



WWF

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THE CIRCLE

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**WANTED:
A GLOBAL
PLAN FOR
POLAR BEARS**

POLAR BEARS

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Papers by Domtar

Seeing polar bears

YOU REMEMBER THE FIRST TIME YOU SEE A POLAR BEAR.

For me, it was July 15 2008, in Svalbard. Large and powerful, its movements an effortless expression of mastery of its environment, whether gripping jumbled ice blocks with long, sharp claws or casually paddling in icy waters that would kill a person in minutes. That first sighting is a thrill comparable to seeing other wonders of the world – the Taj Mahal, Red Square, the Parthenon, the pyramids of Central America and Egypt. Except that people didn't make this icon and are instead in grave danger of destroying it.

As you'll read in this issue, experts agree that polar bears are threatened. Not so much by the activities of those who live close to them in the Arctic homelands, but by people far away, churning out the greenhouse gases that are causing climate change. The threat is emerging sooner in some places than others, with effects already being observed in the Southern Beaufort Sea and Western Hudson Bay. While we know polar bears are intimately connected with the Arctic sea ice, there is uncertainty about how they will respond over time and across regions as the ice disappears.

I see and experience polar bears from afar. Indigenous peoples around the Pole have long lived beside these apex predators. They have a different understanding of them and different experiences. The Inuit face unique challenges as polar bears are increasingly drawn to their communities where they can inflict damage to property and injury to sled dogs and people. But polar bears are also a

HOWEVER POLAR BEARS ARE VIEWED, NORTHERNERS AND SOUTHERNERS AGREE ON THE NEED FOR THEIR LONG TERM CONSERVATION.

valued cultural and economic resource providing skins for unequalled protection against the cold, a valuable source of food, and income opportunities where few exist.

However polar bears are viewed, northerners and southerners agree on the need for their long term conservation. WWF has declared this the year of the polar bear, a year in which the five governments that are stewards of the global polar bear population come together to help protect the polar bear's future.

Leading up to the Polar Bear Range

States Meeting in

December 2013,

WWF will advocate

for specific commitments from these

countries, including:

completion and

implementation of

detailed national

conservation plans;

adequate funding towards implementation of the plans;

increased

habitat protection efforts;

improved mechanisms for

international collaboration; and a shared commitment to

reduce human/polar bear conflict.

habitat protection efforts; improved mechanisms for international collaboration; and a shared commitment to reduce human/polar bear conflict.

The Arctic's summer sea ice, which polar bears depend on, is projected to shrink dramatically in the next few decades due to climate change. But we still have an opportunity to act for polar bears while their populations and their Arctic ecosystem are relatively healthy. We can mitigate threats within our control and plan for the upheavals that are already inevitable. But the clock is ticking. ○



JIM LEAPE is Director General of WWF International

Humans “dominant cause” of global warming: UN report

A **LANDMARK REPORT** handed down in Stockholm in September says it is more certain than ever that pollution from burning fossil fuels is changing earth’s climate and



More weather extremes in the future.
Foto: Viewminder, Flickr

contributing to rising seas, stronger storms, hotter days and severe droughts.

The report by the Intergovernmental Panel on Climate Change, a United Nations-

sponsored panel, also says global warming is “unequivocal” and warns that limiting climate change will require “substantial and sustained” reductions of greenhouse gas emissions.

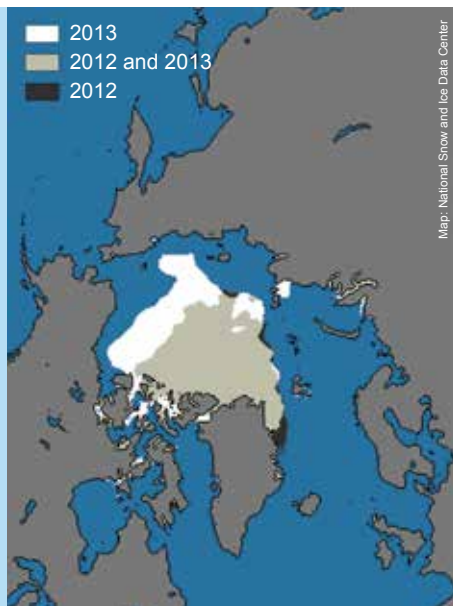
“Many of the extremes of the last decade were unprecedented,” said the World Meteorological Office’s secretary general Michel Jarraud in delivering the report. He pointed out that each of the last three decades have been successively warmer at the earth’s surface than any preceding decade since 1850. Improved climate models suggest temperatures are likely to rise by two degrees Celsius, and sea levels will possibly rise by almost one metre by the end of this century. The report also says heat waves are likely to occur more frequently and last longer; wet regions will receive more rainfall; dry regions will get less rainfall. The report says people, more than any other factor, are to blame for all that.

“Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes,” the report said.

Getting the word out on the Last Ice Area

SUMMER SEA ICE hit its sixth lowest recorded extent this past summer. That’s not a new record but a continuation of an overall downward trend leading once again to densely packed herds of walrus being driven ashore from their usual homes on the ice. In Alaska, as many as four thousand walrus clustered ashore at one point, jeopardizing their health and leading to deaths caused by stampedes. In addition to large herds coming ashore in Russia, a lone walrus cow and her calf showed up far south of their usual range, in a location they have not been seen in for more than a century.

This continuing decline of sea ice underscores the importance of planning for those areas where ice is projected to persist during the Arctic summer. WWF staff will be presenting the “Last Ice Area” project to international audiences this year through the Arctic Council and through conservation-related conferences to make the global community aware of the need for conservation of this unique habitat.



Map: National Snow and Ice Data Center

2013 ice minimum compared to the 2012 record low minimum extent. Light gray shading indicates ice occurring in both 2013 and 2012. White and dark gray areas show ice cover unique to 2013 and to 2012, respectively.

Polar bear rescue

THE ASSINIBOINE PARK Conservancy in Winnipeg, Canada, says it will be sending a

team of four experts to assess the last polar bear being held in captivity in Argentina. The team is not saying whether they will take the bear back to Canada because he may not be healthy enough to travel north, according to Don Peterkin, the conservancy's chief operating officer. Peterkin confirmed senior officials in the city of Mendoza will allow four people from the Winnipeg zoo to check on the condition of Arturo the polar bear and determine whether he can be relocated.

The aging Arturo is 28 years old and weighs 635 kilograms. In April, the Winnipeg zoo confirmed it had made an offer to take Arturo, but the offer was declined by Mendoza zoo officials.

A distressing YouTube video prompted calls for international intervention. In the 54-second clip, Arturo is shown pacing, swaying in a space barely bigger than himself and sporadically mouth-ing at the air, his lips curling back over his teeth.

The behaviour is a sign of an animal crazed by lack of space and heat stress, said Winnipeg Humane Society chief executive officer Bill McDonald.

The provincial local government in Argentina has thrown its support behind the campaign to relocate the polar bear closer to his native Arctic home.



New Norwegian government agrees to temporary protection of fishing grounds

CONSERVATIVE CANDIDATES in Norway won landslide election victories in September, potentially signalling an end to a deadlock over oil drilling off the shores of the protected islands of Lofoten, Vesterålen and Senja. WWF Norway has long argued that oil activities along the Norwegian coastline could destroy vital natural resources such as fish, seabirds, marine mammals and deep water corals.

Norway's political Centre party, the Liberals, the Christian Democratic Party and the Socialist Left Party are all opposed to oil opera-

tions in these areas. However, the Conservatives and the Progress Party which form the new coalition government are both in favour. In the government cooperation negotiations, the Christian and Left parties secured four more years of protection for Lofoten, Vesterålen, Senja, as well as Jan Mayen, the Ice edge (northern Barents), Skagerrak, and the Møre fields.

However, these areas are temporarily protected only from oil and gas development, so other economic activity is likely to continue.

Oil companies say the waters may hold the equiva-

lent of 3.4 billion barrels of oil. "It is inconceivable that the new government would allow for oil drilling in our dinner plate," says WWF Norway General secretary Nina Jensen. "We now know that 70 percent of all commercial fish species caught in the Norwegian and Barents Seas begins life in Lofoten, Vesterålen and Senja as fish eggs, larvae and/or juveniles according to the Norwegian Institute for Marine Research. An oil spill can knock out an entire fish stock as was witnessed in Alaska after the Exxon Valdez accident."

Talking bears

Are polar bears declining across the Arctic and on the brink of extinction? Or are there more bears than ever, maybe even too many? Whichever scenario is true, what should be done? ERIC REGEHR says these are good questions because the reality is more nuanced than people usually hear. Here are his thoughts on science, conservation, and communication and how to round out the message in a way that is good for bears and people.



A FEW YEARS AGO I was in Leonardville, Kansas (population 462) when a farmer in his 80s asked me how the polar bears were doing, what with climate change and all. That stuck with me. It spoke to the power of these animals to capture the imagination and raise environmental awareness. It also spoke to how effective scientists, conservationists, and the media have been in getting out the message: as goes the ice, so goes the bear.

Simple messages are effective but they don't leave room for much nuance. For polar bears, I think this has led to some confusion and polarization.

