Arctic Bulletin

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Chukotka: the heat is on p.12, p.14–15

Contents

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Editorial

Fishy business

Illegal, unreported and unregulated (IUU) fishing is a significant problem in the Arctic, particularly in the Barents and Bering Seas. And it's big business – by some estimates, the annual illegal catch from these seas is worth nearly a billion dollars a year, and perhaps more. This is money that, by rights, should be going to governments, to management of fisheries, and to legitimate companies that play by the rules.

IUU fishing isn't just a headache for governments, however. Some of the world's biggest seafood producers and retailers buy, usually inadvertently, illegally caught fish from the Arctic. These products are sold at premium prices and end up on the plates of consumers in Asia, Europe and North America. Recent revelations in the media about purchases of illegally caught seafood have been a major embarrassment for some seafood producers and buyers.

The effects of IUU fishing go beyond lost revenues for governments and lost reputation for producers. One doesn't have to go very far outside the Arctic to see the effects of over- and unregulated fishing on fish stocks and the ecosystems around them. Exhibit A is the once great cod stocks off Canada's Grand Banks, which were among the world's largest but now have been fished to commercial extinction. Without rapid and decisive action to cut down on over fishing and illegal fishing in the Barents and Bering Seas, that's the situation we may some day face in these arctic seas as well.

Right now, the Barents and Bering Seas are comparatively healthy ecosystems, in a global context anyway. This isn't as good as it sounds; they stand out because more than 75 percent of the world's fish stocks are either over exploited or fished to capacity. In a world of shrinking fish populations, the Barents and Bering Seas together house four of the world's biggest fish stocks. The Bering Sea provides more than half of the United States' total marine harvest every year, and provided a similar share of Russia's total catch in the 1990s. Barents Sea fisheries produce some one to two billion dollars of fish per year, every year.

Recent trends in IUU fishing in the Arctic are not encouraging. The illegal pollock catch in the Bering Sea is estimated to be 50–150 per cent of quota. In September 2005, the Russian Ministry of Fisheries reported that 75 percent of the seafood exported from the Russian Far East, including the Bering Sea, was illegally caught. For 2005, the Norwegian Ministry of Fisheries estimates that the Russian illegal catch of cod from the Barents Sea was nearly half the official Russian quota of 213,000 tonnes. Russian authorities, meanwhile, point to an estimated over-catch by Norway of 460,000 tonnes over the last 30 years.

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What can be done to change these trends, and ensure that arctic seas continue to provide food, wealth and jobs as they have for hundreds of years? Over the next couple of years, WWF will work with partners in the seafood and retail industries, to encourage them to ensure that they only buy legally caught fish. We'll also work with the fishing industry to increase the number of fisheries that are certified by the Marine Stewardship Council, so that consumers can be sure that they're buying legally caught and sustainably fished products. We'll work with governments, who are already stepping up efforts to tighten landing rules and quota enforcement. Over the long-term, though, perhaps the Arctic needs a new approach, such as a new fisheries management regime. Let's hope that what we can do in the short-term will be enough to save arctic seas.

CLIMATE COLLEGE

The WWF International Arctic Programme, with WWF Netherlands and WWF UK, took part in a week-long field trip for prospective climate change campaigners to Greenland in May. The trip is part of a new initiative called The Climate Change College, run by polar explorer Marc Cornelissen and backed by ice-cream makers Ben and Jerry's. WWF is providing expert environmental support. For more, visit www.climatechangecollege.org

ALASKAN WOLF KILL ILLEGAL

Alaska's controversial programme of shooting wolves from the air to boost the population of moose and other game was recently declared illegal, prompting state officials to suspend the policy. Superior Court Judge Sharon Gleason ruled that the state failed to adequately address regulatory requirements, calling for proof that aerial wolf control is necessary and would be more effective than other, less drastic steps to boost game populations. Source: Reuters

POLAR BEARS DROWNING

A report by the US Mineral Management Service that polar bears are drowning because climate change is melting the arctic ice shelf received widespread international media coverage in December. Leading polar bear scientists say there is no scientific data available yet to confirm whether the findings are part of a wider trend. Scientists agree that such drownings may, however, become more frequent across the Arctic in the future, as sea ice, the polar bear's preferred habitat, melts.

Photo: WWF-Canon/François Pierrel

Climate link to hungry bears

Residents of a Russian coastal community on the Bering Sea have shot three unusually aggressive polar bears so far this year in what many are saying is another sign that the bears' natural feeding patterns have been disrupted by global warming.

Polar bears normally forage along the sea ice in winter, stalking seals. But this winter, the ice edge has been far from the coast, leaving the predators with a long swim from shore to the stable pack ice where seals live. Instead of swimming, some hungry bears are staying on land.

Viktor Nikiforov, WWF-Russia's director of regional programmes, said: "This makes polar bears particularly vulnerable since animals in search of food lose their sense of danger, enter villages and often attack people."

This chain of events was evident this winter in northwestern Russia. A 15-year-old girl was killed by a bear that had entered her remote village on the Chukotka Peninsula in January. The bear was shot.

The potential for such harmful interactions could increase as the bears' preferred habitat continues to literally melt away around them. WWF is working closely with communities on Russia's arctic coasts to help reduce human-bear encounters and to restore the traditional hunting ethic that once honoured the polar bear and ensured its long-term sustainable use.

It's not just polar bears and their prey that are feeling the effects of a warming climate. Local hunters have also observed that the retreating sea ice is affecting the local walrus population: individual walruses have been arriving on shore in a much weakened state.

Along with a network of partners around the Arctic, WWF is committed to saving polar bears, ice-associated seals, walrus, and the other iconic species of the far north from the complex threats posed by global climate change.

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US may declare polar bear "threatened"

The US Fish and Wildlife Service has announced that it is opening the formal process to list polar bears as officially "threatened" because of the unprecedented meltdown of their sea ice habitat, a result of global warming.

The finding comes in response to a December lawsuit filed under the federal Endangered Species Act by three conservation groups.

This finding to list polar bears under the Endangered Species Act begins a comment period and full "status review" of the species, following which the federal government will decide whether to propose listing the polar bear as a threatened species.

The primary reason for the review is the increased threat to polar bears from the ongoing decline of arctic sea ice. According to the National Snow and Ice Data Centre in Boulder, Colorado, temperature increases over the past 28 years have seen a reduction in sea ice roughly equivalent to twice the size of Texas.

The increased scrutiny of polar bear population management by the US government will also have implications for trophy hunting in northern Canada. The US will review Nunavut's polar bear quotas, which were increased last year, to ensure that the hunt is sustainable.

In an interview with the Canadian Broadcasting Corporation (CBC), Dr Andrew Derocher, a professor and polar bear researcher at the University of Alberta, said: "The Nunavut Government can expect American officials to carefully review its numbers.

"It's quite clear that in the US system, polar bears are coming under much greater scrutiny and that has long-term ramifications of what might happen in Canada."

American hunters may be prohibited from bringing polar bear hides and skulls back to the US.

The Polar Bear Specialist Group (PBSG) of the World Conservation Union (IUCN) also recently concluded that the IUCN Red List classification of the polar bear should be upgraded from Least Concern to Vulnerable (see *Arctic Bulletin* 03.05).

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Canada and Alaska extinction hotspots

The caribou and musk ox of northern Canada and Alaska are listed as species at risk from extinction in the future, according to a new study by researchers at London's Imperial College Division of Biology.

The research, published in the *Proceedings of the National Academy of Sciences*, reveals "hot spots" which have the potential to lose species not currently in danger. Northern Canada and Alaska are among the top 20 hot spots.

According to the researchers at Imperial, conservationists should be acting now to protect mammals such as the caribou, which risk extinction in the future as human population grows.

Professor Andy Purvis, from Imperial's Division of Biology and a co-author of the research, said: "Most conservation resources are spent in regions where the conflict between people and the natural system is entrenched. That's understandable, because we can see the damage that we are doing and we want to put it right, but repairing damage tends to be very expensive.

"Latent risk hotspots might provide cost-effective options for conservation; they're places that are relatively intact, and preventing damage is likely to be cheaper and more effective than trying to repair it."

In the coming years, the Arctic is going to be under increasing pressure as oil, gas and mining interests continue to press for industrial development in the area. This will only intensify as climate change makes some areas more accessible due to the melting of sea ice.

A recent survey in northern Canada, found that there had been a drastic drop in the numbers of some caribou herds. The Bluenose West herd suffered a decline of 80 percent.

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REPRIEVE FOR LOFOTEN

WWF has welcomed Norway's decision to continue a moratorium on oil development in two of the world's most important marine areas, Lofoten and Vesterålen in the Barents Sea. The moratorium is part of an overall management plan for the Barents Sea, and will be in place until at least 2010. WWF is disappointed, however, that the moratorium will be re-evaluated in just four years. Samantha Smith, director of the WWF International Arctic Programme, said: "Norway says that the management plan is at the forefront of international environmental policy. WWF disagrees."

SEED BANK IN ARCTIC

Norway is planning to build a "doomsday vault" inside a mountain on Svalbard to hold a seed bank of all known varieties of the world's crops. It will be designed to withstand global catastrophes like nuclear war or natural disasters that would destroy the planet's sources of food. Permafrost will keep the vault below freezing point and the seeds will further be protected by metre-thick walls of reinforced concrete, two airlocks and high security blast-proof doors. Source: BBC

WWF GRANT FUNDS EXHIBITION ON MARINE ENVIRONMENT

"Ocean Sounds", a combination of tourism attraction and research centre in the Lofoten Islands in northern Norway, has received WWF's Arctic Tourism & Conservation Grant 2005. The company's tourism activities aim to combine and support marine research and conservation, and the grant will help to pay for an exhibition illustrating the marine ecosystem and its need for conservation.

The Grant provides start-up funding of up to 10,000 Swiss Francs for projects which establish or improve links between tourism and arctic conservation. New applications will be accepted this autum.

Greenland's glaciers accelerating

PHOTO: Bryan and Cherry Alexander Photography/www.arcticphoto.co.uk

Researchers are concerned that glaciers in the north of Greenland, such as the Kangerdlugssuaq glacier (pictured), will begin to accelerate like the glaciers in the south.

The amount of ice that Greenland's glaciers dump into the Atlantic Ocean has almost doubled in the last five years because glaciers are moving faster, according to a new study.

Rising surface air temperatures appear to be triggering the increase in glacier speed in the southern half of Greenland. One result is that many estimates of Greenland's future contributions to sea-level rise could be too low.

This is the first study to incorporate recent changes in glacier velocity into estimates of the overall mass of ice being lost for nearly all of Greenland.

Eric Rignot, of the NASA Jet Propulsion Laboratory and co-author of the study, said: "The behaviour of the glaciers that dump ice into the sea is the most important aspect of understanding how an ice sheet will evolve in a changing climate.

"It takes a long time to build and melt an ice sheet, but glaciers can react quickly to temperature changes."

Over the last 20 years, the air temperature in south-east Greenland has risen by three degrees Celsius. The warmer temperatures increase the amount of melt water reaching the glacier-rock interface where it serves as a lubricant that eases the glaciers' march to the ocean.

The Greenland Ice Sheet is 1.7 million square kilometres, up to three kilometres thick and a little smaller than Mexico. If the Greenland Ice Sheet completely melted, it would raise global sea level by about seven meters.

"The southern half of Greenland is reacting to what we think is climate warming. The northern half is waiting, but I don't think it's going to take long," said Rignot.

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Witnesses to climate change

WWF has been working with the community of Huslia, Alaska to record its peoples' experiences of climate change as part of a WWF Climate Witness Project. The outcome of this project is an audio slideshow and four radio programmes now available on the WWF International Arctic Programme website.

