, extreme cold, moving

ice floes, high wind, and low visibility) can also make spill response operations extremely difficult or totally ineffective.

Despite the applicability of many global and regional treaties for protection of the arctic marine environment as well as for effective management of shipping by the International Maritime Organization (IMO), there are many problems that require attention. There is a need for an arctic ship routing system, traffic separation schemes, and use of Automatic Identification System (AIS) and Long Range Identification and Tracking (LRIT). Due to their vulnerability, arctic waters require very strict standards for ballast water exchange, fuel content, discharge, and emission. Internationally binding standards are needed for construction, design, equipment, and manning of ships.

International framework needed

With the inevitable rush to exploit the arctic region's extraordinary natural resources, it is absolutely imperative that a new, comprehensive, international govern-

ance regime is established for the arctic environment. This regime is needed before natural resource development expands widely. The longer the delay in developing international environmental rules, the more likely it is that unplanned and unregulated development will damage the very resources most necessary for a sustainable future in the Arctic. That is why WWF proposes the adoption of a simple framework convention to improve arctic governance. This mechanism would provide a framework for arctic environmental issues through a harmonious, uniform approach, as opposed to the current fragmented regime based on national approaches. The Arctic Framework Convention will allow for sustainable ecosystem-based management of the region.

The earliest date for an ice-free Arctic Ocean in the summer may be 2013. There is no time to waste and no reason to wait.

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Barents Sea success in fight against illegal fishing

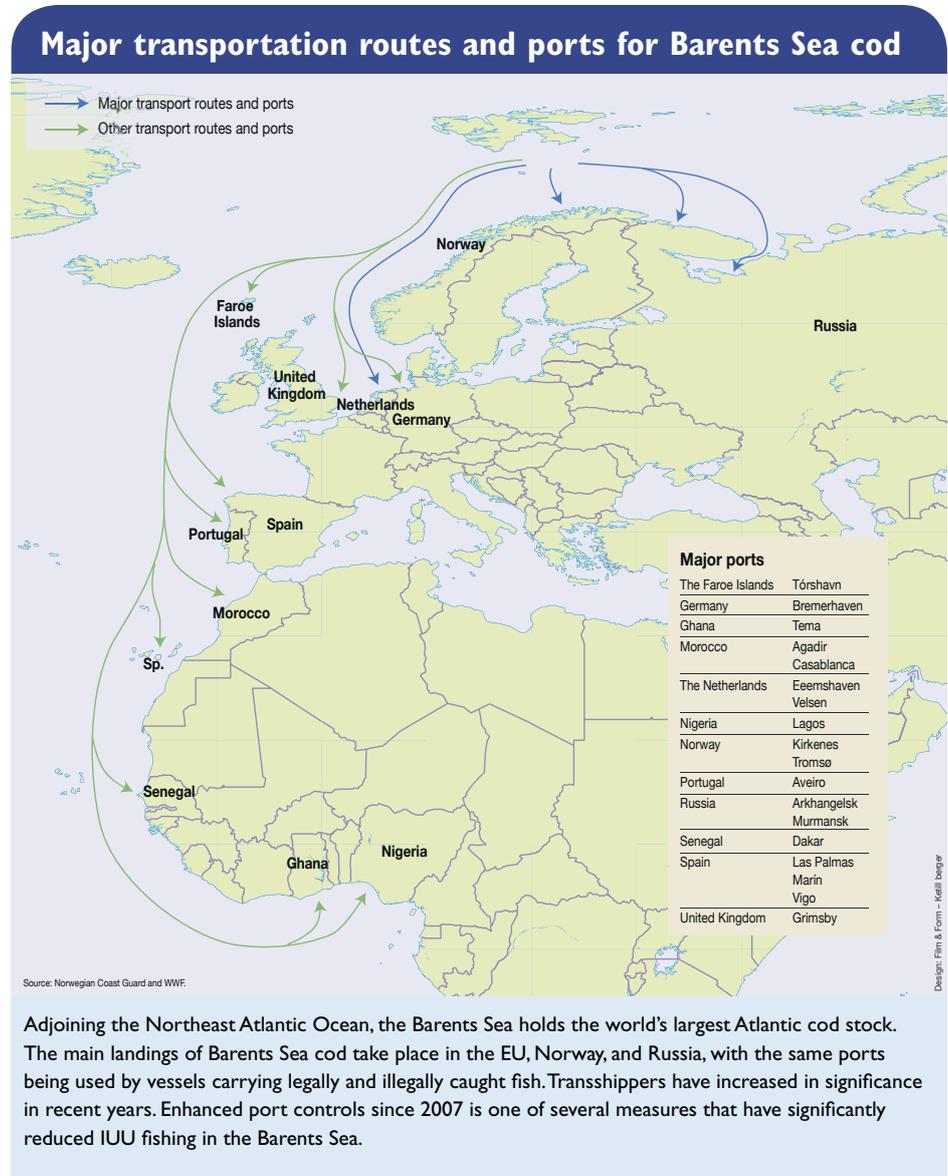
Maren Esmark and Asle Rønning from WWF's Barents Sea Ecoregion Programme highlight a major marine conservation win in the Arctic.