THE SCIENCE

Climate change is the greatest long-term threat to the species. There are 19 polar bear populations in the Arctic and, if sea ice loss continues, most are likely to decline within the 21st century. How-

CLIMATE CHANGE IS LIMITING BEARS' ACCESS TO SEALS, OPENING THE ARCTIC TO SHIPPING AND DEVELOPMENT AND BRINGING BEARS INTO INCREASING CONTACT WITH PEOPLE

ever, scientists expect a lot of variation in when, where, and how the effects of sea ice loss will manifest. The populations are starting from 19 different points. And they will follow 19 different, nonlinear paths.

For some populations, like Western Hudson Bay, there's already evidence of

the negative effects of climate change. For others, like the Chukchi Sea population, bears appear to be doing well despite large sea ice declines. For many others, the situation is unknown because the sea ice has not yet changed enough, because multiple things are changing at once (e.g., ice extent, prey populations, and harvest levels), or because we simply don't have good data.

The important point is that near-term variability in the status of polar bear populations is 100 per cent consistent with long-term concerns. Bears will fare better in some are-



DR. ERIC REGEHR is a biologist with the U.S. Fish and Wildlife Service in Anchorage, Alaska. He studies the population dynamics of polar bears.



*Moon setting and sleeping polar bear.
Churchill, Hudson Bay, Canada.*

Photo: Alex Berger

as than others, within our lifetimes and beyond. But the entire species depends on sea ice as a platform from which to catch seals. And – unless we control greenhouse gases – climate change is expected to eventually affect nearly all bears in a negative way.

CONSERVATION

Climate change is doing more than limiting bears' access to seals. It is opening the Arctic to shipping and natural resource development. It is also bringing bears into increasing contact with people, as ice-free seasons get longer and animals encroach on human settlements in search of food. Viewed broadly, there are probably more polar bears in the Arctic today than there were 40 years ago, because of an international treaty in the 1970s that restricted sport and commercial hunting. Viewed locally, there may indeed be "too many" bears in some areas, as evidenced by concerns for human safety and increasing defense kills.

The idea that there can be too many bears is sometimes difficult for people outside the north to accept. The same applies to the idea of enough bears, from a biological perspective, to allow sustainable use by Indigenous peoples in the near term, or managed use in the longer term. As the public realizes the world is either unwilling or unable to address the underlying problem of climate change, they are calling for local and direct action. In some cases this has led to efforts to stop all human-caused removals of polar bears, including subsistence harvest. People's hearts may be in the right place. But if the goal is conservation, a deeper understanding of the context is helpful.

The first step is to realize that – short of controlling greenhouse gases – we are not addressing the ultimate threat. The second step is to agree that the public is right: we need to do something, and the place to do it is in polar bear country. The third step is to recognize that making a difference on the ground requires engaging Indigenous stakeholders as willing and equal partners.

POLAR BEARS HAVE BEEN PART OF DAILY AND TRADITIONAL LIFE IN THE NORTH FOR THOUSANDS OF YEARS.

Co-management (i.e., governmental and Indigenous organizations working together) is key to wildlife management in the Arctic. Polar bears have been part of daily and traditional life in the north for thousands of years. Both domestic and international laws recognize this special relationship by mandating an active role for Indigenous peoples in polar bear conservation. From a practical perspective, the cooperation of local residents is necessary to deter bears from villages without killing them. And, on a vast and remote landscape where law enforcement is spread thin, cooperation of traditional hunters is necessary to ensure compliance with monitoring and reporting requirements, and to adjust subsistence harvest levels in response to local conditions.

Climate change is placing stress on both bears and people. Our ability to deal with an increasingly difficult situation will depend on flexible and adaptive management that is done with – or by – Indigenous peoples and considers the social, economic, and traditional roles of polar bears in human life.

COMMUNICATION

Today's forecast for Anchorage shows a 50 per cent chance of rain. I'll jog anyway because it's sunny out and I've been stuck in the office too long. Like meteorology, conservation science is characterized by uncertainty. It's the job of scientists to quantify and reduce it. And it's the job of managers to make decisions that consider the best-available information, its uncertainty, and other factors that may be important (e.g., human well-being). I'm learning that this process works best when scientists

have a degree of humility and managers have the fortitude to define acceptable risks and state their true motivations. Good communication is everyone's responsibility.

Because we are human there are plenty of chances to fail. Imagine that a scientist downplays uncertainty in a complex model. Or a manager misrepresents science to justify a political decision. Or the media sacrifices key details for an eye-grabbing headline. The resulting message to the public will be inaccurate or, at best, too reduced to be useful. These breakdowns are among the most serious threats on the horizon for polar bears. Consider one of many possibilities. What could happen if, 10 years from now, the message is still "as goes the ice, so goes the bear"? More likely than not, some populations will still be doing well because of natural variability and acknowledged uncertainty in population projections. But the overly-simple message didn't allow for that. So we'll be accused of crying wolf and the pendulum of public support will swing back in the other direction, knocking over a lot of good work on the way.

Handling uncertainty, maintaining a transparent science-policy interface and good communication are critical to long-term conservation. We have to both craft a balanced message and discuss it beyond the choir with oil companies as well as animal rights activists, in the villages as well as Washington D.C. We'll never all agree. Some people won't even care, often for perfectly good reasons. But I think there's more common ground than we realize and being diligent on these issues can only help to find it.

I was back in Leonardville this summer to visit family. This time, when someone wondered how the bears were doing, I took a new approach. First I listened to what they had heard. Sometimes we talked for a while about farming or the weather. And eventually, when everyone had chimed in and if they were still interested, we discussed the nuances of a well-rounded message. ○

Polar bear facts

- Polar bears depend on the arctic ice. This is where they hunt and raise their young.
- Climate change is the biggest threat facing the polar bear. A reduction in sea ice makes access to prey more difficult for polar bears and means many cannot put on enough weight to survive the summer season.
- A polar bear's home range often exceeds 200,000 sq kms.
- Typically, an adult male polar bear is an impressive 6-10 feet long and weighs between 780 and 1,500 pounds. He needs to eat on average 45 ringed seals every year to survive.
- The heaviest polar bear ever recorded was estimated to have weighed an astonishing 2,120 pounds
- The polar bear is estimated to spend well over 50 per cent of its time hunting and tries to obtain most of its annual fat reserves between late April to mid-July, hopefully consuming enough calories to survive the summer and winter seasons when prey is harder to catch.
- The average lifespan of a polar bear is between 20-25 years.
- The polar bear has 42 teeth. Similar to the rings of a tree, the polar bear has thin layers of bone in his teeth that can be used to estimate his age.
- A polar bear's tongue and skin are black.
- The polar bear can be found across five Arctic nations: the United States (Alaska), Canada, Russia, Greenland and Norway. There are 19 subpopulations of polar bears in the circumpolar Arctic, ranging from as far south as Northern Ontario to the high Arctic regions of Canada and Greenland.



Photo: USGS

Cubs emerge from their den in the spring and head to the ocean in search of food.

CUBS & MUM

- Defenseless at birth, the polar bear cub is born blind and covered with short, soft fur. It is entirely dependent on its mother for survival. Newborn cubs are 12-14 inches long, about the size of a guinea pig, and weigh an average of about 2 pounds.
- A polar bear cub weighs around 600–700g at birth. This is five times less than the average human baby.
- Polar bear cubs are called COYS in their first year. Polar bear milk has a fat content of over 30 per cent, helping cubs keep warm and grow rapidly.
- Once the cubs grow to 18-30 pounds, the mother pushes up through the snow and the family emerges from the maternal den.



Polar bear female and her two cubs on an iceberg, off Baffin Island. Nunavut, Canada.

Photo: naturepl.com / Eric Baccaga / WWF-Canon

What we don't know

Although closely related to brown bears genetically, polar bears' bodies have adapted to a life in what to us seems like a harsh environment. Polar bears are dependent on cold and sea ice because they mainly dine on the various species of sea-ice associated seals. To these bears, the cold secures a habitat in which they can live, breed and thrive. JON AARS says a warming climate is recognized as the main threat to several polar bear populations in the Arctic, but do we know enough about the long term effect?

THE BEST EVIDENCE of how a warmer climate has already negatively affected polar bears comes from Western Hudson Bay in Canada. Nowhere else have polar bears been studied so intensively while experiencing a dramatic change in habitat availability. Most years now, the bears have several weeks less to hunt seals and gain weight, compared with two to four decades ago. As a result, the population has declined due to lower reproductive output, and lower survival particularly among young and old bears. The Hudson Bay population once had very high reproductive rates: litters of three were common and cubs

typically left the mother at one year old. Now most litters stay with the mother until they are two years old, and three cubs in a litter is rare. This population that once seemed to be particularly productive seems likely to die out if the Arctic continues to warm as most experts predict.

We also see the effects of reduced habitat availability on polar bear health and survival in other countries although in several areas of

IF THE WARMING OF THE ARCTIC CONTINUES, CAN WE PREDICT WHAT WILL HAPPEN TO THE BEARS

Canada and Alaska that still have plenty of sea ice much of the year, polar bear populations are doing well. They may be below their current carrying capacity (the number of bears the area and its resources can support over time) if they still are in recovery after earlier unsustainable hunting.