The audio slideshow and the radio programmes share the experiences of recent climate change as expressed by village elders, members of the Tribal Council and other community members from Huslia and nearby native villages.

Their perspective of global warming derives from Traditional Ecological Knowledge of the land and subsistence resources, rather than a western scientific way of knowing.

Local high school students sorted most of the images and conducted the interviews with elders in their community that are featured in the slideshow and the radio programmes.

Huslia is a village of mainly Koyukon Athabaskans and lies on the banks of the Koyukuk River in interior Alaska. Its residents still adhere to a subsistence lifestyle that relies on plant and animal resources gathered from the land.

Huslia-born resident Orville Huntington was the project's principal investigator and Kathy Turco of Alaska's Spirit Speaks: Sound and Science was the media consultant to the village.

Visit: www.panda.org/arctic/climate-witness

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More carbon in arctic soil

Scientists studying the effects of carbon on climate warming are significantly underestimating how much carbon is stored in arctic permafrost, new University of Washington research shows.

A three-year study of soils in north-west Greenland found that a previous study greatly underestimated the organic carbon stored in the soil. That's because the earlier work generally looked only at the top ten inches of soil, said Jennifer Horwath, a UW doctoral student in Earth and space sciences.

The earlier work, reported in 1992, estimated nearly one billion metric tons of organic carbon was contained in the soil of the polar semi-desert, a 623,000-square-mile treeless arctic region that is 20 to 80 percent covered by grasses, shrubs and other small plants.

That research also estimated about 17 million metric tons of carbon was sequestered in the soil of the adjacent polar desert, a 525,000-square-mile area where only 10 percent or less of the landscape is plant covered.

Horwath dug substantially deeper, in some instances more than 3 feet down, and found significantly more carbon. She concluded that the polar semi-desert contains more than 8.7 billion metric tons of carbon, and the polar desert contains more than 2.1 billion metric tons.

Horwath said: "In the polar semi-desert, I found nearly nine times more carbon than was previously reported. In the polar desert, I'm finding 125 times more carbon."

Photo: Sudha Brown

Researchers from the University of Washington examine the levels of carbon in the soil near Thule Air Force Base in north-west Greenland.

Over three years, during thawing from late June to early August, Horwath excavated more than 75 pits on a peninsula near Thule Air Base in Greenland. The peninsula lies between the Greenland Ice Sheet and Baffin Bay.

The findings are significant because the Arctic is showing greater effects from global climate change than anywhere else on Earth.

Horwath said: "We already know the arctic climate is warming, and as it warms the depth of the permafrost is lowered. As that happens, more carbon becomes active and can be converted to carbon dioxide, one of the most abundant greenhouse gases in the atmosphere."

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Preparing for IPY

The Canadian Government recently pledged $150 million towards International Polar Year (IPY) research.

Not all countries are creating a specific pool of research money for IPY. Some are donating icebreakers and other infrastructure and technical support.

The US has set up a National Committee to facilitate US participation in IPY but has not designated specific funding for IPY activities. US researchers will apply for funding through normal science funding mechanisms.

Canada is supporting a targeted science and research programme focussed on two of Canada's most important challenges for its northern regions – climate change impacts and adaptation, and the health and well-being of northern communities.

But some aboriginal people in Canada and the US are concerned about proper recognition for their input into IPY research.

Maryann Ross of the Gwich'in Council International, a group that represents 9,000 Gwich'in people in Canada and the US, said: "I'm concerned that a lot of our people don't get recognised for their contribution to the studies that are going to take place under this massive project."

IPY representatives told the delegates at the Arctic Leaders Summit that the intellectual property rights of native people contributing to the project would be protected.

This will be the third International Polar Year, but IPY 2007–2008 will be fundamentally broader than those held in 1882–1883 or 1932–1933 or the International Geophysical Year of 1957–1958.

The IPY will be a period of intense research and collaboration to learn more about the polar regions.

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Norway coast boost

Norway's biologically rich but vulnerable northern coastline received a boost recently when the Norwegian Government announced that it was seeking permission to keep shipping at least 30 nautical miles offshore.

The Government is applying to the International Maritime Organisation to establish the new limit. A decision will be made this summer.

Andreas Tveteraas, head of conservation at WWF-Norway, said: "WWF supports this proposal, although we would have ideally liked to see shipping routes even further from the coast.

"WWF wants the most valuable and vulnerable stretches of coastline declared Particularly Sensitive Sea Areas (PSSAs) by the IMO, as this will help protect this unique ecosystem against the threats from a rapidly increasing oil transport traffic along the northern Norwegian coastline."

The new measure will allow more time to rescue a ship in trouble before it runs aground on the coastline, with potential devastating impacts on Norwegian wildlife and coastal industry.

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Photo: US FWS

Offshore oil drilling platforms could be a common sight along some portions of Alaska's coast, if proposed plans by the US Government are allowed to proceed unchecked.

Bering threat

Sensitive parts of the Bering Sea Ecoregion are the target of a new plan for offshore oil and gas development.

Many Alaskan communities, local governments, conservation groups and scientists are concerned about the long-term effects of the new Outer Continental Shelf (OCS) draft five-year-plan, which has recently been released by the US Minerals Management Service (MMS),

The plan, which covers leasing from 2007 to 2012, proposes the sale of new leases off Alaska's Beaufort and Chukchi Sea coasts, which could affect habitats, wildlife, and subsistence economies based on renewable marine resources, such as fish, mammals, and seabirds.

The plan also proposes opening Bristol Bay on Alaska's southern Bering Sea coast to drilling for the first time since it was withdrawn from leasing consideration in 1989.

Anglo-Dutch oil giant Shell spent more than $44 million last year on exploratory leases in the Beaufort Sea, off Alaska's north coast. The company is now relocating a mammoth, newly purchased drilling rig to probe the waters for promising reserves. New drilling could begin as soon as next summer.

Shell and at least ten other companies have openly expressed interest in exploring Bristol Bay.

MMS's proposed sites for oil and gas development are home to some of Alaska's richest biological treasures. Bristol Bay, recognised by WWF as a high conservation priority area within the globally-significant Bering Sea ecoregion, supports some of the largest populations of groundfish, crabs, and marine mammals on earth.

The Beaufort and Chukchi Seas have not been protected by federal mandate (in fact, there are already active leases in the Beaufort), but Bristol Bay, by order of a Presidential withdrawal, has remained safe from drilling so far.

Following the release of MMS's latest plan, new legislation was introduced by Florida Senators Bill Nelson (D) and Mel Martinez (R) that would extend the Presidential OCS moratoria on new oil and gas drilling in Bristol Bay, as well as in some other sites nationwide, until at least 2020.

WWF strongly supports passage and implementation of this bill, which strikes an important balance between new development and protection of our fragile coast ecosystems.

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New protected areas

WWF, together with other NGOs and scientific organisations, wants three new protected areas created on the northern coast of the Kola Peninsula in north-west Russia, part of the Barents Sea Ecoregion.

The proposals for protected areas follow surveys of the Murman Coast, near the Dvorovaya and Ivanovskaya Bays, that showed they were home to important concentrations of seals and seabirds, as well as threatened plants.

WWF-Russia initiated and supported the surveys, which were carried out by experts from the Kola Biodiversity Centre in July and August 2005.

The size of the proposed protected areas is about 9,000 hectares.

Offshore oil and gas development and transportation along the coast of the Nenets Autonomous Okrug, Arkhangel and Murmansk Oblasts expose the regions to serious risks.

WWF believe that establishing a network of protected areas in the marine and coastal zones of the Barents Sea, as well as pushing for strong shipping regulations and the development of oil spill preparedness, are efficient tools for safeguarding the region.

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Massive oil spill on Alaska's North Slope

An oil spill on Alaska's North Slope has been described by Alaska's State Department of Environmental Conservation as "the largest spill of crude oil on the North Slope" so far.

On March 2, a BP oil operator discovered signs of an oil spill at a caribou migration site. Three days later, response workers finally uncovered the source of the spill – a quarter inch hole in an oil transit pipeline, the result of internal corrosion.

It is estimated that 1,011,000 litres of crude oil has escaped onto the snow-covered tundra.

The accident is one in a long history of substantial spills seen on Alaska's fragile North Slope since development began there.

The area is near the Arctic National Wildlife Refuge and contains the largest oil fields in the US. It is covered by an extensive system of roads, pipelines, refineries and landfills.

Despite industry hype about the safety of development and new technology, the Prudhoe Bay oil fields and Trans-Alaska Pipeline have caused an average of 504 spills annually on the North Slope since 1996, according to Alaska's Department of Environmental Conservation.

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Photo: State of Alaska Department of Environmental Conservation (DEC)

Local spill responders work to clean up the more than one million litres of crude oil that spilled onto the tundra.

Beluga habitat under pressure

The Canadian Government is opening up part of a protected beluga whale habitat in the Mackenzie Delta and Beaufort Sea to oil and gas companies.

According to the Canadian Broadcasting Corporation (CBC), the companies have until the beginning of May to place their bids on two parcels in the region, both of which contain protected whale habitat.

The parcels comprise about 156,300 hectares, one about 70 kilometres west of Tuktoyaktuk in the Northwest Territories, and the other off the northern coast of the Yukon. The Government is offering nine-year exploration licences to the successful bidders, in consecutive terms of five and four years.

Between 20,000–40,000 beluga whales migrate into the area every summer, and depend on the shallow and relatively warm waters for easy access to prey.

Drilling is currently prohibited in the most sensitive areas, but is allowed in the surrounding waters, with some restrictions. Much of the surrounding water is already leased to gas companies.

Federal officials say environmental screening processes will ensure gas explorers don't damage whale habitat.

Peter Ewins, arctic conservation director for WWF-Canada, said: "The federal government is clearly continuing to respond to the pressure of the oil and gas sector to accelerate finds in the Mackenzie Delta-Beaufort region. And that's all well and good if there were an adequate marine and land-based conservation plan in place. There is not."

The NWT Protected Areas Strategy, the framework for setting aside important natural and cultural areas for protection, includes provisions for protecting marine ecosystems. WWF has been strongly advocating for the effective implementation of the strategy.

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Narwhal trouble

The Greenland Home Rule has decided to increase the annual narwhal hunting quota from 260 animals to 310 on the west coast of Greenland.

The decision, taken in December, was against the advice of the local Institute of Natural Resources and the specialists of the North Atlantic Marine Mammals Specialist Organisation (NAMMCO).

Both had advised and warned against taking more than 135 of the heavily decreased population of narwhals.

The original quota of 260 animals was set during the summer of 2005 in contradiction to the recommended 135 after long debates in the local press and the Parliament.

The hunt started slowly during the autumn but in late November hunters in a local community, Uummannaq, struck gold. Perfect weather conditions coincided with the arrival of a large group of whales. At this time the hunters were 17 short of reaching their hunting quota of 68 whales but local authorities decided to keep the hunt open over the weekend to give the hunters the opportunity to take a few more narwhals.

And so they did – about 70 narwhals and thereby exceeding the quota with more than 50 animals. Two weeks later the decision to increase the quota was taken and the hunters did not have to face any penalties for their excessive hunt.

The population of narwhals in Greenland is under pressure from pollution and climate change and over hunting could be the final straw.

According to the hunters in Greenland, there are plenty of narwhals and belugas – but according to biologists in Canada and Greenland both populations of narwhals and belugas in Greenland are decreasing fast.

In December 2004, the EU scientific CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna) Committee decided to impose a ban on all import of narwhal products to the EU. The decision is based on concerns that the Greenlandic quota initiative was not sufficient to halt the decline and that the trade in narwhal products may be detrimental to the population.