Efforts to clamp down on illegal, unreported, and unregulated (IUU; see box) fishing for cod in the Barents Sea are paying off — illegal fishing has been cut by more than half since 2005.

According to Norwegian government figures, more than 100,000 tonnes of cod, valued at 225 million (\$US350 million), was illegally caught in the Barents Sea in 2005. This year, corresponding figures for 2007 were set at about 40,000 tonnes. By way of comparison, the annual legal catch is around 450,000 tonnes. Russian authorities disagree with the Norwegian figures but acknowledge there has been a significant drop in illegal catch. Both Norway and Russia recognize that illegal fishing is a major challenge.

“WWF and its many partners in marine conservation are celebrating this major reduction in illegal fishing in the Barents Sea,” says James Leape, director general of WWF International. “This impressive achievement shows how concerted efforts by governments, industry, and NGOs can make a real difference in stopping criminal fishing activities.”

The Barents Sea is home to the world's last large Atlantic cod stock and supplies more than half the cod available on the global market. Illegal fishing for Barents Sea cod threatens the health of culturally important fisheries that are vital to the livelihoods of northern coastal communities. It can also reduce the capacity of fish populations to adapt and survive, and undermines efforts to build sustainable fisheries management regimes. The most widespread illegal fishing activity in the Barents Sea is vessels that overfish their legal quota. They often transfer the “black” catch to cargo ships in international waters — so called transshippers — that



Adjoining the Northeast Atlantic Ocean, the Barents Sea holds the world's largest Atlantic cod stock. The main landings of Barents Sea cod take place in the EU, Norway, and Russia, with the same ports being used by vessels carrying legally and illegally caught fish. Transshippers have increased in significance in recent years. Enhanced port controls since 2007 is one of several measures that have significantly reduced IUU fishing in the Barents Sea.

dock in European and sometimes African ports.

Taking action

The recent drop in illegal fishing in the Barents Sea is partly the result of combined efforts by Norway and Russia, under the umbrella of longstanding fisheries management cooperation. The two countries have a long history of dialogue on marine resource management that started during the Cold War; however in recent years, illegal fishing grew due to opportunities arising from globalisation of the industry and overcapacity in the fishing fleet.

Recognising the pressing need to fight illegal fishing, the Norwegian and Russian governments proposed that the Northeast Atlantic Fisheries Commission (NEAFC) — which is responsible for managing stocks in the Northeast Atlantic Ocean, including the Barents Sea — implement a Port State Control scheme (see interview page 21).

Environmental NGOs and the fishing industry have also contributed greatly, supporting the measures taken by governments and initiating voluntary measures such as certificates giving guarantees that no illegal fish has entered the long

gal fishing

and often complex supply chain from fishing vessel to consumers.

Looking forward

The Barents Sea cod success shows that with sustained political will and backing from the industry and civil society, the battle against illegal fishing can be won. By working together, individuals in industry, government, and the NGO community have shown that it is possible to significantly improve environmental and socio-economic conditions.

There is a risk though that the positive trends in the Barents Sea may not continue — illegal fishing can take new shapes and illegal products can find new ways to the market, for example through landing points outside the jurisdiction of the NEAFC port state agreement.

The challenge now is therefore to completely eliminate illegal fishing in the Barents Sea and to extend the better fisheries management practices from the Barents Sea to other fisheries.

“WWF calls for a global port state agreement to address illegal fishing activities,” says Leape. “We also urge all EU countries to support the draft European Commission regulation to deal with illegal fishing, and appeal to processors, retailers, and consumers to not support criminality in fishing.”

Writing the next chapter of this success story will involve a united effort including governments, fisheries management organisations, the seafood industry, and NGOs.