If the warming of the Arctic continues, can we predict what will happen to the bears in the range states we find them in today? And do we know how best to manage the different populations as habitat decreases?

The five Arctic polar bear nations first came together in the 1960s over concerns that unregulated and unsustainable harvest could threaten the existence of polar bears. Since then, there has been a lot of research and numerous studies on polar bear biology. Canada, Alaska and Norway have also undertaken annual capture-recapture field research in which bears are immobilized and marked, making it possible to monitor these populations for changes associated with reduced sea ice.

Despite all this knowledge, it's still difficult to predict how polar bears will cope in the future. It's easy to say they don't stand a chance in the long term in areas with no sea ice for significant periods of the year. But we are still in the initial phases of observing the effects of changes in sea ice availability on some populations. Other populations live in areas with a range of different ecosystems and thus will encounter different challenges in a warmer climate. So we can't extrapolate our findings to all these areas. We do know that reduction in sea ice at some point affects the condition of the bears and that poorer condition leads to decreased reproduction and survival. We do not know how extensive the effect of certain reductions of habitat will be for most areas and this is what we need to know the most. It is also where most of our research efforts should be focused. Several studies are needed at the same time into the effects on individual bears' health and the health of the population in areas with variable conditions, ranging from those with sea ice most of the year to those with long ice-free summers. It is then critical to follow these populations over several years with differences in availability of sea ice.

We will then be in a much better position to predict how different populations will be affected in coming years.

Beside the direct effects on condition and demography, understanding how



JON AARS is a scientist at the Norwegian Polar Institute with expertise in demography and population genetics of mammals. He has studied polar bears in Svalbard, Norwegian Arctic, for 11 years.

The cost of research

By GEOFF YORK

DOING RESEARCH in the Arctic – like any remote part of the world – is logistically challenging and hugely expensive. Working on Arctic marine mammals is that much more challenging and costly. New technology for aerial surveys and monitoring via satellite is promising as are unmanned aerial vehicles and other remote-controlled drones. New methodology for genetic mark and recapture is also effective for estimating population size while reducing cost and disturbance. But nothing replaces the physical capture and handling of wildlife.

Capturing a large animal allows scientists to take a host of physical measurements and samples that are fundamental in understanding population dynamics and animal health, not unlike your annual physical at a doctor's office. Capture events also allow researchers to attach tracking devices on select animals (ear tags, glue on tags, and traditional radio collars). Data from these devices provide

crucial insights into the lives of polar bears that spend the majority of their days far from human observation. Over time, this data allows researchers to create models for habitat use, identify hot spots for conservation like denning areas, and model potential human impacts like the effects of an estimated oil spill.

The cost of this crucial research varies by region, generally rising exponentially as logistic

options decrease. One of the least expensive locations for helicopter-based capture is the town of Churchill, Canada. Here, due largely to nearby seasonal high densities of polar bears and the year-round availability of aircraft and fuel, captures cost around \$1,000 to \$1,500 US per bear. Meanwhile, further north in Viscount Melville Sound, Nunavut, captures approach \$8,000 US per bear. Research costs increase again substantially in the Alaskan

A United States Fish and Wildlife Service polar bear biologist works with a tranquilized bear on the ice.



Photo: Karyn Rode/USFWS

Chukchi Sea due to a combination of low bear densities, the need for a spotter/refuelling plane, and limited logistic bases. Estimates for capture in much of Arctic Russia are likely the highest in the world due to decreased infrastructure such as roads, airports, aircraft and fuel and the absence of small, more fuel-efficient helicopters. These essential studies require tremendous – largely government – investments and the overall costs remain a significant barrier to long term conservation as many bear populations either lack sufficient monitoring or are missing baseline data altogether. WWF is actively working to build new public-private partnerships to leverage funding and begin filling these information gaps. ○

these are altered is also important, as are effects on movement, use of space, and swimming. Long swims to get between hunting and denning areas may mean higher energy demands. So far, polar bears seem to be little affected by diseases. But disease vectors are predicted to become more common in

the Arctic as it becomes warmer. Several pollutants are found in high concentrations in polar bears in several areas. During periods of increased starvation, it is predicted that they could have more profound effects on bears as they become released into the blood stream when more fat is burned. Very little

is known about how climate, diseases and pollutants may interact. It is also essential to know how those species the polar bears prey upon will cope with less sea ice. Studies on shifts in predator-prey relationships over time are key to understanding how climate will affect polar bears. ○

The struggle to survive

By ERNEST POKIAK

I F IT WEREN'T for animals like Nanuq I probably would not be sitting here writing this article. In all likelihood I would have been born and starved or frozen to death pretty quickly. As harsh as that sounds, that is the reality.

My Dad, Bertram Pokiak and his Dad before him made a living hunting and trapping.

Both generations experienced the time when Nanuq was only harvested for food and clothing.

It was in the late 1950's when polar bear hide sales began.

For my Dad hunting, trapping, and harvesting was a way of life, otherwise we would have starved to death for sure. I have also hunted most of my life – polar bear, caribou, rabbit, ptarmigan, geese – just taking what we need and

some to give to friends and relatives. Animals put meat on our tables. Their hides were our clothing. Animal fat was our source of heat. When my Dad would go out hunting on Banks Island, about 250 miles north of Tuktoyaktuk, there is no drift wood for heat, cooking our meals, or keeping us dry. So you had to save all the fat of any animal you harvested because that was your fuel and energy needed to survive. We Inuvialuit also like to eat fat caribou, polar bear and fish.

When we harvested a polar bear in earlier times, we used almost every part of the bear. We did not hunt very many, but if you ran into a polar bear while you were out hunting we harvested it. Old bears and young ones that may have separated from their mothers were very dangerous because they become starving bears and go after anything that smells and moves.

The fur of the polar bear is waterproof so it makes a very good bottom sleeping mat. When we made camp, my dad always built an igloo to fit two of us and of course you need bedding so a polar bear hide is the best thing because the fur doesn't get wet. So you put the fur next to the snow, then you get a couple of big caribou skins for mattresses, then you get a down blanket. The down of course is collected from either snow geese or other birds. Then you have a very warm bed.

You eat most of the meat from the polar bear, except for the liver because it is poisonous. The paws are the tastiest part! The rest you feed to the dogs. In the old days you would make hooks from the teeth. Or keep them for souvenirs or toys. We had no store bought toys so we would use small animal bones to play with. But even today,

NANUQ IS MUCH LIKE THE INUVIALUIT/INUIT. WE HAVE STRUGGLED FOR OUR EXISTENCE FROM THE BEGINNING.



not too much of anything is wasted.

Nanuq is but one animal that has helped us survive in the harsh, cold environment we live in. Nanuq is much like the Inuvialuit/Inuit. We have struggled for our existence from the beginning.

In Canada, through a 40 year-long intensive research program, a management system for Nanuq was created. Inuvialuit struggled with Western Science from the beginning to include traditional knowledge but we crossed that hurdle. Now we work well with the scientific community.



ERNEST POKIAK is a hunter, trapper and fisherman in Tuktoyaktuk, Northwest Territories, Canada. These are his personal thoughts and observations.

Inuit hunter Thomas Nutararearq in Caribou skin clothes with hunting rifle, Baffin Island, Nunavut, Canada.

Photo: Staffan Weisrand / WWF



Within the past four years an effort was made to up-list the polar bear which would have banned all trade. This was well-intentioned but it caused the demand for polar bear hides to escalate. Prior to this, the quotas driven by research never exceeded the allowable harvest. Today because of the quota system in Canada and good management practices there is no cause for concern in most parts of Canada.

Some communities, through the Hunters & Trappers Committee, do have sports hunts of which up to 50 per cent of the quota may be allocated for

that purpose. The numbers are quota driven, and have proven to be effective to preserve the numbers. It is known perhaps 50 per cent of the hunts will be successful. I see that as productive. It helps the Inuit economically, promotes conservation, and puts food on the table.

Climate change is also a great concern to the Inuvialuit and Inuit peoples. In the North, climate change not only affects the Nanuq, but Inuit in general. We also depend on ice and snow for our survival. We all need to work towards slowing climate change which in turn

will buy the animals some time to better adapt to the changes.

Above all, Inuvialuit are conservationists and stewards of OUR land, the animals and the ocean mammals. ○



■ To the Inuit, the polar bear is Nanuk, (translated as *nanuq* in the Inupiat language) an animal worthy of great respect. In their poetry he is Pihqahiak, the ever-wandering one.

Preventing extinction

Polar bears have successfully survived at least six periods of global warming since they appeared on Earth approximately 600,000 years ago. Understanding how they survived and how they function today is key to effective polar bear conservation. NIKITA OVSYANIKOV has studied the population, condition and behavior of polar bears on Russia's Wrangel Island for more than 15 years. He says ongoing field studies focusing on observing animal activities in various ecological situations and habitats are critical to obtaining this information.

LOCATED IN THE ARCTIC OCEAN between the Chukchi and the East Siberian seas, Wrangel Island is one of the largest polar bear denning sites in the world. It has a wide diversity of conditions and supports high densities of polar bears year round making it a good model area for studying internal population processes.