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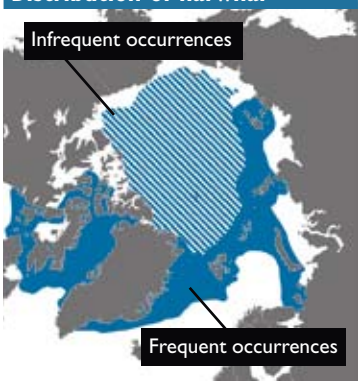
Read more about management of Beluga and Narwhal in WWF Denmark's report *The Big Four* available as pdf at www.wwf.dk/261000c.

Distribution of narwhal



Greenland has increased the annual narwhal hunting quota against the advice of marine experts.

Photo: Peter Prokosch

Hunting figures – West Greenland only. No quota for East Greenland:

	Quota 2004–2005	Hunt 2004–2005	Quota 2005–2006	Recommended quota
Narwhal	300	294	First 260. Then increased to 310	135 annually
Beluga	320	91	220	100 annually

Mystery of narwhal tusk solved

A researcher from the Harvard School of Dental Medicine has discovered that the narwhal's tusk is actually a tooth with ten million tiny nerve connections that tunnel their way from the central nerve of the narwhal tusk to its outer surface

Martin Nweeia, studied the whales during four trips to the Canadian High Arctic and found that the tusk is like a membrane with an extremely sensitive surface, capable of detecting changes in water temperature, pressure, and particle gradients.

Nweeia said: "Why would a tusk break the rules of normal development by expressing millions of sensory pathways that connect its nervous system to the frigid arctic environment? Such a finding is startling and indeed surprised all of us who discovered it."

The tooth, or tusk, which emerges from the left side of the upper jaw of the narwhal, is an evolutionary mystery that defies many of the known principles of mammalian teeth.

The tooth's unique spiral, the way it sits to the left side, and its odd distribution among most males and some females are unique.

The narwhal lives in the Atlantic portion of the Arctic Ocean, concentrating in the Canadian High Arctic. It is also found in fewer numbers in the seas from Greenland to Svalbard and Severnaya Zemlya, off the coast of Russia.

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West Greenland seabirds exterminated by hunting

A new study published in the journal of the Danish Ornithological Society reveals that birds in West Greenland have suffered a severe decline over the last 100 years. The thick-billed murre has been reduced from 500,000 pairs to none.

The survey was carried out in the municipality of Uummannaq – an area of 12,000 square kilometres, bordered by the Greenland Ice Cap to the east and Baffin Bay to the west.

In this intricate system of fjords, bays and islands, three American scientists re-visited more than 207 sites in 2000 to count the birds and compare the findings with those of the Danish doctor, Alfred Bertelsen, almost 100 years before.

The results were significant. Eight species that were common 100 years ago have declined substantially. The most dramatic being the thick-billed murre. But also the black-legged kittiwake, the razorbill, common eider and gyr falcon have suffered severe losses. The few birds found are now located at the maximum distance from human settlements.

Christian Hjorth, chairman of BirdLife Denmark, said: "We are facing a biological collapse. The eider has traditionally been one of the most important quarry species in Greenland, and it is a severe threat to this species that regulations on hunting and egg collecting are not generally observed."

Human activities have been vastly increasing in this part of Greenland during the 20th century. Greenland has experienced a four-fold population increase, and nowadays most hunters have speedboats to hunt from. This means that hunters can now reach previously unreachable bird cliffs on an evening trip.

Hjorth continues: "International pressure has caused the Greenland Home Rule to tighten regulations, but policing and law-abiding are generally poor. The result is that seabird colonies in most of Greenland are declining, or have been exterminated like in Uummannaq."

Anne Marie Bjerg, of WWF-Denmark, said: "Greenlandic politicians need to take this seriously and allocate time and money to control the illegal hunting. It is still possible to avoid a total collapse in the remaining populations, such as the kittiwake and eider, but action must be taken this spring."

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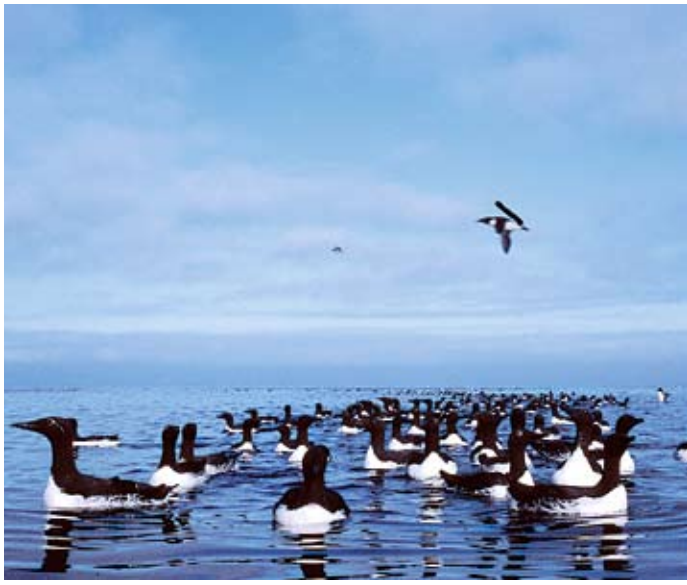

Photo: Michael Häferkamp

The thick-billed murre (Uria lomvia) or Brünnich's guillemot, near Svalbard. The species has been completely wiped out in West Greenland.

Increased toxics in arctic bird eggs

A 20-year study has shown that eggs from arctic seabirds contain increasing quantities of brominated flame retardants. This is the first time that contaminants in seabird eggs from the European Arctic have been examined over such a long period of time.

The Norwegian study confirms that brominated flame retardants are found far from their original source.

The greatest increase during the past 20 years has been found in the flame retardants hexabromocylododecanes (HBCDD).

HBCDD is being used as a substitute for the now banned flame retardants polybrominated diphenyl ethers (PBDE). Many countries have banned or are phasing out PBDE under the Stockholm Convention on Persistent Organic Pollutants.

However, HBCDD also has the characteristics of a Persistent Organic Pollutant (POP). It increases in concentration as it moves up the food chain, travels in air and water from warmer to colder regions of the world, is a threat to human health and the environment, and persists in the environment for many years.

The eggs that were examined came from herring gulls, puffins, kittiwakes and glaucous gulls. In the past researchers have found flame retardants in various species of arctic animals and birds. This study shows that flame retardants are also transferred from bird to egg.

Håvard Holm, Director of the Norwegian Pollution Control Authority (SFT), said: "The study shows that flame retardants are not only found far from their sources, but also in constantly increasing concentrations. This creates cause for concern, and SFT wants stricter regulation of their use."

The HBCDD levels in seabird eggs from the arctic region rose between 1983 and 2003, and some PBDEs, including the now-banned octa-BDEs, showed an increasing trend throughout the entire period.

A recent Canadian-led study, which found high levels of the banned PBDE in polar bears, also found traces of HBCDD.

Killer whales currently hold the dubious honour of being the most toxic animals in the arctic, as a recent study found alarmingly high levels of flame retardants and PCBs (see *Arctic Bulletin* 04.05).

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Focus on Chukotka

Chukotka, on the far eastern extremities of Russia, is still a largely undisturbed arctic region. But the area is increasingly under threat. This issue of the *Arctic Bulletin* includes a special pull-out leaflet on Chukotka.

Chukotka, bordered by the Chukchi and Bering Seas, is home to indigenous peoples and a wide range of flora and fauna. But the area is under threat. Large industrial projects present the greatest risk to Chukotka's ecosystems. Chief among them are the exploration and exploitation of natural resource deposits – oil, natural gas, gold, silver and platinum amongst others. Wastes from the Bilibino Nuclear Power Plant and outdated radio-isotopic thermo-electro generators (RITEGs) along Chukotka's coast threaten radioactive pollution.

Climate change, too, is having a noticeable impact on the region. Its effects include diminishing sea ice cover, changes in the distribution and abundance of fish and other marine species, and an increase in severe weather events that cause coastal erosion and flooding. Tundra fires also pose a serious threat.

Its natural and cultural treasures make Chukotka a priority for WWF's conservation work. In recent years, the work of WWF's Bering Sea Ecoregion Programme has focused on coastal and marine conservation, including the designation of Wrangel Island as a UNESCO World Heritage site, and environmental education for young people (see *Arctic Bulletin* 4/03).

Currently, WWF's focus in Chukotka is on polar bear conservation, both at the management level (and in support of the implementation of the US/Russian treaty on the conservation and management of the shared population of polar bears) and with regard to conservation needs in the face of climate change, pollution and human-bear conflicts. Scientists, in cooperation with native coastal villages, gather information on the status and behaviour of polar bear populations and the threat from illegal hunting, and help develop management practices for the legal subsistence hunt allowed under the treaty (once activated). The protection of critical denning habitat is an important part of the work, too.

In this issue, we include a special pull-out leaflet on the nature and protected areas of Chukotka, which a workshop on community-based ecotourism hosted by WWF and the Government of Chukotskiy Autonomous Region, recognised as "key attractions for tourism" that "increase Chukotka's visibility with potential tourists".

Protected areas are not a new concept to Chukotka. In 1960, Wrangel Island was established as a long-term wildlife refuge and later upgraded to a state nature reserve (zapovednik), the only one in Chukotka.

Ambitious plans for a network of protected areas have since gained and lost political support, and plans for the establishment of Beringia Heritage International Park, which would protect both sides of the Bering Strait, have stalled.

In fact, the process to follow up on the protected area plans has not only slowed, but led to less protection. During the course of 2002, the operational periods of three of the regional wildlife refuges – Tumansky, Tundrovy, and Omolonsky – expired, and regional authorities dissolved them. In 2005, however, the Administration of the Chukotksky Autonomous Okrug decided to re-establish the three regional refuges. The re-establishment process is still underway.

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WWF *for a living planet*

The Bering Sea Ecoregion

CHUKOTKA'S NATURAL HERITAGE AT A GLANCE

The Bering Strait coast.

Photo: Dennis Litovka

Polar bears, Wrangel Island.

Photo: Arne Nævra, www.naturbilder.no

Rough-legged Hawk.

Photo: Peter Grigorovich

Chukotka, officially the Chukotsky Autonomous Okrug, forms Russia's north-eastern frontier. About half of the region's 737,700 square kilometers lies above the Arctic Circle.

The region's landscape is dominated by alpine and arctic tundra, although small larch, pine, birch, poplar, and willow trees can grow in the valleys of larger rivers. More than 900 species of plants grow in Chukotka, including 400 species of moss and lichen. Thirty freshwater fish species inhabit Chukotka's inland lakes and streams. There are 220 bird species in the region. The chilly waters washing the region's shores provide important habitat for numerous marine mammals, while species such as brown bear, sable, lynx, ermine, mountain hare, and mink can be found in terrestrial habitats. Numerous rare and endangered species inhabit the Chukotsky Autonomous Okrug. Among those listed in the Red Data Book of the Russian Federation are the polar bear, bighorn sheep, narwhal, humpback whale, finback whale, grey whale, blue whale, razor back, and 24 bird species.