“We are optimistic that the Barents success can be extended to other fisheries where illegal fishing is a serious threat to fish populations and ecosystems,” Leape concludes.

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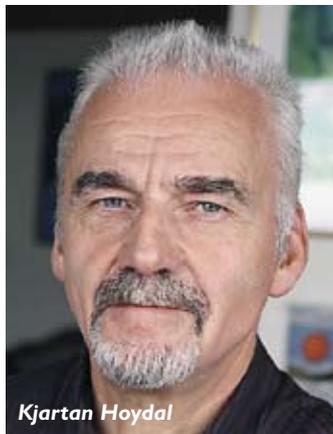
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NEAFC & arctic fisheries management

The Northeast Atlantic Fisheries Commission (NEAFC) is the regional fisheries management organisation for fish stocks in the Northeast Atlantic and Arctic Oceans. NEAFC secretary Kjartan Hoydal spoke with WWF Barents Sea officer Mark Burnett about the recently introduced Port State Control scheme and its role in sustainable fisheries management.

Mark Burnett: *The NEAFC Port State Control (PSC) came into force just over a year ago, on 1 May 2007. What were the circumstances that led to its introduction?*

Kjartan Hoydal: The NEAFC contracting parties have participated actively in discussions in the UN Food and Agriculture Organization (FAO) on its Model Scheme on Port State Measures to Combat Illegal, Unregulated, and Unreported (IUU) Fishing.



Kjartan Hoydal

The control measures have the interests of legal vessel operators at heart, at the same time stopping free riders.

It was a natural development that the parties set up Port State Control for the NEAFC area. In the process it turned out that parties were able to agree on measures that went considerably further than the FAO model scheme. Another reason for the momentum on this topic was IUU activities in the NEAFC area which could not be addressed through black listing of vessels. The breakthrough was consensus that the measures should apply to the whole NEAFC conven-

tion area for all frozen fish, that the control system involved both the port state and the flag state of the fishing vessel, and that it limited landings to designated ports. The control measures have the interests

of legal vessel operators at heart, at the same time stopping free riders.

MB: *Who are the contracting parties?*

KH: All EU member states, Iceland, Norway, the Russian Federation, and Denmark in respect of the Faroe Islands and Greenland. NEAFC cooperating non-contracting parties include Belize, Canada, the Cook Islands, Japan and New Zealand.

MB: *What are the main provisions of the PSC?*

KH: The PSC requires prior notification of landings of frozen fish along with a declaration by the master of the vessel of the catch on board. Before the landings can be authorised by the port state, the flag state of the landing vessel must verify the information provided in the declaration. In particular, the flag state must confirm that the fishing vessel had sufficient quota to allow for the catch, that the vessel was authorised to fish, and that the area where the catch was made has been verified by a Vessel Monitoring System. Without this confirmation, the port state cannot give an authorisation, and without authorisation no landing can occur. The control measures also include new obligations and benchmarks for inspections to be carried out by the port state. This provides the means for contracting parties to control landings of illegally caught fish from the whole NEAFC area, for example cod from the Barents Sea.

MB: *Does the system include physical inspections?*

KH: Inspections can be carried out ► 22



The NEAFC convention area covers the Atlantic and Arctic Oceans east of a line south of Cape Farewell (the southern tip of Greenland, 42° W), north of a line to the west of Cape Hatteras (the southern tip of Spain, 36° N), and west of a line touching the western tip of Novya Zemlya (51° E). The Baltic and Mediterranean Seas are excluded. Most of this area is under the fisheries jurisdiction of NEAFC's contracting parties, as it is defined as their national waters, but three large areas are international (high seas) waters and constitute the NEAFC regulatory area (shown in orange).
Map: NEAFC

21 ► by authorised officials from NEAFC contracting parties. In order to avoid loss of fish quality, inspectors make all possible efforts to avoid unduly delaying or inconveniencing a vessel. Masters of vessels and inspectors may comment upon reports and both parties need to sign them. Copies go to the master, the flag state of the vessel, the flag states of donor vessels in the case of transhipped catch, and the NEAFC Secretariat, which makes inspection reports available to contracting parties via its website.

MB: How many ports are involved in the PSC scheme and where are they located?

KH: There are one hundred designated ports in the territories of the contracting parties: Denmark, Faroe Islands, France, Germany, Greenland, Iceland, Ireland, Latvia, Lithuania, Netherlands, Norway, Portugal, Russia, Spain, Sweden, and the UK. The full list can be found on the NEAFC website (www.neafc.org). Frozen catches by vessels from these flag states cannot be landed in any other port.