The island has also seen significant changes in the sea ice in recent years. Our long-term study of polar bear behavioral ecology here began in 1990

as global warming accelerated, providing insights into how polar bears respond to ice disappearance and survive critical periods in their life cycle.

As sea ice in the Arctic continental shelf disappears, polar bears move into coastal ecosystems. In recent years, this pattern is observed in all Arctic regions of

the Eastern Hemisphere – from Wrangel Island to Svalbard. Bears observed stranded on Wrangel Island spend 55

per cent of their time sleeping, 34 per cent of their time slow walking in search of food and 5 per cent of their time eating. Polar bears stay on land until the sea ice returns or the ocean freezes again, then immediately shift to the ice. In the absence of ice, polar bears may leave land for swimming into the open sea but only if they are aggressively disturbed on land. Therefore stranded polar bears should be protected from disturbances in their terrestrial refuges.

Onshore polar bears gather at key spots where large amounts of food are available, such as walrus haul-outs and beached whale carcasses. To find food onshore polar bears have to cover long distances. Availability of food for polar bears in coastal ecosystems varies widely in different regions. The Chukchi Sea is biologically highly productive and coastal ecosystems here during ice free seasons provide ample food for polar

bears. There are numerous walrus haul-outs along the Chukchi coast, and whale and walrus carcasses are often cast to the beaches. In some seasons polar bears are not losing and can even gain weight while stranded here. Our study has revealed polar bears actively hunt walruses in this sector of the Arctic year round but particularly in the summer as herds remain in coastal ecosystems when ice is disappearing. In contrast, coastal ecosystems in Svalbard are much scarcer perhaps due to the enormous loss of whales and walruses in Svalbard from commercial hunting.

Contemporary science has solidly proven that global warming is negatively affecting polar bears with the result that some geographical populations – the southernmost ones first – may disappear. The species area will significantly shrink and population numbers will drop down to critical thresholds. While polar bears are capable of surviving seasonal ice disappearance, it may be impossible for them to survive natural impacts combined with human-imposed effects. This current global warming is unique in the magnitude of human-imposed impacts on habitats and animals.

In a greenhouse situation, coastal habitats become critically important



DR. NIKITA OVSYANIKOV is the Deputy Director for science and senior research scientist, Wrangel Island State Nature Reserve, Ministry of Nature Resources, Russian Federation.

AN OIL SPILL IN ANY KEY POLAR BEAR MARINE HABITAT WILL BE AN APOCALYPSE FOR POLAR BEARS

for polar bear survival. There are not enough polar bear sanctuaries on land to protect their key terrestrial habitats from destruction and animals from disturbances. Places where polar bears gather while stranded are ecologically determined and polar bears appear to be highly selective in their choice of habitats. Therefore a system of conservation measures is needed emphasizing territorial protection. Key terrestrial habitats or sanctuaries need to be established, given strict protective status and monitored to ensure polar bear survival as in the Wrangel Island Nature Reserve and in Svalbard. In addition, temporary protection may be effective in areas which bears occasionally use. Habitat protection can only be effective when combined with protection from hunting. Protection of habitats will not help prevent polar bear extinction if physical elimination of bears is allowed to continue. When polar bears are threatened by global warming and struggle for survival, every bear counts.

Measures that strongly enforce the protection of sea ice habitats and polar bear food resources are also urgently needed. The invasion of the oil and gas industry into the Arctic continental shelf poses huge risks to the most vital polar bear habitats. An oil spill in any key polar bear marine habitat will be an

CONTEMPORARY SCIENCE HAS SOLIDLY PROVEN THAT GLOBAL WARMING IS NEGATIVELY AFFECTING POLAR BEARS



Polar bear family on Wrangel Island. No ice behind – this may be an evolutionary question for them: to be or not to be?

Photo: Nikita Ovsyanikov



A group of bears eating together from walrus carcass cast to the beach. When walrus are available on shore, bears can even gain weight while stranded.

Photo: Nikita Ovsyanikov

apocalypse for polar bears directly and through catastrophic effects on the ecosystem. Commercial fisheries in the Arctic basin could destroy the entire food chains on which polar bears depend. Increased shipping through the Arctic poses the danger of increased pollution and environmental disturbances.

Global warming is a long-acting global threat, whereas human imposed impacts are immediate factors that can be eliminated by proactive conservation. It is our responsibility to ensure

that growing anthropogenic threats will not drive polar bears to extinction. And we have to act now. There is no time for further delays. ○



■ The Russian term for polar bear is *bely medved*, the *white bear*.

Distinct but similar: global populations

In 1945 it was suggested polar bears make large scale circumpolar movements, and therefore constitute one large population moving with the main direction of the ice drift. Twenty years later, concerns over harvest levels led the polar bear nations and experts to meet and discuss how little information was available on the structure or distinct qualities of the world's polar bear populations. **DAG VONGRAVEN** says understanding and defining these populations is critical to their survival.

BY 1970 TWO DISTINCT POPULATIONS

were thought to exist in Alaska – one to the north and one to the west with the one to the north possibly originating in Canada; a southern Hudson Bay population separate from the main Hudson

Bay population; a shared population between Norway and Russia around Svalbard and Franz Josef Land; and two populations in Greenland – one in the northeast and one population on the west coast shared with Canada.

Today, 19 sub-populations of polar bears are recognized by the International

Union for the Conservation of Nature/ Polar Bear Specialist Group throughout the circumpolar Arctic. These subpopulation boundaries have been established based on movement patterns of individual bears from satellite telemetry, jurisdictional delineations, and sound management practices.

The term “subpopulation” is used because polar bear “populations” are not true populations in a strict biological meaning of the word. Genetic studies indicate that polar bears seem to be

WE KNOW CLOSE TO NOTHING ABOUT POLAR BEARS IN HALF THE AREA THEY COVER

genetically similar around the Arctic, which means they are mating across the boundaries of the so-called population borders at a rate high enough to prevent genetic distinctions from arising between populations. Thus, “management units” would be the more correct term for these population entities.

THE 1973 AGREEMENT

The meeting in 1965 was facilitated by the IUCN, and as these talks developed, the opportunity to agree on certain principles arose, resulting in the *Agreement on the conservation of polar bears*, signed by all five polar bear nations in 1973, effective in 1976, and reconfirmed for “eternity” in 1981. This agreement was one of the first international agreements to be based on ecological principles. In its simplicity it has been regarded as a success story in bringing together five nations, from competing military alliances, to collaborate on the conservation of polar bears and the ecosystem of which they are a part.

FROM OVER-HARVEST TO CLIMATE

From the 1960s to the turn of the millennium, the concern for the status of the world's polar bears revolved around harvest levels. There were suggestions in the 1960s that the total world population of polar bears was less than 10,000, and there was sufficient information about harvest levels around the world to make it clear to everyone that more than 1,000 bears were being killed annually. Since then, concerns about legal harvest levels have generally ebbed, although there are still legitimate doubts about the sustainability of the harvest in some areas.

In 2001, the Intergovernmental Panel on Climate Change focused for the first time on how sea ice in the polar region was threatened by rising temperatures and how climate change could be accentuated in the Arctic. The polar bear nations now acknowledge climate warming and resulting receding sea ice habitat has replaced over-harvesting as the main threat to polar bears worldwide.