Photo: Gennady Smirnov

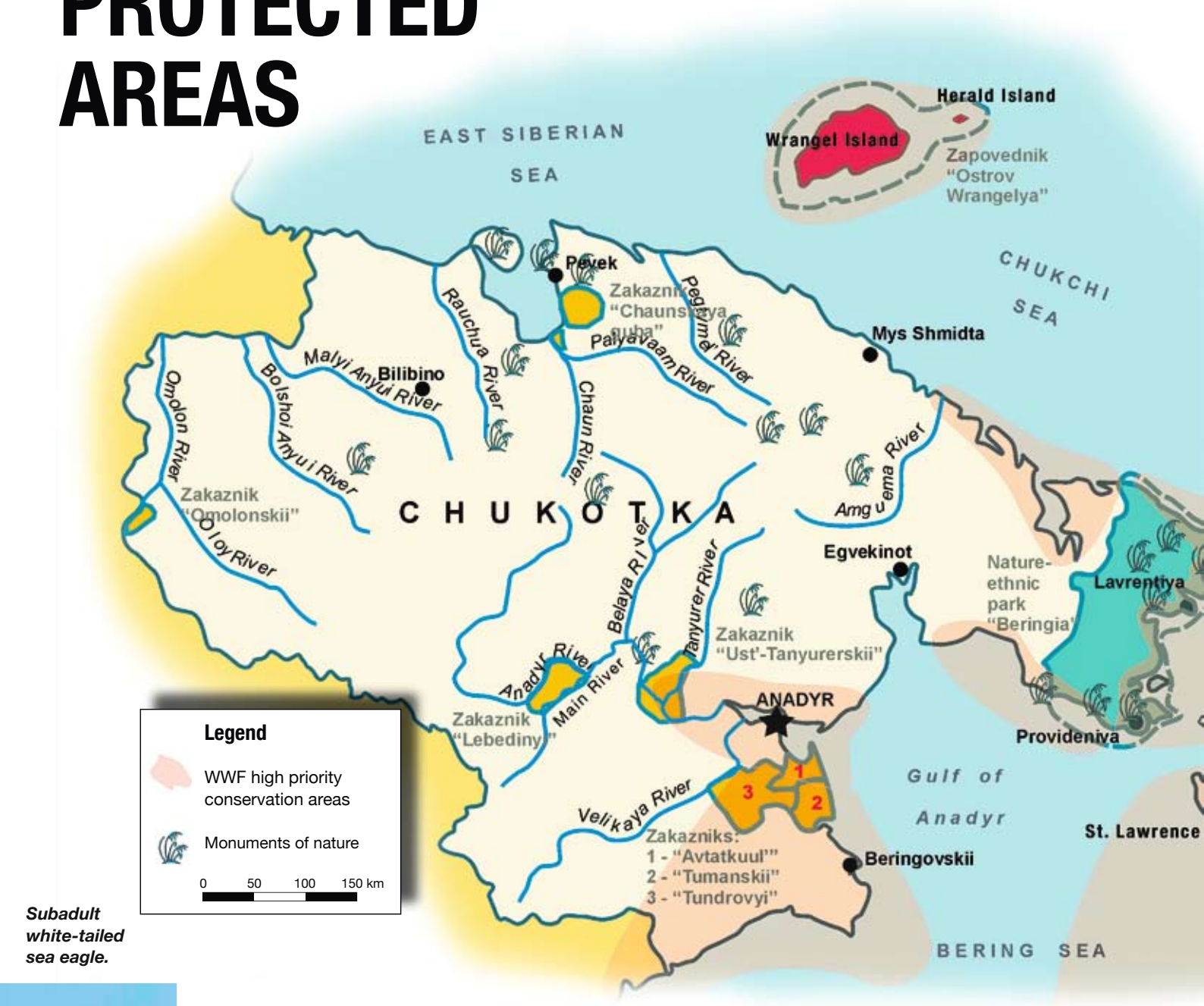
Walruses, Wrangel Island.
Photo: Gennady Smirnov

Native hunting party.
Photo: Gennady Smirnov

Siberian dwarf pine.
Photo: Gennady Smirnov

Tumanskaya River.
Photo: Gennady Smirnov

CHUKOTKA'S PROTECTED AREAS



Subadult white-tailed sea eagle.

Photo: Peter Grigorovich

Lebediny Federal Zoological Wildlife Refuge

The Lebediny Federal Zoological Wildlife Refuge, between the Main and Anadyr Rivers, protects almost 400,000 hectares of wetland habitats, as well as the animal species inhabiting them. The area is home to important plant life, including dwarf Siberian pine shrub tundra, hummocky sedge and cotton-grass tundra, and thickets of shrubby alder and tall-growing willows. Even more spectacular are the Refuge's birds. One of north-eastern Asia's largest nesting grounds for white-fronted goose is lies in in the Refuge. Two thousand pairs nest here. The isolated Anadyr population of whooper swan is the north-eastern outpost of this species. Pacific black brent and snow goose are found during the seasonal migration period. Birds of prey, such as white-tailed sea eagle, peregrine falcon, gyrfalcon, and goshawk are widely distributed throughout the Refuge. Moose, wild reindeer, brown bear and red fox are common among terrestrial fauna, as are wolf and wolverine.

Flood plain lake.

Photo: Peter Grigorovich

Contact information: Lebediny Federal Zoological Wildlife Refuge Headquarters, Ulitsa Berezkina 15, Apartment 8, Markovo, Anadyrsky District, Chukotsky Autonomous Okrug, Russia 689530. Tel: 3-05 (connection available through the operator).

Chukchi Prim

Photo: Igor Zagrebin


Seal pup.

Photo: Vladimir Eineucheivun

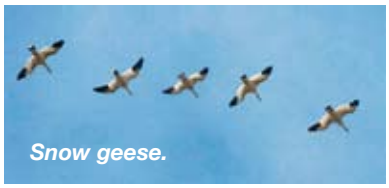

Snow geese.

Photo: Peter Grigorovich

Wrangel Island Federal Strict Nature Reserve

Two islands off Chukotka's northern coast – Wrangel and Herald – and their surrounding seas out to 12 miles are protected in the Wrangel Island Federal Strict Nature Reserve, or "Ostrov Vrangelya" Zapovednik, as it is known in Russian. The islands are the remains of the mainland, which in ancient times, stretched for hundreds of kilometers to the north of where the present Asian and American continents meet, and formed the so-called Bering Land Bridge.

The Reserve's regime of strict protection allows for conservation and research on this unique arctic island ecosystem, which is home to the highest density of polar bear dens in the world, coastal Pacific walrus haul-outs, the only nesting population of snow geese in Russia, musk oxen, and many other species of Beringia flora and fauna found nowhere else in the world. In addition, skeletal remains and mammoth tusks are often found on the islands' open terrain.

In 2004, Wrangel Island Federal Strict Nature Reserve was inscribed on the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage List as a site of outstanding importance to the common heritage of humankind. It is the first territory in the Russian Arctic to receive this prestigious recognition.

Contact information: Wrangel Island Strict Nature Reserve Headquarters, Ulitsa Obrucheva 27, Room 63, Pevek, Chaunsky District, Chukotsky Autonomous Okrug, Russia 689400. Tel/Fax: +7 (427-37) 2-15-35. Email: wisnr@chrues.chukotka.ru .

Beringia Nature-Ethnic Park

Chukotka's largest and most recently-created protected area is the Beringia Nature-Ethnic Park. Chukotka authorities established this regional protected area in 1993, as a preliminary step in the process of creating the federal-level Beringia National Park. The Nature-Ethnic Park occupies 3,053,300 hectares and was established to preserve the natural ecosystems, historical heritage, and traditional economies of the Chukchi and Eskimo (Siberian Yupik) peoples.

Numerous mineral hot springs with unique flora and fauna, and endemic and relict elements dot the park's landscape. Also found here are spawning areas for valuable commercial fish species, such as Dolly Varden char and Pacific salmon, as well as bird colonies and walrus haul-outs. The park also protects two world renowned ancient indigenous cultural sites: Whalebone Alley, a sacred place for early native whalers on Ittygran Island, where one can wander among the 500-year-old skeletons of giant bowhead whales; and Ekven, an archaeological site dating back to 500 BC, which preserves burial sites and artifacts belonging to early whale hunting cultures.

Contact information: Beringia Nature-Ethnic Park Headquarters, Ulitsa Gorkogo 4, Anadyr, Chukotsky Autonomous Okrug, Russia, 689000. Tel: +7 (42722) 2-63-46. Fax: +7 (42722)2-88-71. Email: beringija@chukotnet.ru

rose.

Killer whale.

Photo: Gennady Smirnov

Chukotka has also three special protected areas for wildlife: the *Avtatkuul, Ust-Tanyurersky* and *Chaunskaya Guba Regional Wildlife Refuges*.

Avtatkuul Regional Wildlife Refuge

is 40 kilometers to the south of Anadyr in Beringovsky District, where it covers 250,000 hectares of wetland habitats important for waterfowl and shorebirds. The Refuge's territory includes extensive marsh meadows and areas of coastal tundra, which form favorable conditions for waterfowl staging during seasonal migration, and during their moulting and nesting periods. In the shallow waters of the Anadyr River Estuary, brent goose, Eurasian widgeon, and pintail gather in particularly large groups during moulting, their numbers often exceeding several thousand birds. Also the white-fronted goose is numerous here, while bean geese are common. Numerous migratory bird species nest in the Refuge. North-eastern Asia's largest nesting colony of brent goose is located on Strela-Kosa Island.

Photo: Pavel Tomkovich

Spoon-billed sandpiper.

Photo: Julii Gubar

Siberian caribous.

Ust-Tanyurersky Regional Wildlife Refuge

occupies 450,000 hectares in the Lower Anadyr geo-botanical district, and thus represents a transitional zone between forest tundra and southern sub-arctic tundra. Sedge-cotton grass tundra, with sphagnum cranberry mires in thermokarst depressions, dominates the landscape. In the valleys of the Anadyr and Tanuirer Rivers, abundant lakes with various stages of vegetative growth, alternate with shrubby meadows. One of Chukotka's largest lakes, Lake Krasnoye, borders the Refuge's territory. Whooper and Bewick's

swans, and various duck, geese, and sandpiper species are numerous in the Refuge in the summer. Sandhill cranes nest here in large numbers. Various birds of prey including white-tailed sea eagle, peregrine falcon, gyrfalcon, and goshawk can be encountered in the Refuge almost year round, and the snowy owl is common in winter. Mammals include brown bear, moose, red fox, arctic fox, and mountain hare, and occasionally wolverine and wolf.

Chaunskaya Guba Regional Wildlife Refuge

is situated on the eastern and south-eastern coasts of Chaunskaya Bay, in the East Siberian Sea. Typical tundra of the coastal zone dominates the landscape. One of the territory's greatest values is the high concentration of nesting, moulting, staging, and feeding habitats that it offers rare waterfowl and shore-birds species before the autumn migration. These species include: Bewick's swan, snow goose, lesser white-fronted goose, greater white-fronted goose, ember goose, arctic (black-throated) loon, three eider species (common, king and Siberian), and Ross's gull. Arctic fox, wild reindeer, ermine, mountain hare, wolf, wolverine and brown bear can also be found in the refuge. Moose are sometimes observed in river valleys, and polar bears may visit the Refuge in the winter. The Chaun Lowlands were included on a list of the Soviet Union's most significant wetlands.

■ In addition to Chukotka's three existing regional wildlife refuges, three additional areas, which had regional wildlife refuge status up until 2002, are worthy of particular attention. They are: the territory of the **former Tumansky Regional Wildlife Refuge**, which borders the existing Avtatkuul Refuge and is an important area for numerous migratory bird species; the territory of the **former Tundrovy Regional Wildlife Refuge**, which is located in the hilly tundra area between the Nygchekveyem and Velikaya Rivers, where it is bordered by the existing Avtatkuul Refuge and by the territory of the former Tumansky Refuge; and the territory of the **former Omolonsky Regional Wildlife Refuge**, which is located in middle flow of the Omolon River and was the only protected nature area in Chukotka in the larch taiga zone.

When the operational periods of these three short-term refuges lapsed in 2002, regional authorities chose not to renew them, thus effectively dissolving the protected areas. In 2005, however, the Administration of Chukotka decided to re-establish the three regional refuges. They adopted this decision thanks in large part to the public's persistent requests, and based on the recommendations of ecologists and scientists. The re-establishment process was still underway at the time this guide was published.