MB: What are the consequences if a vessel is found to be carrying illegal

fish?

KH: If the cargo of a fishing vessel, or a reefer that has taken fish from one or more fishing vessels, cannot be confirmed by the flag state of the fishing vessel(s) as described above, the landing is denied. It is then up to the flag state of the vessel to follow up on the origin of the non-confirmed fish according to domestic law.

MB: It's been just over a year since the PSC was introduced — what are the results so far?

KH: As at 4 August, there were 1,790 landings and 186 inspections since the PSC entered into force. The handling of the forms has been without complications. The industry has welcomed the measures and the degree of certification of legality it delivers. In spring, Norwegian authorities published information indicating that illegal harvesting of demersal species such as cod from the Barents Sea has fallen sharply — a drop of more than 50% between 2005 and 2007 (see article on page 20). The PSC has also effectively controlled landings of pelagic species like herring, blue whiting, and mackerel.

Hail and farewell to WWF staff in the Arctic

Clive Tesar joins the WWF International Arctic Programme as head of communications. He grew up in Canada's Northwest Territories and



spent ten years travelling the Canadian Arctic as a reporter, producer, and host for the Canadian Broadcasting Corporation. For the past ten years, he has worked across the Arctic as a communications consultant for NGOs, indigenous peoples' organisations, and governments. Clive is completing a Masters degree in Environmental Education and Communications to supplement a Bachelors degree in creative arts. He is past chair of the Northwest Territories Arts Advisory Council and a former Vice-President of the Canadian Media Guild.

Dr Tatiana Saksina is the new arctic governance officer. Previously she was senior legal adviser for the Council for

the Study of Productive Resources of the Russian Academy of Sciences and the Ministry of Economic Development and Trade. Tatiana holds a Ph.D. in International Law from Moscow State Institute of International Relations and an LL.M. in International Maritime Law from the IMO International Maritime Law Institute. She also undertook an internship at the International Maritime Organization, and has produced several publications on law of the sea issues.



Geoff York has been appointed as WWF polar bear conservation coordinator, based in the WWF Alaska field office, working closely with the WWF Kamchatka/Bering Sea team as well as with the broader WWF International Arctic Programme team. Geoff has lived in



Alaska since 1990 when he came north to pursue a Masters degree in science/biology at the University of Alaska Fairbanks. He has 12 years of arctic field experience, most recently as a biologist and programme manager for the US Geological Survey's Polar Bear Project, the leading polar bear research team in the US.

Sylvie Leveau is the new executive assistant to WWF International Arctic Programme director Neil Hamilton. She is a graduate of ICHEC - ISC St Louis Business School in Brussels. Sylvie has worked for Procter & Gamble in France and in the US office of the international chemical company Rhodia.



Stefan Norris, head of conservation, and **Mark Burnett**, Barents Sea officer, have left the WWF International Arctic Programme.

Forthcoming arctic meetings & events

Arctic Council events

The 12th Biennial Meeting of the Conservation of Arctic Flora and Fauna Working Group (CAFF)

WHERE: Illuisat, Greenland • WHEN: 29 September – 3 October • MORE INFO: caff@caff.is

Working Group Chairs Meeting

WHERE: Longyearbyen, Norway • WHEN: 7–9 October • MORE INFO: ac-chair@arctic-council.org

Sustainable Development Working Group Week

WHERE: Tromsø, Norway • WHEN: 20–25 October • MORE INFO: <http://portal.sdwg.org/>

Protection of the Arctic Marine Environment (PAME) Working Group Meeting

WHERE: Helsinki, Finland • WHEN: 28–30 October • MORE INFO: www.pame.is

Senior Arctic Officials (SAO) Meeting

WHERE: Kautokeino, Norway • WHEN: 19–20 November • MORE INFO: ac-chair@arctic-council.org

Conferences and workshops

3rd SEDIBUD (Sediment Budgets in Cold Environments) Workshop

WHERE: Boulder, US • WHEN: 9–13 September • MORE INFO: www.geomorph.org/wg/wgsb.html

2008 American Association for the Advancement of Science (AAAS) Arctic Division Annual Meeting: “Growing Sustainability Science in the North”

WHERE: Fairbanks, US • WHEN: 15–17 September • MORE INFO: <http://arctic.aaas.org/>

Parameterization of Lakes in Numerical Weather Prediction and Climate Modelling Workshop