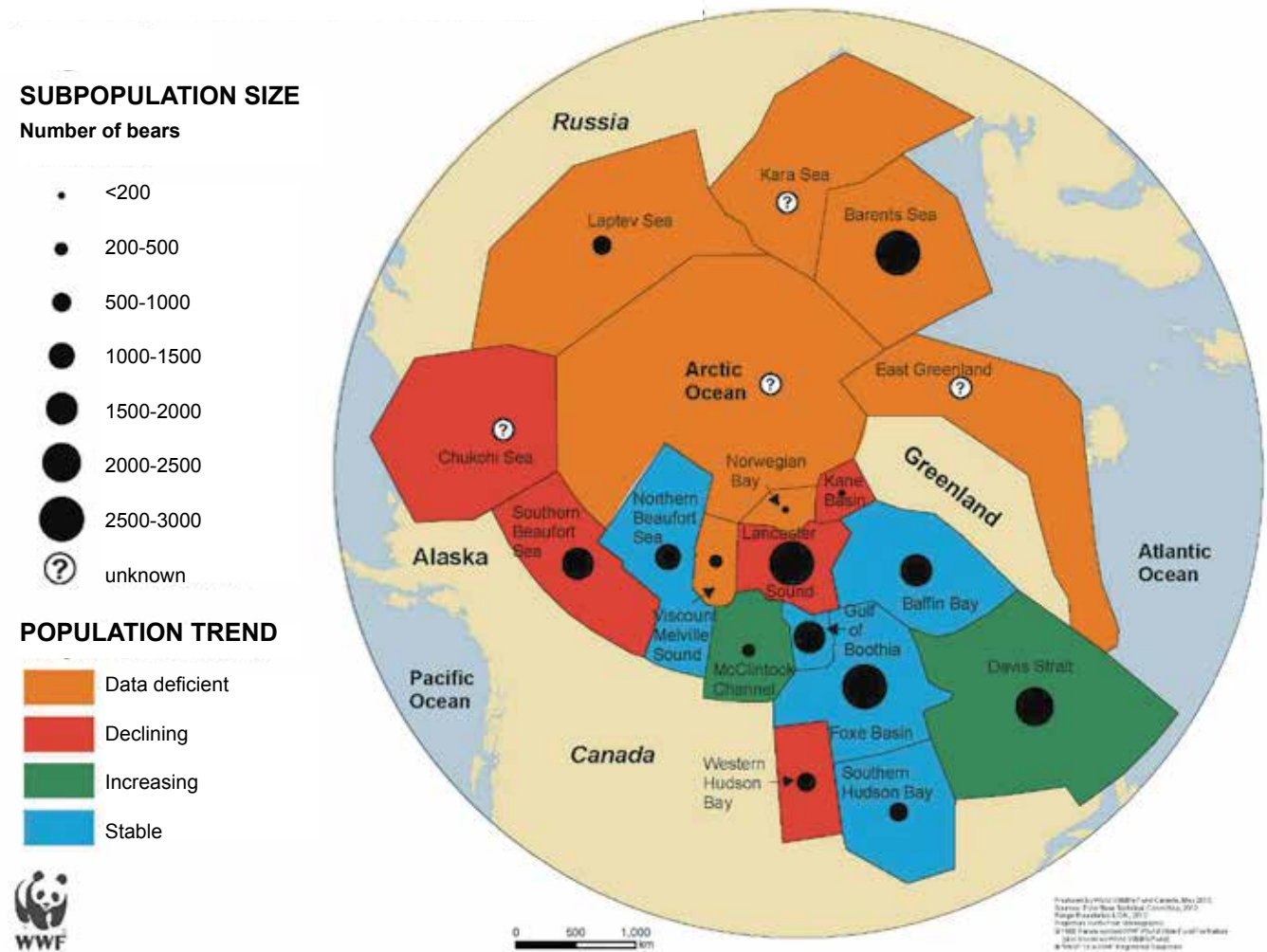
LACK OF KNOWLEDGE

As for all species, sound management of polar bears requires knowledge. Yet knowledge about polar bears is lacking in large parts of their range; we know close to nothing about polar bears in half the area they cover. Of the 19 sub-



DAG VONGRAVEN is Senior Advisor, Norwegian Polar Institute and Chair of the International Union for the Conservation of Nature/ Polar Bear Specialist Group.

Trends in polar bear subpopulations



Map showing the 19 subpopulations presently recognized by the PBSG.

populations recognized by the PBSG, we have good or fair knowledge on population trends in three of them – the subpopulations in Western Hudson Bay, and the Southern and Northern Beaufort seas. Our knowledge about the subpopulations in the Kara Sea, the Laptev Sea and East Greenland, is almost non-existent. Research and monitoring needs are enormous in most areas.

Overall, the future appears gloomy

for polar bears and the burden large for those responsible for designing and implementing action plans to conserve this uniquely symbolic species. ○

■ For more information on the “Final Report: Meeting of the Parties to the 1973 Agreement on the Conservation of Polar Bears” go to this link: <http://www.polarbearmeeting.org/content.ap?thisid=500038172>



■ In Norway and Denmark, the polar bear is *isbjørn*, the *ice bear*.
 ■ Norse poets described the polar bear as *white sea deer*, *the seal's dread*, *the rider of icebergs*, *the whale's bane*, and *the sailor of the floe*. They praised polar bears for having the strength of 12 men and the wit of 11.

Sea ice and survival

Ursus maritimus is the Arctic iconic species. These massive mammals live predominantly on the sea ice of the Arctic Ocean. They have a circumpolar distribution and are found mainly in areas of annual ice cover over the continental shelf and the inter-island channels of various archipelagos. They feed mainly on ringed seals but they can also eat bearded seals, belugas, narwhals and walrus. But **JULIE VEILLETTE** says polar bears are particularly sensitive to the sudden, unidirectional and substantial changes in Arctic sea ice conditions.

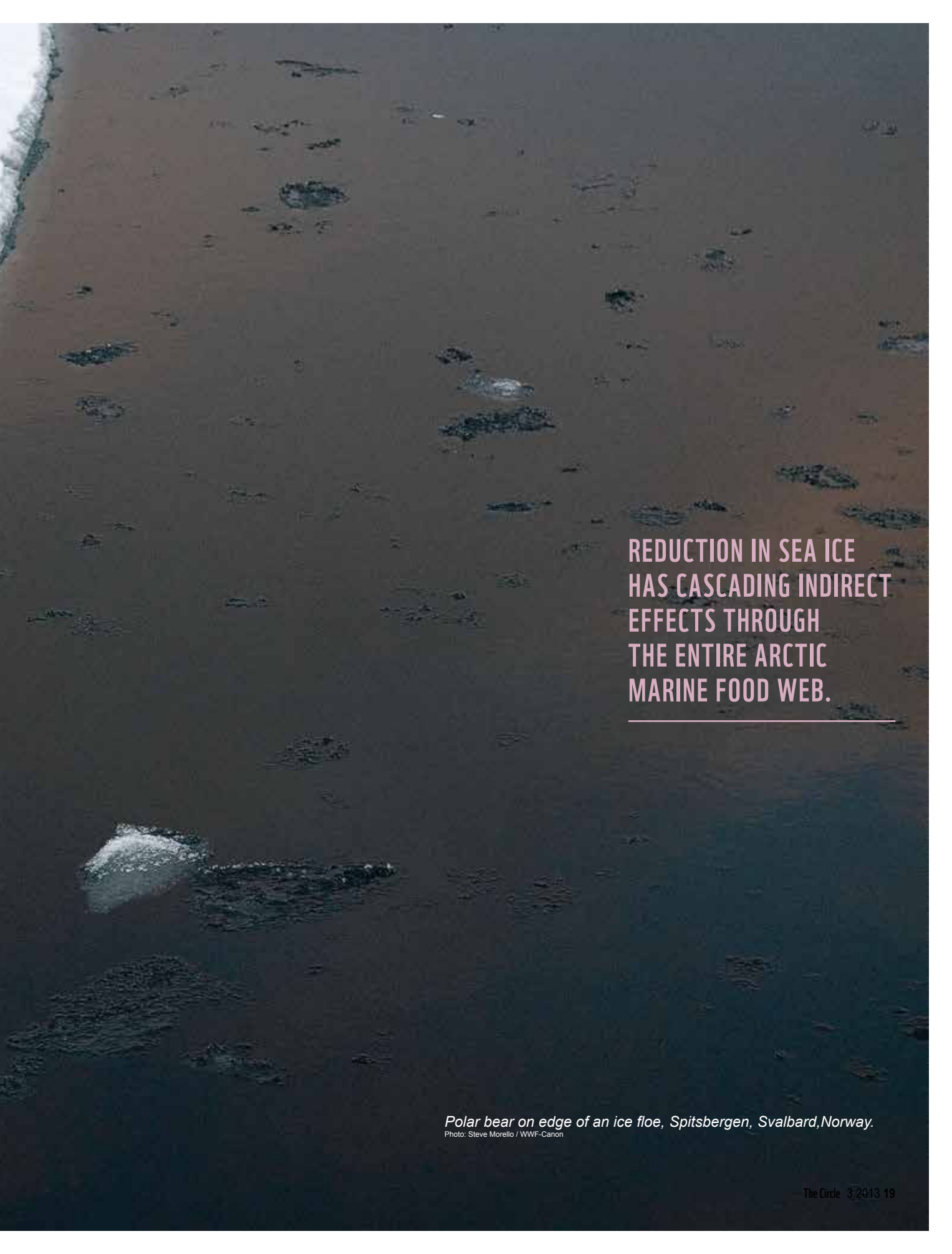


JULIE VEILLETTE is a biologist specializing in the impacts of climate change on Arctic aquatic ecosystems.



THE ESTIMATED GLOBAL NUMBER of polar bears is 20,000 to 25,000 individuals and the population trend is declining (<http://www.iucnredlist.org/details/22823/0>). The main threat to the polar bears' long-term survival is the loss of sea ice due to climate change. Sea ice extent has dramatically declined in the last decades and the last seven sum-

mers (2007-2013) were the seven lowest Arctic sea ice years since satellite monitoring began in 1979. Polar bears rely on sea ice as a platform to hunt for seals. The critical feeding time occurs in late spring and early summer, when they feed on ringed seal pups that are born in early April and weaned about six weeks later. At that time, pups are up to 50 per ▶

An aerial photograph showing a vast expanse of dark, choppy water with numerous small, scattered ice floes. In the lower-left quadrant, a single, larger ice floe is visible, with a white polar bear resting on its edge. The bear is facing away from the camera, looking out over the water. The overall scene is desolate and emphasizes the isolation of the Arctic environment.

REDUCTION IN SEA ICE
HAS CASCADING INDIRECT
EFFECTS THROUGH
THE ENTIRE ARCTIC
MARINE FOOD WEB.