Photo: Gennady Smirnov

Moose.

Contact information for Chukotka's regional wildlife refuges: Directorate of the Federal Service for Oversight in the Sphere of Agriculture (Rosselhoznadzor) for Chukotsky Autonomous Okrug, Ulitsa Otke 33, Anadyr, Chukotsky Autonomous Okrug, Russia, 689000. Tel: +7 (42722) 2-65-38. .

■ In addition to the refuges, **20 natural monuments** have been established by regional authorities. According to The World Conservation Union's (IUCN) system of protected area management categories, natural monuments are protected areas that are managed mainly for conservation of specific natural features. Chukotka's natural monuments include: Chosenia willow-poplar groves in river valleys, ancient settlement sites, habitats of rare animal species and unique animal communities, relict plant communities, and several natural landscapes.

Threats to Chukotka's natural heritage

Large industrial projects present the greatest threat to Chukotka's ecosystems.

Chief amongst them are the exploration and exploitation of natural resource deposits – oil, natural gas, gold, silver, platinum, and tin, among others. Wastes from the Bilibino Nuclear Power Plant and from more than 85 outdated radio-isotopic thermo-electro generators (RITEGs) along Chukotka's coast threaten radioactive pollution.

Tundra fires also pose a serious threat. In recent years, the scale of these fires has significantly grown due to the increasing number of people and different types of transport that are involved in the prospecting, oil, gas, and mining industries.

In addition, climate change is having a noticeable impact on the region. Its effects include diminishing sea ice cover, changes in the distribution and abundance of fish and other marine species, and an increase in severe weather events that cause coastal erosion and flooding.

Many of the threats pose a direct risk to Chukotka's protected nature areas. The unique ecosystems of Avtatkuul Regional Wildlife Refuge, as well as those in two former refuges – Tumansky and Tundrovy – may be harmed by the unregulated exploration of oil and gas in the Lower Anadyr Lowlands. Ust-Tanyurersky and Chaunskaya Guba Regional Wildlife Refuges are located near gold deposits under development, as is the territory of the former Omolonsky Regional Wildlife Refuge. Consequently, the natural functioning of these territories is threatened by industrial waste pollution and by an increased level of wildlife disturbance.

Why does WWF care about Chukotka?

■ Chukotka is part of the Bering Sea region, an area that is a global priority for WWF's conservation work. WWF is working with communities, government agencies, NGOs, scientists, fishermen, and many residents of Bering Sea communities throughout the ecoregion to address threats to the environment and to better understand and conserve the many complex systems that make up the Bering Sea Ecoregion. Communicating the values at stake is part of this work.

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A challenge for Murkowski

Photo: http://murkowski.senate.gov

Despite acknowledging the human impact on climate, Lisa Murkowski, US senator for Alaska, is yet to back any state or federal legislation to regulate carbon emissions.

The first step to solving any problem is to acknowledge that it exists. Alaskan Senator Lisa Murkowski recently outlined the effects that climate change is having on her state and acknowledged that humans are largely to blame.

Despite this acknowledgement, Murkowski has yet to endorse any policy that would cap the amount of carbon dioxide emitted by the US.

In a speech at the Catholic University Law School in Washington, DC, Murkowski said: "I believe there is now almost universal acceptance that our planet is warming.

"While the extent of anthropogenic influence on our climate may remain in debate, I believe it is a reality that man is contributing to the current warming trend."

The Republican Senator, who has consistently voted against legislation to limit carbon emissions, has cited examples of coastal erosion, diminished snow pack and an unusual infestation of spruce bark beetles that has killed three million acres of forest, as having negative impacts on the people and environment of Alaska.

Alaska has not put in place any regulations for controlling carbon emissions. Some other US states have agreed to reduce their greenhouse gas emissions as part of the Regional Greenhouse Gas Initiative.

Murkowski is instead looking to the Bush Administration to prove that its approach, which involves the trading of new energy technologies with China, India and other countries, will be successful in limiting the affect of climate change.

The Administration fears that any caps to reduce industrial greenhouse gas emissions will hamper economic growth.

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WWF-Russia conservationist recognised

Viktor Nikiforov, regional programme director of WWF-Russia, is a winner of the 2005 WWF International Staff Awards for Outstanding Service.

He received the award for his outstanding commitment to conservation and the development of protected areas in arctic Russia, and for his ability to communicate with stakeholders at all levels.

Viktor joined WWF in 1994 and has since been a key player in WWF's arctic work. His involvement was crucial in establishing some 400,000 square kilometres of protected areas in Russia's Kola Peninsula, Pechora Delta and elsewhere, as well as his continuing role in implementing WWF's Gift to the Earth in the Sakha (Yakutia) Republic.

This award, first created in 2003, is presented to WWF staff members in recognition of exceptional dedication and outstanding service.

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Viktor Nikiforov, regional programme director of WWF-Russia.

Photo: WWF

Feeling the heat in Chukotka

Photo: Bryan & Cherry Alexander, www.arcticphoto.co.uk

Lema, a Chukchi woman, sits on her sled during a break on a journey by dog team in Chukotka, Russia.

Around the Arctic, indigenous people are witnessing the changes taking place as a result of a warming climate. Their observations are based on the experience of generations. Melissa Mooza **reports on the effects that global warming is having on the people of the Chukotkan Peninsula in eastern Russia.**

Occupying the far north-eastern corner of the Eurasian continent, Russia's Chukotka Peninsula juts into the Arctic and Pacific Oceans. Its shores – washed by the Chukchi Sea in the north, and by the Bering Sea in the south and east – are dotted with small coastal settlements, many of no more than a few hundred people. Largely inhabited by indigenous Chuchki and Siberian Yupik, these villages preserve the region's ancient coastal hunting and fishing cultures.

Here, people's lives are shaped by the natural environment and its resources. In this unique part of the Russian Arctic, traditional skills and knowledge – and observations about the environment – are passed from generation to generation. Local residents' insights into the natural world around them carry strong links to the past. As a recent WWF climate change survey indicated, they can also offer a very important glimpse into the future.

Under the auspices of WWF-Russia's Climate Change Programme, Vladilen Kavry, a local Chukotkan hunter, travelled to seven coastal communities during the summer and autumn of 2005 to gather information about residents' perceptions of climate change. Kavry's travels, complicated by difficult access to many settlements – some accessible by plane only – took him to Ryrkaipii and Vankarem along the peninsula's northern shore. He also visited five villages along the Bering Sea coast: Enmelen, Nuligran, Sireniki, Yanrakynnot, and Lorino.

In each of these communities, Kavry met with men and women representing different age and ethnic groups – Chukchi, Siberian Yupik, and Russian.

The overwhelming majority of his contacts were involved in subsistence activities, such as reindeer herding and hunting. Their responses clearly demonstrate

that people in Chukotka's coastal communities have noticed signs of climate change and feel the effects on their lives.

Across the survey region, people commented on changing seasonal weather patterns and on the increased unpredictability and instability of the weather. Respondents noted shorter winters, observing that the autumn-winter transition is occurring later and spring weather arriving earlier. Many participants pinpointed the deviation as being about a full month on both ends of the winter period.

Magtagin, a 71-year-old Chukchi hunter from the village of Vankarem on the peninsula's arctic coast, however, noted that winter was beginning a full two months later. He said that while the winter frosts had previously begun in September, they were now really only taking hold in November. Magtagin, and many other survey participants, also noted the frequent occurrence of weather phenomena that either did not occur previously, or occurred only very rarely. He cited frequent thunderstorms.

Other respondents, such as Anatoly Ranavtagin, a 64-year-old sea hunter from Lorino, on the peninsula's eastern Bering Sea coast, noted the uncharacteristic occurrence of very strong snow storms and blizzards, as well as winter rains.

Ranavtagin says: "Earlier, winter was calm and cold, and the location of the village was good. Now easterly winds carrying blizzards dominate, and for several days at a time. Snow is more abundant and there were never such snow banks in the village before. Only in December do we leave for the ice edge, while previously we left in November. Sometimes there are periods of thaw and rains in the winter."

Survey respondents also observed numerous warming-related changes in the physical condition of the peninsula's familiar landscapes and landscape features. With increased temperatures, frozen ground, snow fields, and frazils (the first stage of sea ice) have begun to melt. Rivers and lagoons have also begun to melt earlier than they did before, but by far of greatest concern to many were observed changes in sea ice.

Sea ice extent has declined and its quality and timing are changing. Vladimir Petrovich Typykhkak, a 41-year-old Siberian Yupik sea hunter from the village of Sireniki, says: "The sea begins to freeze in November only, while before it did so in September."

Survey respondents also said they encountered animals that had not been observed in their region previously, as well as changes in the habitat and, in some cases, behavior, of more typical species. Species such as moose, lynx, badger, and beaver, that are typically unseen in the area, have begun to appear, and people have noted that the walrus, which spends most of its time on the sea-ice, has been forced to come ashore.

Such testimonies to climate change, offered by people whose connection to the environment is so close, are very valuable in building an understanding of the climactic transition taking place in the Arctic.

Viktor Nikiforov, the director of WWF-Russia's "Global 200" Programme, who has extensive experience collaborating with some of Russia's indigenous peoples on ecological programmes, says: "Because climate change will most affect indigenous peoples – their lives depend on natural resource use – it is very important to use the knowledge of indigenous communities to develop mechanisms for adapting to possible changes in the future."

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Photo: Bryan & Cherry Alexander, www.arcticphoto.co.uk

An elderly Chukchi woman carrying a bucket of snow to melt for water at a camp in the Oloy Valley. Chukotka. Siberia. Russia.

Coastal changes

Coastlines in the Arctic have been changing rapidly in recent years due to climate change. Nicole Couture **of McGill University in Montreal and** Vassily Spiridonov **of WWF-Russia, report on the effect these changes are having on coastal communities and ecosystems.**

The arctic region is undergoing the most rapid environmental change experienced by a large region anywhere on Earth in at least the last 10,000 years, and the rate of change is expected to increase over the coming decades. The coastal zone is particularly vulnerable to climate warming because it is affected by changes in three different systems – the land, the ocean, and the atmosphere.

In most parts of the Arctic, the greatest coastal threat from environmental change is an increase in erosion. As permafrost warms, it loses much of its strength and is more susceptible to attack by waves.

➤ 16

Environmental changes are likely to generate more erosion, such as these retrogressive thaw slumps on Herschel Island, Canada.

Photo: Dan Leitch

15 ➤ In addition, warmer sea temperatures melt the ice binding coastal sediments and wash them away. A solid cover of sea ice in winter protects the coast from erosion, but even during the break-up period in the spring or freeze-up in the autumn, the presence of ice floes serves to suppress waves.

The extent and duration of sea ice has steadily declined in recent years, however, and in 2005, the sea ice cover was the lowest it has been since satellite measurements began in 1978. This trend is expected to continue, and can significantly increase the open water period when wave erosion occurs.

In the Canadian Beaufort Sea, for example, open water currently lasts from June to early October (about 120 days), but the duration of open water is expected to increase by 60 days to 150 days. Sea level rise due to the thermal expansion of ocean waters will subject even more land to flooding and erosion, and this is compounded in areas where natural adjustments in the Earth's crust are already causing coastal submergence.

The most rapid coastal erosion occurs as a result of storm surges, when winds force water up on shore, above the height reached by normal tides. Should changing environmental conditions result in more frequent or stronger storms, this process will be intensified. Sediments, soil carbon, and contaminants mobilised by erosion have the potential to create dramatic changes in the geochemistry and biodiversity of the near-shore zone.

Physical changes in the coastal zone have differing implications. For instance, many arctic communities are faced with threats to their infrastructure. Duane Smith of the Inuit Circumpolar Conference, says: "Some of our communities are eroding into the ocean in front of our eyes because of the decrease in the multilayered ice, which is allowing for larger storms to roll in."