WHERE: St. Petersburg (Zelenogorsk), Russia • WHEN: 18–20 September • MORE INFO: <http://netfam.fmi.fi/Lake08/>

International Conference for the Exploration of the Sea (ICES) Conference

WHERE: Halifax, Canada • WHEN: 22–26 September • MORE INFO: www.ices.dk/iceswork/asc/2008/index.asp

16th Annual Northern Contaminants Programme Results Workshop

WHERE: Yellowknife, Canada • WHEN: 23–25 September • MORE INFO: Jason Stow (stowj@inac.gc.ca)

15th International Symposium on Polar Sciences: “Polar Ecosystems: Biodiversity and Adaptation”

WHERE: Incheon, Korea • WHEN: 24–26 September • MORE INFO: <http://symposium.kopri.re.kr>

5th Northern Research Forum: “Seeking Balance in a Changing North”

WHERE: Anchorage, US • WHEN: 24–27 September • MORE INFO: www.uaa.alaska.edu/nrf/

Exploring Domestic Spaces in the Circumpolar North Conference

WHERE: Tromsø, Norway • WHEN: 2–4 October • MORE INFO: www.sami.uit.no/boreas/conference.html

The 16th Arctic Conference

WHERE: Barrow, US • WHEN: 2–4 October • MORE INFO: Anne Jensen (anne.jensen@uicscience.org)

2008 Geological Society of America Special Session: “Ancient Polar Ecosystems and Environments: Proxies for Understanding Climate Change and Global Warming”

WHERE: Houston, US • WHEN: 5–9 October • MORE INFO: Anthony Fiorillo (tfiorillo@natureandscience.org)

Human Dimensions in the Circumpolar Arctic

WHERE: Umea, Sweden • WHEN: 8–10 October • MORE INFO: www.umea-congress.se/polar2008.html

Society for Advancement of Chicanos and Native Americans in Science National Conference: “International Polar Year: Global Change in Our Communities”

WHERE: Salt Lake City, US • WHEN: 9–12 October • MORE INFO: <http://sacnas.org/confNew/confClient/>

Park Science in the Arctic - 2008 Alaska Park Science Symposium in conjunction with Beringia Days 2008

WHERE: Fairbanks, US • WHEN: 14–16 October • MORE INFO: <http://nps.arcus.org>

16th Inuit Studies Conference: “Imagining Inuit Imagining”

WHERE: Winnipeg, US • WHEN: 23–25 October • MORE INFO: Chris Trott (trottcg@cc.umanitoba.ca)

“Arctic Ocean History, From Speculation to Reality: A Workshop to Prepare for Arctic Ocean Scientific Drilling”

WHERE: Bremerhaven, Germany • WHEN: 3–5 November • MORE INFO: www.oceanleadership.org/usssp/workshops/arctic

Circumpolar Arctic Vegetation Map Workshop

WHERE: Helsinki, Finland • WHEN: 3–6 November • MORE INFO: www.cbvm.org

1st International Symposium on Arctic Research: “Drastic Change Under Global Warming”

WHERE: Tokyo, Japan • WHEN: 4–6 November • MORE INFO: www.jamstec.go.jp/iorgc/sympo/isar1/index.html

Russian Academy of Sciences 8th Annual Conference: “Nature of the Shelf and Archipelagos of the European Arctic”

WHERE: Murmansk, Russia • WHEN: 9–11 November • MORE INFO: Euro-Arctic@mmbi.info

Approaching Arctic Frontier Areas for Petroleum Exploration Workshop

WHERE: Tromsø, Norway • WHEN: 12–13 November • MORE INFO: www.ig.uit.no/Forskingskolen/index.htm

For more on these events and other meetings, please visit:

<http://arcticportal.org/iasc/services/arctic-meeting-calendar> • <http://calendar.arcus.org>

Shrinking sea ice

-  Average minimum sea ice from 1979 through 2007
-  2007 annual Arctic minimum sea ice from 14 September 2007

To put this map illustrating sea ice shrinkage into perspective, the total area of lost ice shown in light blue (1 million square kilometres) is about the size of Egypt, or four times the area of the United Kingdom, or about three times the area of Japan.



Map: NASA/Goddard Space Flight Center Scientific Visualization Studio

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WWF is the world's largest and most experienced independent conservation organisation, with almost five million supporters and a global network active in 90 countries. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature. WWF continues to be known as World Wildlife Fund in Canada and the United States of America.