Polar bear on edge of an ice floe, Spitsbergen, Svalbard, Norway.
Photo: Steve Morello / WWF-Canon

cent fat, naïve about predators and accessible from the surface of the ice. After the ice break-up, the seals live in the water column and are mostly inaccessible to the bears. Sea ice also facilitates the polar bears' seasonal movements, mating, and in some cases, maternal denning. A reduced extent in sea ice and an earlier sea ice break-up in spring results in less time to access prey, longer periods of fasting, less healthy body condition and lower survival of cubs. While all bear species have adapted to changes in their environment in the past, the adaptive capacity of polar bears is limited since they are highly specialized for life in the Arctic, and they exhibit low reproductive rates with long generational spans. Moreover, the pace of Arctic sea ice loss is extremely fast for polar bears to adapt to.

The survival of their favourite prey, ringed seals, may become reduced as well since they are directly dependent on sea ice for all aspects of their lives: giving birth, as a staging area for breeding, for moulting, resting and avoiding predators. Nonetheless, ringed seals would be much less sensitive to sea ice changes since they have a circumpolar distribution, a large population size, and flexible habitat requirements. Reduction in sea ice cover is not only affecting Arctic marine mammals such as polar bears and seals; it has cascading indirect effects through the entire Arctic marine food web. Earlier dates of sea ice break-up may increase primary production (ice algae and phytoplankton growth) that determines the amount of food that is available to consumers. Hence, it is predicted that there might be increased zooplankton (e.g. copepods), benthic organisms (e.g. crustaceans) and fish. Ringed seals feed mainly on Arctic cod and on a variety of large zooplankton under the ice or in the first 50 m of the water column. Their food sources would not be at risk for now. The fitness of polar bears is therefore influenced by change to the dynamic balance among sea ice effects on ecosystem structure and prey availability.

Projections of polar bear habitat losses for this century are the greatest in the southern seas of the polar basin (e.g., Chukchi and Barents seas) and least along the Arctic Ocean shore included in the Last Ice Area from Banks Island to Greenland. On the basis of these projected losses in essential habitats and if climate warming continues, two thirds of the global polar bear population could disappear by 2050. For the other third, their best hope is the Last Ice Area where thick multiyear ice will be replaced by annual ice. This is associated with greater productivity and may create more favourable habitats for polar bears over the short term as potential refuges. However, this region is also predicted to become ice-free during summer in the foreseeable future making the long-term viability of polar bears uncertain. ○



Polar bear having a look through the window of the tundra Buggy, Churchill, Canada.

Photo: Staffan Widstrand / WWF

By **JAKE MACDONALD**

GROWING UP IN ARVIAT, NUNAVUT, Darryl Baker didn't see a lot of polar bears. "You could go all summer up and down the Hudson Bay coast in a boat and never see one. When the elders camped out, they would tie out a dog to warn them if a bear was coming. But



LIVING WITH POLAR BEARS

Besieged by bears

us young guys didn't bother with that, because we never saw bears."

The first time Baker encountered a polar bear, he was on his snowmachine, checking his fox traps. A snowdrift alongside the trail reared up and became a large polar bear. "I took off out of there," he said. "But it was very scary because my snowmachine wasn't running good and I was afraid I was

going to have to walk back to town with that polar bear on my trail."

Arviat is one of the hotspots for polar bear/human conflict. It is the southernmost community in mainland Nunavut, and one of the most traditional with a population of about 90 per cent Inuit, and Inuktitut as the primary language. Groceries are expensive and country food such

as caribou and fish is the main source of protein. Many Inuit hunters and trappers keep dog teams, but in Arviat and other communities across the Arctic, bears make it difficult to be a dog owner.

"They come right into town, and they hate dogs," Baker says. "A couple of years ago my neighbour phoned me one morning and said, 'there's a big polar

bear coming down the street and he looks like he's in a bad mood.' The bear was heading right for my dogs. I opened the kitchen window and fired a shot to scare it off but it ignored me and killed one of my dogs with one slap. So I shot the bear."

The Canadian Broadcasting Corporation interviewed him about the shooting and he says a number of *qallunaat* – white people – criticized him. "People were saying a polar bear is more valuable than a sled dog. Well, I work hard and I spend a lot of money on my dogs. A good dog is worth from \$2000-\$5000. They said you should put your dogs in a 'safe location.' We don't have safe locations. The bears walk right into the hamlet. Am I supposed to just stand there and watch when a bear starts killing my dogs?"

"And it's not just dogs you have to worry about," says Kukik Baker, Darryl's wife. "Kids are in danger too. We're afraid to let them walk home from school, or even play outside."

Bear season along the coast of Hudson Bay normally stretches from late summer until freeze-up in November, when polar bears head out onto the ice to hunt seals. But in Arviat and other coastal communities, those seasonal patterns no longer dictate when a bear might show up in the yard. One day last March, Kukik's 10-year-old daughter Natalie was playing on

a snowbank with a friend when a neighbour spotted a polar bear stalking the kids. "It was creeping up on them like a cat sneaking up on some birds," he says. "The kids screamed and ran into the house. I rushed over there. My father-in-law had already shot the bear, but it was wounded, so I shot it again and finished it off."

Local artist Mary Tutsuituk says she lives in fear from the end of August until the end of November. "A few days ago, a bear was slamming his paws on the wall of my house and looking in my daughter's bedroom window! We just have a little house and it would be easy to break the door. What would he do if he came in? I'm exhausted all the time because I'm too afraid to sleep."

With global warming, Arctic winters are becoming shorter, and on average, freeze-up occurs weeks later than it did only four or five decades ago. Satellite images show that Arctic summer sea ice has diminished by roughly 30 per cent since 1979. Polar bears are heavily dependent on seals for their diet, and many bear scientists argue that shorter winters are stressing polar bears by reducing their prime food-gathering season. Some scientists argue that bears in the western Hudson Bay population (the southernmost of the world's 19 populations of polar bears) face the most immediate threat. In 2004, Environment Canada researchers



Polar bear warning at Churchill, Hudson Bay, Canada

Photo: Peter Prokosch, grida.no

predicted that by 2011, that population would decline to about 610 animals. Polar bear scientist Dr. Andy Derocher of the University of Alberta believes that population is "teetering on collapse." Others predict polar bears across the Arctic could be extinct by the end of the century.

"Some of these bears we think have been pushed off the ice early, away from their primary prey, so they get desperate," Derocher says. Inuit hunter Darryl Baker disagrees.

"Most of the bears coming into Arviat are fat and healthy. I skinned the bear that stalked my daughter last spring, and it had lots of fat on it."

In 2012, the Nunavut government conducted a long-awaited census of western Hudson Bay polar bears and came up with 1,013 animals, or about twice as many as the number projected by Environment Canada.

The study, however, was cold comfort to the people of Arviat. Scientists might continue to squabble about survey results, but the Arviarmiut are certain they're having far more bear encounters than ever before, and no one seems to know what to do about it.

Alex Ishalook studied animals

Conflict Prevention methods

- Polar bear patrols engaging local people to help keep bears away from communities
- Keeping attractants – trash, food – away from settled areas
- Education on safety measures for living and working around polar bears
- Deterrents such as bear spray and non-lethal projectiles
- Physical barriers, such as electric and fixed fences, and secure food storage
- Behavioral approaches to better understand both bear and human dimensions, or to help make bears averse to humans
- Detering, relocating, or destroying problem bears.

under the tutelage of his father and grandfather, and at the age of five he bagged his first caribou with a single-shot .22 that he still owns. He believes there are far more bears around Arviat than ever before, and says the seacoast south to Churchill, Manitoba is now unsafe for camping. "It's too dangerous, much too dangerous. There are bears everywhere. We used to camp at Sentry Island, for example, and we never saw bears. Now there are from three to five bears there, all the time."

He is the head of the local Hunters and Trappers Organization, and says there would be fewer bear problems if Inuit hunters were allowed to legally harvest more bears. "A larger hunting quota would be a good idea for many reasons. The bears are overpopulated and are causing many conflicts. Our people have been hunting animals, respectfully, for thousands of years and we can be trusted not to over-hunt the bears. And hunting teaches bears to fear people and avoid people."

Arviat hands out its allotment of polar bear tags every year around Halloween. About 1,200 applicants (just about everyone in the community older than 16) gather at the assembly hall to observe the drawing of the lucky names. The winner must kill a bear within 48 hours or the tag goes to someone else. If defense kills have been registered during the year, those bears are subtracted from Arviat's annual nine-bear quota.

In 2010, there was no hunt because all nine tags were used on defence kills. In 2011, two bears were killed in defense and seven tags were drawn. Part of the credit for improving numbers might go to recent preventive programs. Two years ago, the World Wildlife Fund (with the backing of Coca-Cola) contributed money to provide Arviat with bear-proof steel containers for storing meat and dog food and electric fences to protect chained-up sled dogs. Alex Ishalook says the fences aren't a perfect solution to the age-old grid

between bears and canines, but they help. "We're still losing a few dogs. Sometimes the snow drifts up into the wires and short-circuits the fence. And if a bear wants to go through the fence, he's going through. But they work better than no fence at all."