Erosion at Tuktoyaktuk in western Canada has already shifted the coastline more than 100 metres in the last 50 years and is causing the abandonment of a school, houses and other buildings. Substantial resources are being spent on shoreline protection, but residents recognise that they may have to relocate their community. Shishmaref, a community on a small island off the Alaskan coast, is already planning to move to a new site inland, at a cost currently estimated to be between $150 and $180 million.

The coastal zone encompasses many important linkages between marine and terrestrial ecosystems (eg shorebirds, geese, mammals, fish and related food webs), which cannot be effectively studied and protected as discrete marine or terrestrial entities. For example, sediment from coastal erosion near Sachs Harbour in Canada appears to affect bottom-dwelling biota. These changes can migrate up the food chain and may explain the decline in fish catches by community residents in recent years.

To better understand the impact on coastal ecosystems and communities, two projects of the International Arctic Science Committee (IASC), integrate current arctic research in areas such as permafrost, climate change, sea ice, marine geology, and fisheries.

Arctic Coastal Dynamics (ACD) has been focusing on improving understanding of physical coastal processes in the circumarctic, while Arctic Coastal Biodiversity (ACBio) has recently developed a science plan that includes assessing and mapping biodiversity.

With the IASC arctic coastal biodiversity and coastal dynamics projects, there is now an opportunity to apply the best available physical and biological science to practical goals that serve local human interests and global environmental science and policy.

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Victory for Refuge — for now

The dying days of last year saw a further victory for those who want to keep oil development out of Alaska's Arctic Refuge. But this isn't the end of the battle. Randy Snodgrass **reports.**

The year-end holidays were made considerably brighter when the US Congress again rejected legislation to open the Arctic National Wildlife Refuge to oil development. Repeated attempts since 1990 by the oil companies and their allies in Congress to authorise drilling have failed.

The latest chapter in the saga unfolded in December when moderate Republicans and Democrats in the House of Representatives joined to block a provision to allow drilling that was inserted in a budget-savings bill that most Republicans and the White House were eager to pass.

Every Democrat in Congress opposed the bill because, among its consequences, it would dramatically reduce funding for programmes that benefit some key constituencies – the poor, sick, and elderly.

In order to pass the bill, the Republican majority leaders were soliciting the vote of each member of their caucus. That's when Republican Charlie Bass of New Hampshire told his party leaders that if the Refuge drilling provision was not removed, he and 20 other Republicans would vote against the legislation, thereby ensuring its defeat. The House leadership bowed to the threat, removed the offending language, and passed the budget bill. It was time to celebrate, right? Wrong.

Photo: Randy Snodgrass/WWF

Aufeis (new ice) along the Aichilik River, Arctic National Wildlife Refuge, Alaska

The move by Bass and his colleagues was lauded by conservationists, religious groups, the Gwitch'in people of Alaska and Canada and others who have worked together for many years to keep the Arctic Refuge intact. But Alaska's senior senator Ted Stevens, an ardent supporter of oil development in his state, was incensed by the action of lawmakers in his own party.

Senator Stevens decided to make a last ditch effort to include the Refuge drilling provision in an unrelated bill that would provide funding for US troops fighting wars in Iraq and Afghanistan. The Defense Department Appropriations bill is among a handful of so-called "must pass" bills. This distinction stems from the perceived political fallout by an enraged electorate if Congress failed to provide funding for soldiers under fire in a foreign land.

Stevens' gambit failed. In a nail-biting procedural vote, Stevens fell short of the votes necessary to propel the bill to final passage. Senator Maria Cantwell (D-WA), a long-time champion for protecting the wildlife sanctuary, was joined by most of her Democratic colleagues as well as Republican senators Lincoln Chafee of Rhode Island and Mike DeWine of Ohio in rejecting Stevens' bald-faced move. After hours of behind-closed-door hand wringing by the senator and his allies in the Republican leadership, the offending language was stripped and a "clean" defense spending bill was adopted.

That evening the celebrations by conservationists were cut short when a visibly angry and dejected Ted Stevens returned to the Senate floor to scold colleagues who had voted against him that day and to deliver a sobering warning: he would make another attempt in 2006 to authorize drilling.

Stevens' strategy isn't likely to change much this year. His options in the Senate are limited because he doesn't have 60 votes to avoid a filibuster by senator Cantwell and others. The most likely scenario is that senator Stevens will urge the Budget Committee chairmen to include a Refuge drilling provision in the Budget Reconciliation bill just as he did last year. Under Senate rules, budget legislation cannot be filibustered. Stevens would only need a simple majority – 51 votes – to prevail.

The challenge for the senator from Alaska, however, will be in the House. Bass and his band of moderate Republicans have pledged to join with Democrats to try and derail Stevens' budget bill strategy again. Conservation groups and other friends of the Refuge are working to ensure that this outcome is repeated, if it becomes necessary. The 2006 legislative year is short due to congressional elections in November. So the majority of the members of Congress will spend more time than usual at home campaigning for re-election. This reduces the chances that both houses of Congress will have time to enact a Budget Reconciliation bill. In fact, most years Congress fails to pass such a measure because it is such a political lightning rod. This would be good news for the Arctic Refuge, keeping it safe and secure another year.

Conservationists have long sought to permanently protect the Refuge by adding the area to the National Wilderness Preservation System, which places it off limits to oil development. However, like Senator Stevens, we do not have enough votes in Congress to succeed in our goal. Until we can build enough support for protected status in Congress and in the White House, we must continue to fight defensive battles again and again.

WWF is grateful for the help of tens of thousands of conservationists who have engaged in the campaign to keep the Arctic Refuge wild. By working together, we will continue to be victorious.

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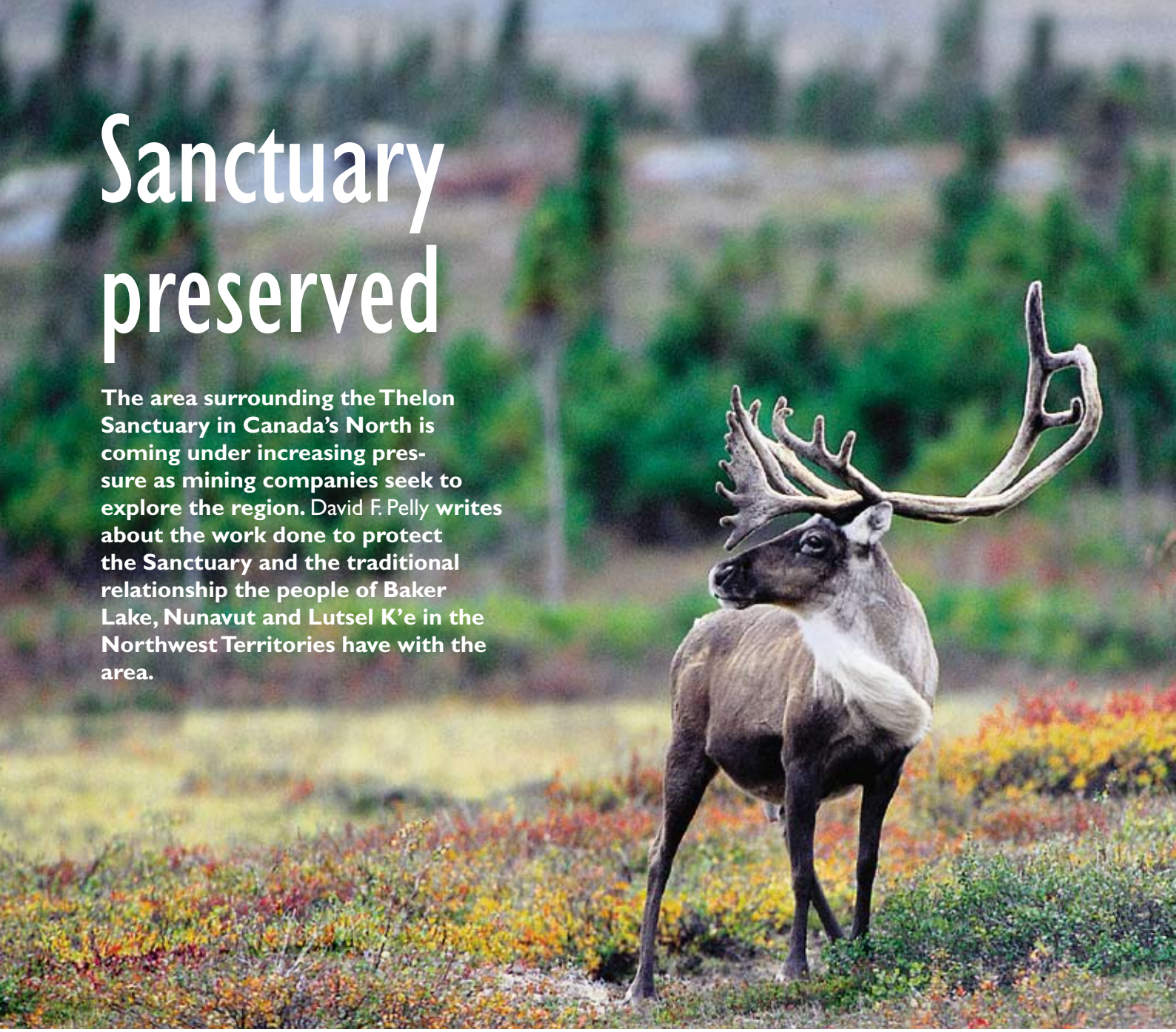
Sanctuary preserved



The area surrounding the Thelon Sanctuary in Canada's North is coming under increasing pressure as mining companies seek to explore the region. David F. Pelly **writes about the work done to protect the Sanctuary and the traditional relationship the people of Baker Lake, Nunavut and Lutsel K'e in the Northwest Territories have with the area.**

Mannik is one of those older Inuit men who, by their very presence, stirs respect in any gathering. He, like others of his era, has been a hunter all his life. That essential fact defines him. It speaks volumes about his understanding, his views, his values. His face is lined by the winds of time. His eyes are forever focused on the distant horizon.

At a public forum in Baker Lake, Nunavut, more than ten years ago now, several hundred people, including Mannik, turned out to learn about, and contribute to, the discussion of the Thelon Wildlife Sanctuary's future. It was a contentious issue in many ways. Mining companies, for whom the vast area in the heart of the Barrens – 56,000 square kilometres, the oldest and largest fully protected wilderness in Canada – had been off-limits for as long as there has been mineral exploration in the North, had been campaigning for access to the riches they were certain must lie beneath the surface of the Sanctuary's pristine landscape. Inuit and Dene both wanted to assert their aboriginal right to hunt in the Sanctuary, in an area that, when it was established in 1927, was set aside as a no-hunting zone to protect the musk-ox, endangered at the time. As recently as the mid-1990s, other groups all had their own particular interest: outfitters, sports-hunters, canoeists, biologists, wolf hunters and so on.

As the meeting wore on, opinions were voiced and duly recorded. One wondered where the consensus would lie in Baker Lake. It was unclear. After an hour or more of somewhat circular discussion, Mannik took the microphone. He spoke slowly. It was translated for those who did not understand Inuktitut. The room was silently absorbed.

Here is what he said: "When I was young, maybe 30, living on the

The Thelon Wildlife Sanctuary Management Plan

The new Plan, as approved in Nunavut, and proposed in NWT, includes the following key elements:

- The Sanctuary is recognised as special for both natural and cultural reasons.
- The Sanctuary will be retained, its status essentially unchanged, its lands remaining "withdrawn" from availability to mineral exploration companies.
- Consideration is to be given to adding special management areas beyond the Sanctuary's boundary (in Nunavut, to protect caribou habitat, and in NWT to protect the upper Thelon watershed), based on community input.
- Inuit hunting rights under the Nunavut Land Claims Agreement are not affected.
- A management authority, made up of community and government representatives, is to be established.