Over the last two years, WWF has also helped the community pay the salary of a bear monitor, who works for three months a year, starting at the beginning of October. He drives constantly around the edge of the hamlet on a Honda ATV, looking for bears and offering a ride home to anyone who might be out walking alone. "My job is to keep people safe," says Leo Ikakhik. "I work from midnight to eight in the morning, and when I see a bear I chase it out of town."

He says there are far more bears in the region than when he was growing up and camping out on the land with his father. "The population has increased, big time," he says. "And I don't agree that we're just seeing more desperate bears. Like any animal, they'll take food if they find it. But all these bears would be coming through town anyway. They don't have much choice because they built the town on the coastline and we're living on their natural highway. They're migrating from south to north, so I usually try to chase them out the north end of town, so they won't circle around and come back."

On a busy night he might get half a dozen bears coming into the hamlet and will deal with well over 200 bears in a season. Ikakhik will first try to scare the bear by slowly driving towards it. If that doesn't work, he'll fire a loud cracker shell into the air. If the bear still isn't scared off, he'll fire a 12-gauge rubber bullet into the bear's rump. He also carries a rifle in case of a life threatening emergency, but so far he hasn't had to put a bear down. Although he's had a few close calls.

One night during a snowstorm, multiple bears started appearing out of the blowing snow. "There were three or four bears on the west side of town

and three or four bears on the east side. I was speeding back and forth, trying to handle them all. Then I heard some dogs barking like crazy. Dogs have a special bark when they see a polar bear, so I was looking for it. Then this skinny bear appeared in the headlights about 30 steps away. I shot it with a rubber bullet and it started jogging towards me. Skinny bears are dangerous. They're not afraid of anything. I tried to get away but my ATV got stuck in the soft snow. My rifle was on a sling on my back and I didn't have time to get it. When the bear was about 10 feet away I shot it again in the shoulder with a rubber bullet and it turned away."

Alex Ishalook agrees that a timid bear is a safe bear, but he says he's worried that lobbying efforts by scientists and environmentalists will reduce the polar bear hunt further, or even stop it, at which point the polar bears will lose their fear of people altogether. "Why aren't these scientists coming to Northern communities and talking to us about bear populations? We've never had a single visit from them in Arviat. They don't seem to care what we think. I don't understand it."

Darryl Baker says the community is a peaceful and law-abiding one. "We were taught to respect the law by our elders, and we've always listened to the authorities. But they don't listen to us. If a polar bear kills one of our children, this community is going to be very angry. Then it will be too late for talking." ○

■ This article first appeared in Up Here magazine and is reprinted with permission



■ In eastern Greenland, the polar bear is known as *Tornassuk, the master of helping spirits.*

Emerging conservation challenges

Polar bears are awe inspiring animals that have co-existed with Arctic peoples for millennia. They have no natural predators other than us. Because they are long-lived, late-maturing carnivores with low rates of reproduction, their populations can plunge quickly. Since the 1973 Agreement on the Conservation of Polar Bears was signed by the polar bear Range States, human-caused polar bear deaths have generally been well managed. But **JAMES WILDER** says the bears now face an uncertain future due to the effects of climate change on their sea ice habitat.

CLIMATE CHANGE has occurred throughout the history of our planet. But there is no longer any doubt that current changes are occurring at a greatly accelerating rate and are largely the result of human-generated greenhouse gases.

Indeed, recent findings indicate that the summertime Arctic Ocean may be largely ice free as early as 2020. Such dramatic changes will inevitably lead to an increase in human-polar bear conflicts as nutritionally stressed bears are forced on shore and closer to people.

In order to survive in the Arctic, polar bears have

evolved to investigate any anomalies in their prevailing white, monotonous landscape which often indicate the presence of food. All human activities and infrastructure in the Arctic, such as cabins, tents, snow machines, and people

HUMANS OFTEN CREATE DANGEROUS SITUATIONS

*Polar bear road sign,
Longyearbyen,
Spitsbergen, Norway.*

Photo: WWF-Canon / Sindre Kinnerød



JAMES WILDER works as a wildlife biologist for the U.S. Fish & Wildlife Service polar bear program in Alaska. Part of his research focuses on understanding and developing management strategies for human-polar bear conflicts.

FOOD-CONDITIONED BEARS ARE MUCH MORE DANGEROUS

on the ice, are anomalous and therefore worth investigating. Humans often create dangerous situations through attractants near settlements, camps, and cabins. These include garbage, harvested animal remains, meat caches, and dog yards and serve to suppress polar bears' natural wariness. When given a choice, polar bears prefer their sea ice habitat and spend 95 per cent of their time there mainly because that is where their primary prey, ice seals, live. When forced onshore, they are attracted to human activities and are sometimes killed as a result. To date, polar bear attacks on humans have been rare, but when they do occur they evoke strong negative public reaction, often to the detriment of polar bear conservation.

A primary goal of the Range States is to ensure the safe coexistence of polar bears and humans in the face of accelerating climate change. To do this, specific information about human/bear incidents is needed: location, date and activity of the people involved; sex, age and body condition of the bear(s) involved; and the reasons for the conflict. Yet human-polar bear interactions have been poorly documented throughout the Arctic.

Recognizing this, the Range States are collaborating on developing a system to track and analyze human-polar bear conflicts throughout the Arctic, and to use the data to craft strategies to reduce conflicts. The Polar Bear-Human Information Management System (PBHIMS) database will document, quantify, and

The Umky Patrol

POLAR BEARS and people are sometimes uneasy neighbors. In Chukotka, a region in far northeast Russia, the bears frequent coastal areas near several indigenous Chukchi villages attracted by walrus come there to rest and care for their young.

This proximity can lead to conflict.

The Chukchi Sea polar bear sub-population is faring relatively well, but sea ice decline is expected to force the bears to spend more time on land each summer. As a result, they come into closer contact with humans.

When a polar bear killed a girl in the village of Ryrkaipiy in 2006, local hunters established the Umky Patrol (pronounced Um-kha, Chukchi for polar bear). Created with support from WWF, the patrol works to prevent human-polar bear confrontation.

Its first task was to reduce the amount of easily accessible protein for bears in the form of walrus and whale carcasses washing ashore near the communities.

The Umky Patrol then established rules for tourists visiting walrus resting sites to ensure the walrus weren't frightened and provoked into trampling each other in stam-

pedes, leaving more potential bear food behind. Melting sea ice caused by climate change often forces walrus ashore, making them possible prey for polar bears.

The Patrol then improved lighting in villages to keep children safe while walking to and from school in the dark; pushed for the conservation of public buildings where people can congregate in safety; and suggested the demolition of dilapidated housing where polar bears might seek shelter.

Patrollers have also educated villagers about bear behavior, instructing them to stand well away from bears while taking photos and video.

"It is very important to inform the villagers," says Sergey Kavriy, a patroller from the town of Vankarem. "There is much to learn from our experiences and recommendations."

The Umky Patrol also monitors the movements of the bears, particularly during their fall migration. The patrollers warn villagers of approaching bears and take action to drive away bears that wander into villages. They also plan to install public speakers to further help with such warnings. ○

evaluate human-bear interactions and other information relevant to bear management. The Range States will then analyze factors such as the patterns in where and when conflicts occur, number of bears killed as a result of conflicts with humans, number and type of attacks on people, effectiveness of bear spray and other deterrents, and the number of natural bear mortalities (e.g. drowning, starvation, cannibalism). Those findings will be used to develop improved management strate-

gies to reduce human-bear conflicts and the number of bears killed as a result of them. ➤



■ The Ket, a Siberian tribe, revere all bears. They call them *gyp*, grandfather, or *qoi*, stepfather.

One way to reduce conflicts is to reduce attractants such as garbage and human food. “Food-conditioned” bears can quickly lose their sense of caution and learn to associate people with food. Strong evidence supports the theory that food-conditioned bears are much more dangerous. In the absence of attractants, polar bears are generally cautious and more susceptible to being scared away in encounters with people.

Establishing Polar Bear Patrols in coastal communities is another effective technique to reduce conflicts. These programs enable local residents to deter polar bears from coming into town using a variety of techniques. Bears that learn to associate people with unpleasant experiences will be less likely to interact with them in the future. While deterrence may not be effective on every bear, it does provide a non-lethal option for keeping bears away from villages in the majority of cases.

WWF and other non-governmental organizations have been very active in working with government agencies and local communities throughout the Arctic to remove attractants from villages, provide bear-proof storage containers for food, provide electric fencing, and fund polar bear patrols. Although these initiatives have gone a long way towards making northern communities safer by preventing dangerous human-bear conflicts, much work remains to be done.