Photo: Leslie Leong

A member of the Beverly caribou herd. WWF-Canada is working closely with communities in Nunavut and the Northwest Territories to protect the migratory route of the Beverly Caribou herd from potential development.

land as a hunter, and the RCMP first told us about the Thelon Sanctuary, a place where we were not to hunt, I thought that was a crazy idea. But many years later, I noticed there was more wildlife in the areas where I was hunting. Then I realised why the Thelon Sanctuary was a good idea. You see lots of musk-ox, lots of wolves, and lots of foxes on the land around here. Do you know where those musk-ox come from? Do you know where those foxes come from? Do you know where those wolves come from? Yes, from the Thelon Sanctuary. It is like a supply place for our land all around. It works for us. It has been left alone for 70 years now, in a natural state, and we should keep it that way, by leaving it alone."

When Mannik stopped speaking, you could feel the atmosphere in the room shift. There was a new certainty of opinion afoot. It was palpable. One man, in 150 words, had laid out what would become the community's accepted truth. In the years that followed, Baker Lake was deeply involved in the development of a new Management Plan for the Thelon Sanctuary, and Mannik's thoughts – though the precise source may have been forgotten, and many other voices added to his words – remained the guiding principle for this community's contribution to the planning process. A few months ago, albeit years after the process began, the Management Plan was finalised and approved for the Nunavut portion of the Sanctuary. Following the lead of people in Baker Lake, the necessary agencies in Nunavut have all endorsed the Plan.

The bigger picture is complicated by the fact that the Nunavut/NWT border cuts through the heart of the Sanctuary. To date there has been no real disagreement between the two territories on the principles or practical measures embraced by the Management Plan, although the NWT Government has yet to apply its stamp of approval.

The foundation for this state of accord was laid 15 years ago by the late Jim Bourque, a Métis man who was active in wildlife management in the NWT for decades, eventually rising to deputy minister of Renewable Resources. He wanted to see the boundaries of the Thelon Sanctuary expanded. In the early 1990s, he stated firmly that the Thelon was not the place for mineral development, however necessary it might be elsewhere in the NWT. "This is one of the few places in the Canadian North where wildlife can live free of any threat from man, and reproduce without having to deal with machinery or man-made noise. It's like a wildlife bank for us," said Bourque, echoing the notion put forward by old Mannik in Baker Lake.

The people closest to whatever happens in the West, the Dene of Lutsel K'e, have been vocal in their support for the new Management Plan. In a crucial and recent move, the Lutsel K'e Dene formally wrote to the Government of the NWT to "strongly urge" the Government to proceed with its approval. "

There is urgency in the matter of Management Plan implementation," the letter says. "In the past, the isolation of the Thelon basin provided relatively hands-off, de facto protection. This circumstance has changed with the fourfold increase in the price of uranium. Many companies are actively exploring for uranium in the area, some with claims immediately adjacent to the Sanctuary. ➤ 20

WWF's work in the Thelon Sanctuary

WWF-Canada has been working mainly with the communities of Baker Lake, Nunavut and Lutsel K'e, Northwest Territories as well as the Beverly and Qamanirjuaq Caribou Management Board (BQCMB), to permanently protect the calving grounds of the Beverly caribou herd in Nunavut, and key migration routes and wintering areas in the NWT. WWF-Canada has provided funding and expertise, and worked with federal and territorial governments, to ensure the approval and implementation of the Thelon Wildlife Sanctuary Management Plan.

Funding of the BQCMB from WWF-Canada is going towards:

- continuing work with Lutselk'e to protect traditional areas in the Upper Thelon River Basin, amidst growing regional mining activity;
- supporting Baker Lake's request for a moratorium on new mineral permits until the community has decided which areas it wants to protect, including the Beverly calving area;
- making sure the BQCMB's recommendations are integrated into regional land use planning and specific project environmental assessments;
- community presentations to groups, such as Hunters and Trappers Organizations and band councils, to get resolutions supporting BQCMB recommendations;
- a youth scholarship; and
- satellite collaring of the herds, for the first population surveys since the early 1990's.

■ This article originally appeared in *The National Post.* David F. Pelly, author of *Thelon: A River Sanctuary*, has travelled extensively in the Thelon region, by canoe in summer and by sled in winter.

19 ➤ We are concerned that without active management in the near future, the ecological integrity of the Thelon basin may become compromised."

The interests of Inuit in Baker Lake and Dene in Lutsel K'e – the native peoples who live on either side of mainland Canada's largest remaining tract of wilderness – have merged into a common goal: the protection of a large amount of wildlife habitat in the central barrenlands, this time in response to the pressure for mineral development from uranium, gold and diamond companies. The question which both of these communities are addressing now is, is the Thelon Sanctuary alone sufficient? Should the entire range of the caribou, upon which they depend for meat, be protected as well?

This is not the first time the Thelon Sanctuary has faced a crossroads in its history. There have, in fact, been several. It has survived them all, and is the more valuable for them – changes to its boundaries, attempts to allow mineral exploration within its borders, questions about its continuing usefulness. Since white man arrived in the North a century or more ago, bringing for his own and for Native use an increasing array of intrusive technology, the Thelon Sanctuary has enjoyed relative immunity from such technological incursions. Previously, the barrenlands ecosystem had not been disturbed by the indigenous people's natural way of life, over preceding centuries. So when the Sanctuary was created, the ecosystem was essentially "pure." In the sanctuary alone, it has remained that way, evolving as it should, largely undisturbed by man. The result is, we are the inheritors of one of the world's few untouched wilderness areas.

In the future, there will not be anyone with the embodied wisdom of Mannik's generation to speak up on its behalf, no one who knew the land before all this discussion began, whose life force came from the land itself. The new Management Plan, properly construed, addresses that reality, and provides a road map for the way ahead, to ensure that the Thelon Sanctuary – the very soul of Canada's northern wilderness – will survive unchallenged for untold generations to come.

The Convention on Biological Diversity and the Arctic

Stefan Norris**, Head of Conservation at the WWF International Arctic Programme, spoke with** Dr Ahmed Djoghlaf**, the new Executive Secretary to the Convention on Biological Diversity (CBD), about the future of the Convention and issues of biodiversity and sustainable development in the Arctic.**

Stefan Norris: *What do you see as the main strengths and challenges of the Convention?*

Ahmed Djoghlaf: In 1992 at the Rio Summit, 101 Heads of State witnessed the birth of the Convention on Biological Diversity. Fourteen year later, the Convention came back to Brazil for its eighth meeting. What has been achieved is just remarkable: the Convention now has 188 Parties, its organs and mechanisms are fully operational, and a Strategic Plan has been adopted. Five thematic programmes of work, and five cross-cutting programmes, as well as six international guidelines on a range of issues, are all under implementation. And finally, 140 Parties have finalised their national biodiversity strategies and action plans.

The Arctic has since the start of the Convention contributed substantially towards issues related to indigenous and local communities and the protection of traditional knowledge.

One hundred and ten countries have committed to substantially reducing their rate of biodiversity loss by 2010. The challenge now is to translate these major commitments, decisions and programmes of work into reality.

SN: *What specific achievements made by the Convention would you highlight as global contributions towards a more sustainable future?*

The adoption of the CBD was a truly historic event. It was the first time the international community addressed the issue of biodiversity at the highest level. In less than 14 years, the Convention has emerged as the most comprehensive global forum addressing the multifaceted challenges facing the biodiversity of our planet. The adoption of the 2010 Biodiversity Target, the adoption and entry into force of the Cartagena Protocol on Biosafety, commitments on protected areas, as well as commitments towards an international regime on access and benefit sharing of genetic resources, are all vibrant testimony to the commitment of the leaders of the world to the implementation of the Convention.

SN: *What tools from the CBD "toolkit" do you see as being particularly important and suitable for addressing the special biodiversity challenges of the Arctic?*

AD: All the provisions of the Convention and its work programmes should guide Parties in addressing the serious biodiversity challenges facing the arctic region. The relationship between biodiversity loss and climate change should be further addressed, including the consequences on marine biodiversity of the accelerated melting of the glaciers. The Arctic has since the start of the Convention contributed substantially towards issues related to indigenous and

Ahmed Djoghlaf, Executive Secretary to the Convention on Biological Diversity.

local communities and the protection of traditional knowledge.

SN: *At the Conference of the Parties in Curitiba, did countries deliver on their protected areas commitments?*
AD: The Programme of Work (on Protected Areas) has ambitious goals and targets. But when it comes to the protection of our life and the life of our children we have to be ambitious. The goals are within reach provided there is the political will and resolve to achieve them. The Parties assess, at each of their meetings up to 2010, progress in the implementation of these goals and targets. The roughly 100 ministers attending the ministerial segment in Curitiba considered ways and means to enhance the implementation of these targets for achieving the 2010 biodiversity target.

SN: *What role do you see bilateral and multilateral agreements having as mechanisms to ensure that ecosystem-based management is the basis of the work on protected areas under the CBD?*

The Circumpolar Protected Areas Network can play a major role not only in reducing biodiversity loss, but also in helping to restore fisheries, for example.

AD: In 2004, the Parties decided that by 2015, all protected areas had to be integrated into the wider land- and seascape, applying the ecosystem approach and taking into account ecological connectivity and networks. They also decided that transboundary protected areas and regional networks be established and strengthened by 2010/2012. Thus, bilateral and multilateral agreements have a key role in implementing protected areas in an ecosystem context.

I would like to highlight the system of marine protected areas throughout the Southern Ocean, currently being implemented by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), and the related work being done in the North Atlantic under the OSPAR Commission. These represent huge steps forward not only in applying the ecosystem approach, but also in finding ways to protect biodiversity in the high seas.

SN: *What roles do regional "soft-law" cooperation processes, such as the Arctic Council, currently have in moving the global conservation agenda forward, and in ensuring that governments meet their CBD commitments?*
AD: I commend the arctic people for the participatory approach (of the Arctic Council) involving all stakeholders, including the representatives of civil society and the indigenous and local communities.

There is a strong need to enhance collaboration to address the biodiversity challenges at regional and sub-regional levels based on the excellent example of CAFF, and also the Arctic Monitoring Assessment Program (AMAP) and the programme for the Protection of the Arctic Marine Environment (PAME).

SN: *What are your recommendations to the Arctic Council on how to strengthen its role, and increase its impact, in getting the arctic countries to deliver on the UN Millennium Goals in general, and on the more specific goals of the CBD?*
AD: The Arctic Council may enhance its contribution in advancing the biodiversity agenda by sharing its experience, the lessons learned and best practices with other regions of the world and in particular developing countries.

The experience the arctic region can offer to the other regions of the world will enhance the implementation of the objectives of the Convention. In doing so the arctic region may also wish to enhance the Convention programme on the relationship between climate change and biodiversity, including on issues related to adaptation.

The Circumpolar Protected Areas Network can play a major role not only in reducing biodiversity loss, but also in helping to restore fisheries, for example. This, in turn can positively impact local communities. I would like also to see the Arctic Council taking the lead in integrating as a matter of high priority the 2010 biodiversity target into its regular activities.

I would like also to see the Arctic Council taking the lead in integrating as a matter of high priority the 2010 biodiversity target into its regular activities.

SN: *What, in your opinion, are the most positive and constructive contributions NGOs, such as WWF, can make towards assisting the CBD in achieving its goals?*
AD: The NGO community has made a unique contribution in promoting the very idea of a legally binding convention on biodiversity. Now that the convention is entering a new and exciting phase of enhanced implementation, the contribution of all stakeholders, including the NGOs, is crucial.

In Curitiba, at the initiative of the Secretariat, a heads of agency task force on the 2010 biodiversity target was established. I call on NGOs to join me in establishing a similar task force, based on the spirit guiding the establishment of CAFF, for achieving the 2010 biodiversity target. I hope that NGOs in the Artic will take the lead in assisting the Secretariat in establishing such a global coalition for the protection of life on Earth.

Avian influenza

What role do migratory birds play in the spread of bird flu? Nigel Allan **investigates.**

Photo: Adrian Pingstone

Up to ten percent of the world population of the bar-headed goose died in an avian influenza outbreak in China. To date there is no evidence that avian influenza can spread from wild birds to humans.

In the summer, the Arctic is home to millions of migratory birds that travel from as far afield as the Antarctic. These birds are natural hosts for many influenza viral strains that do not normally infect humans. There are at least 144 varieties of avian influenza, most of which are benign.

How the outbreaks of Highly Pathogenic H5N1 (type z) Avian Influenza (or "poultry flu" as it is sometimes called) will eventually play out is uncertain. While mutation into a form fatal to humans is possible and something we should be prepared for, it may not happen.

The movement of poultry, poultry products and caged birds have been confirmed as significant factors in the spread of HPAI H5N1, but scientists also want to know about the potential for migratory birds to spread this deadly strain around the world. At the same time wildlife organisations and researchers also want to know about the threat posed by the virus to wild bird populations themselves.

It is estimated that between five and ten percent of the world population of the bar-headed goose perished in the recent avian influenza outbreak in China.

Typically, the influenza virus rests in the gut of water fowl and is non-lethal. Whenever a healthy bird has caught the virus, it died so quickly that it was unable to spread it, making it an ineffective carrier. A possible risk is that low pathogenic viruses could mutate into potentially dangerous high pathogenic forms, although the mechanism for this in wild birds is still uncertain.

Researchers have so far tested tens of thousands of birds, but their tests have failed to turn up a single healthy wild bird carrying the pathogenic strain of HPAI H5N1.

By understanding the way the virus behaves in wild migratory birds, and having detailed knowledge of where these birds travel, researchers hope to understand if and how avian influenza might travel in these populations. This information will be important in formulating an effective response in the event of mutation.

This is the kind of information that researchers around the Arctic are trying to gather.

Connected to the Arctic

The Arctic Centre Groningen in the Netherlands plans to research the risks that diseases pose on the wild bird populations during the coming International Polar Year.

At the University of Alaska (UAF) scientists and state and federal biologists from across Alaska have formed the University of Alaska Program on the Biology and Epidemiology of Avian Influenza in Alaska to study migratory birds, and determine how many are infected, and how strains of influenza virus jump from one species to another.

The research conducted by the team will have the added advantage of providing a better understanding of bird biology and how the virus behaves in their systems, as well as more detailed knowledge of migratory paths.

Jonathan Runstadler, veterinarian and assistant professor of molecular biology at UAF's Institute of Arctic Biology, and a lead scientist on the Avian Influenza Program, said: "One of the reasons we don't understand the ecology of the virus is that we don't know what happens to the virus in its natural ecosystem. We need to understand how the biology of birds impacts disease transmission. For instance, does the time of year when birds nest, fledge, stage, migrate, or interact with young birds affect transmission?"

George Happ, director of the IDeA Networks for Biomedical Research Excellence (INBRE) at

Forthcoming arctic meetings & events

Arctic Council events

AMAP Human Health Expert Group meeting
WHERE: Reykjavik, Iceland • WHEN: 8 May • CONTACT: Email: amap@amap.no

CAFF XI Biennial Meeting
WHERE: Ylläsjärvi, Northern Finland • WHEN: 6 – 8 June • CONTACT: Email: caff@caff.is

Arctic Council Ministerial meeting
WHERE: Salekhard, Yamalo-Nenetsk Autonomous Region, Russia • WHEN: 26 Oct • CONTACT: Email: ac-chair@mid.ru

Conferences and workshops

13th International Symposium on Polar Sciences
from molecules to ecosystem in polar science: toward IPY 2007 – 2008
WHERE: Hoam Faculty House, Seoul National University, Korea • WHEN: 9 – 11 May • CONTACT: Email: leeyk@kopri.re.kr

Arctic Forum 2006 – International Arctic Research at a Turning Point: Innovations and Collaborations for the Future
WHERE: Washington, DC • WHEN: 25 – 26 May • CONTACT: Web: www.arcus.org/annual_meetings/index.html

2006 Annual Russian Permafrost Conference
WHERE: 28 – 31 May • WHEN: Tyumen City, West Siberia
CONTACT: E-mail: dgilichin@issp.serpukhov.su or gilichin@online.stack.net

Inuit Circumpolar Conference – General Assembly
WHERE: Barrow, Alaska • WHEN: July 10 – 13 • CONTACT: Email: artcivanoff@hotmail.com

13th International Congress on Circumpolar Health
WHERE: Novosibirsk, Siberia, Russia • WHEN: June 12 – 16 • CONTACT: www.ict.nsc.ru/ws/icch13/index.en.html

Asian Conference on Permafrost
WHERE: Lanzhou, China • WHEN: 7 – 9 August • CONTACT: Email: ymlai@ns.lzb.ac.cn

Arctic Change and Coastal Communities – Coastal Zone Canada 2006
WHERE: Tuktoyaktuk, Northwest Territories, Canada • WHEN: 12 – 18 August
CONTACT: Web: www.czc06.ca/e/home.html

International Symposium on Cryospheric Indicators of Global Climate Change
WHERE: Cambridge, England • WHEN: 21 – 25 August • CONTACT: Email: igsoc@igsoc.org

4th Northern Research Forum (NRF) Open Meeting: The Borderless North
WHERE: Oulu and Tornio, Finland and Haparanda and Luleå, Sweden • WHEN: October 5 – 8, 2006
CONTACT: www.thule.oulu.fi/nrf2006

For more on these events and other meetings, please visit:
http://www.arcus.org/Calendar/upcomingEvents.shtml • http://www.iasc.no/SAM/samtext.htm

UAF, which is funding the UAF Avian Influenza Program, says: "One of the questions we are asking is: where do these birds go? There are broad arrows on maps but not a lot of that is based on really precise data. A more detailed understanding of migratory paths will help us understand the routes that the influenza might disperse."

According to Birdlife International there is no evidence that HPAI H5N1 infection in humans has been acquired from wild birds or that wild birds are even spreading the virus. To date, all human infections have occurred in people who have been closely associated with poultry.

Organisations such as Birdlife International acknowledge the potential threat posed by the transmission of the virus from wild migratory birds to domestic poultry, but strongly caution against any actions that are inconsistent with scientific understanding.

The World Health Organisation (WHO), The Office International des Epizooties (OIE) and the Food and Agriculture Organisation (FAO) all concur that "the control of avian influenza infection in wild bird populations is not feasible and should not be attempted."

At a recent meeting of the Goose Specialist Group of Wetlands International and the IUCN-Species Survival Commission, in Sopron, Hungary, concern was raised about the risk that migratory birds could carry avian flu viruses from Asia to Europe.

Since the discovery of avian influenza, there has been a state of panic in Europe about the threat posed by migratory birds. The UNEP Convention on the Conservation of Migratory Species of Wild Animals warned against "growing hysteria and a "one-eyed" approach in the media, which grossly over-simplifies the causes of the flu-outbreak, and the methods to counteract it in the interests of human and animal health."

Nial Moores, director of Birds Korea, says: "Wild birds have been blamed in every single outbreak of HPAI H5N1 since 1997, even though the evidence for that link is extraordinarily poor."

Research around the Arctic and the rest of the world on HPAI H5N1 will hopefully reduce the tendency to scapegoat wild birds for a problem that is primarily man-made. At the same time it will help organisations develop responses to the virus that are based on sound scientific evidence.

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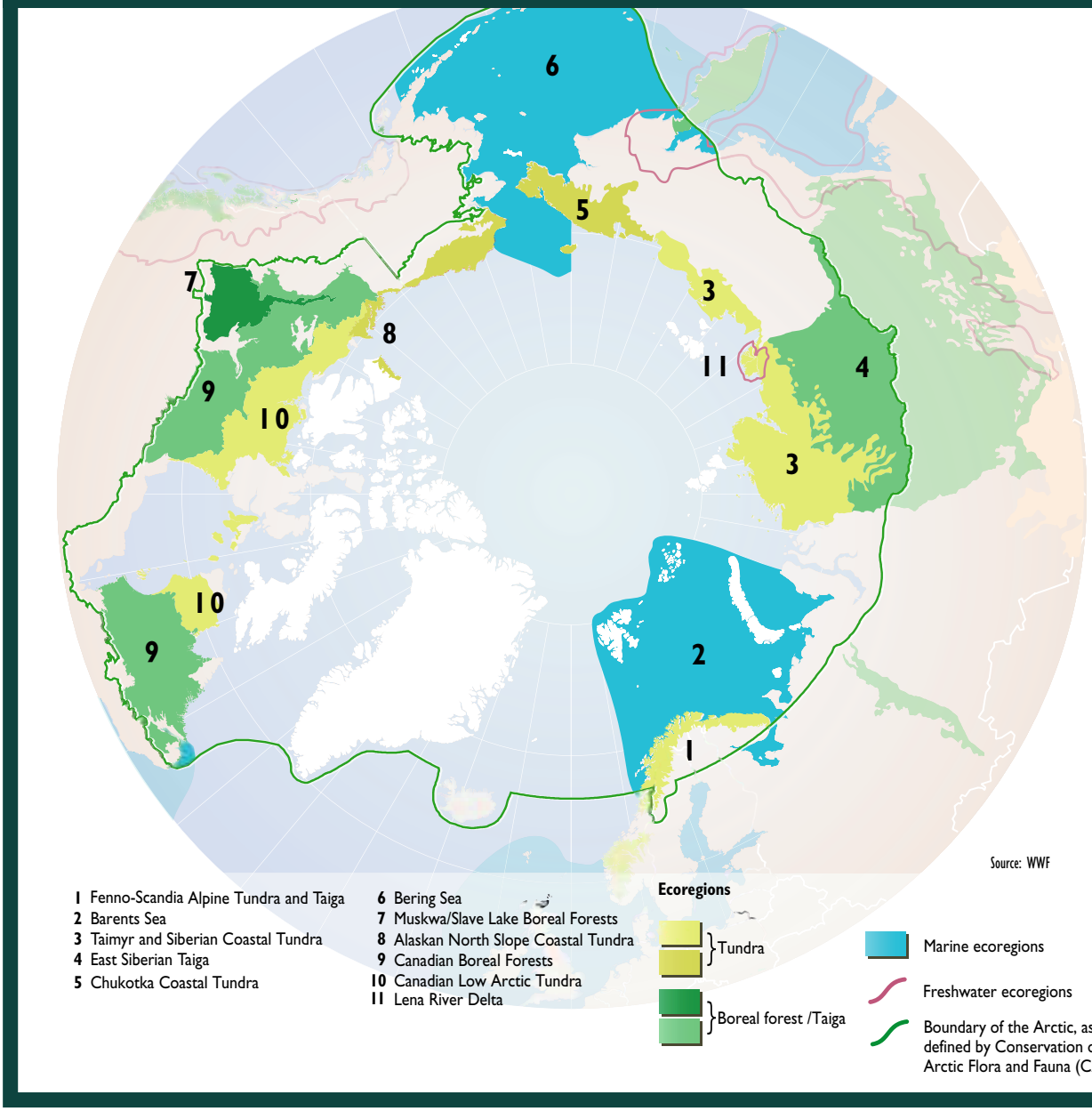
WWF priority ecoregions in the Arctic



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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.

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