Effectively addressing the underlying threat of climate change to polar bears will require global solutions. In the interim, understanding and reducing human-bear conflicts through a data-based assessment of their causes and successful avoidance will be critical to safeguarding both humans and bears as conditions in the Arctic continue to rapidly change. To mitigate the negative effects of climate change on polar bears, we need to work closely with local partners, address conservation at the international level, and be prepared to act quickly. Most importantly, we must act now, as if the future of polar bears hangs in the balance — for indeed, all indications are that it does. ○

“POSTER BEAR”

Polar bear politics

Perhaps more than any other Arctic animal, polar bears living in the far North have long captured the imagination of “southern” populations such as New York City, Toronto, and Copenhagen. In the past few years polar bears have graced garbage bags in Danish trains and Coca-Cola cans. They have shown up at a photo op with Russian President Vladimir Putin, and at the U.S. Congress as a lobbying gimmick for polar bear policy. Here, CHANDA MEEK ponders the politics of polar bears.

POLAR BEARS also live within the imaginations of people in the Arctic, but for them bears represent food and warm skins for clothing, as well as potential danger to avoid.

Because of their significant international appeal, polar bears have been at the forefront of national and international marine mammal conservation efforts since the 1973 Agreement on Polar Bears. The early 70s was a period of strong environmental policy develop-

WHAT ARE OUR RESPONSIBILITIES TOWARDS POLAR BEARS?

ment between and among many of the Arctic states. But the 1970s was also a time in which resource managers and the majority of the public living outside the Arctic were accepting of policy that was developed at the national or international level and delivered wholesale to wildlife agents who would then enforce these rules. One reason the polar bear agreement of 1973 did not include an enforcement mechanism was because the biologists and higher-ups in the room thought it would be insulting to have to draft such an agreement. So each country that signed the agreement built its own rules and regulations, and the programs that began in the Arctic developed very differently depending on where you looked and how that country's other laws and court cases interacted.

In Alaska, it has generally been considered that sport hunters overhunted polar bears as trophy animals in the 1960s. In Canada, polar bear hunting reached a high level in the 1960s but





was considered sustainable based on the knowledge on hand at the time. Greenland was going through a warming period and along with degradation



of polar bear habitat, polar bear hunting was not at a scale that would have had ecological consequences. In Norway, it seems that the majority of polar bears killed on Svalbard were killed by sealing vessels. And Russia had a law on the books since the 1950s that protected bears and actually tried to convince the rest of its neighbors to similarly protect polar bears. Despite such different circumstances and political interests, the regime worked by tailoring the policy options based on what the problem was defined to be. After the 1973 agreement and the end of commercial polar bear hunting, polar bear conservation was long considered a success as population levels rebounded after a moratorium on the commercial trade in bears was adopted across the North.

However, shifting environmental conditions in the late 1990s to the present day have again made polar bears vulnerable. A key question now, though, is what should we do about it? And what

are our responsibilities towards polar bears? Some philosophers suggest that we have ethical responsibilities towards animals that we have direct relationships with because we couldn't possibly focus on all of the animals of the world. And if we should have this responsibility, then it makes sense that we should look to Arctic communities living with polar bears for guidance on how to care for them. Each country within the range of the polar bears continues to have unique community-polar bear relationships and any new policy options must understand all of the nuances of why and how bears and people interact. But it can be tempting from the perspective of passionate polar bear advocates in the South to recommend a subsistence hunting moratorium, without really understanding what that would mean for the people living in the North.

Like other communities living with apex predators, Arctic communities are very active in trying to maintain separate human and bear habitats. Whether you look at Chukotkans on a polar bear patrol, or local hunters in Nunavut leaving carcasses of other animals for bears in lean years, our best bet for conserving these animals is to work with local residents to ensure their safety while helping bears hold their own territories, denning areas, and other habitats. ○



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■ The Saami people of Northwest Europe refuse to speak the polar bear's real name for fear of offending him. Instead they call him *God's dog* or *old man in the fur cloak*.

Polar bears and international law

The Agreement on the Conservation of Polar Bears and their Habitat (ACPB) was primarily developed as a response to commercial over-hunting of bears in some polar bear states – Alaska, USA and Svalbard, Norway. **NIGEL BANKES** says the agreement is largely considered a success because restrictions on harvesting have resulted in polar bear populations recovering. However, he says the agreement has not been successful in addressing the effects of climate change on polar bears and harvest levels for shared populations of polar bears.

THE AGREEMENT aimed to address over-hunting by banning commercial and sport hunting – particularly hunting using large motorized vessels and aircraft – while allowing on-going harvesting by Indigenous peoples in Alaska, Russia, Canada and Greenland and hunts guided by Indigenous peoples.

The Polar Bear Specialist Group (PBSG) – under the auspices of the International Union for the Conservation of Nature – coordinates and collates global research and monitoring efforts and serves as a scientific advisory committee for the Agreement. In recent years the range states to the Agreement

have created a more formal institutional structure by convening meetings of the states party to the ACPB. The first meeting was held in Tromsø, Norway in 2009, and the second in Iqaluit, Canada in 2011. A third meeting is scheduled for Russia in 2013. The Tromsø meeting dealt with topics including climate

change, habitat protection, contaminants, shipping related activities and harvest management. The Iqaluit meet-

THERE IS A MISMATCH BETWEEN THE GLOBAL PROBLEM OF ATMOSPHERIC CLIMATE CHANGE, AND THE ACPB AS A REGIONAL WILDLIFE AGREEMENT

ing formalized the role of the PBSG as the science advisory body for the range states. That meeting also agreed to focus on developing a circumpolar action plan for the conservation of polar bears and their habitat.

However, the Agreement has not been successful in responding to two pressing challenges: climate change, and the harvest levels for shared populations of polar bears.

A central idea of the Agreement is that countries “shall take appropriate action to protect the ecosystems of which polar bears are a part.” However, there is a mismatch of both scale and subject matter between the global problem of atmospheric climate change, and the ACPB as a regional wildlife agreement. The parties to the ACPB have proven to be either unwilling or unable to deal with this problem. The

2009 Tromsø meeting of the parties recognized climate change “has a negative impact on polar bears and their habitat and is the most important long term threat facing polar bears”. Yet, the parties went on to state, “Action to mitigate this threat is beyond the scope of the Polar Bear Agreement. Climate change affects every nation on the earth and reaches well beyond the five parties to the Agreement so the parties look to other fora and national and international mechanisms to take appropriate action to address climate change.”

The Agreement also fails to address the issue of harvest levels for shared polar bear populations. This occurs where two countries allow harvesting by Indigenous communities and share one of the 19 sub-populations of polar bears. For example, Russia and the United States share the Chukchi Sea population, while the United States and Canada share the Southern Beaufort Sea population. Similarly, Canada (principally Nunavut) and Greenland share the Kane Basin, Baffin Bay and Davis Strait populations. The Polar Bear Specialist Group has frequently commented on the challenges associated with managing shared populations but its advisory responsibilities limit it to drawing attention to actual or potential problems of overharvest and exhorting the range states of these sub-populations to come to agreement.



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Female polar bear and cub on sea ice, Baffin Island, Nunavut, Canada, Arctic.

Photo: Staffan Widstrand / WWF



For the most part agreements have been negotiated in a timely way, either between the user groups themselves – as with the Inuvialuit and Inupiat in relation to the Southern Beaufort population – or at the state to state level – as in the case of the Russia\US agreement with respect to the Chukchi Sea population.

On the other hand, an agreement between Greenland and Canada was very slow in coming and was only successfully negotiated in 2009 after some years of unacceptably high harvests, criticism from the PBSG, and after the

scientific authorities in both countries issued negative “no detriment” conclusions in the context of the Convention on International Trade in Endangered Species (CITES). A state must issue a negative no detriment opinion under CITES when it concludes that continued export of an Appendix II species (or a sub-population thereof) would be detrimental to the survival of that species. In formulating that opinion the state’s scientific authority should also have regard to the responsibility of the range state to ensure that “the species is main-

tained throughout its range at a level consistent with its role in the ecosystems in which it occurs.” Efforts (led by the United States) to uplist polar bears to Appendix I of CITES at the last two meetings of the conference of the parties for CITES have failed, largely on the basis that polar bears are threatened by climate change rather than a combination of harvest plus trade. Implementation of the Canada\Greenland bilateral agreement is only just beginning. ○

Inuit co-management and livelihoods

Controversy surrounding polar bears was recently sparked in Bangkok at the 16th meeting of the Parties to one of the world's most long-standing global conservation agreements, CITES – the Conservation on International Trade of Endangered Species of Wild Fauna and Flora. CITES regulates international trade in tens of thousands of plants and animals, most of them (despite its name) not endangered. The USA proposed to uplist polar bears from Appendix II (allowing regulated trade) to Appendix I (prohibiting commercial trade), mainly due to a projected steep decrease in their sea ice habitat caused by climate change. **ROSIE COONEY** delves into why that proposal was rejected.



Polar bear. Hudson Bay, Canada.

Photo: Kevin Schafer / WWF-Canon

SUSTAINABLE USE for the Conservation of Nature/TRAFFIC found that the criteria for uplisting were not met, and the

CITES Secretariat, TRAFFIC and WWF recommended rejection of the proposal. While some range states were in support, Canada, the major range state (with 2/3 of the population) was strongly opposed, arguing that international trade was not a threat to the polar bear, that the

US proposal risked the integrity of CITES itself, and that the Canadian manage-

ment system was adaptive, dynamic and based on sound science integrated with traditional knowledge.

Central to the debate was the role of Inuit, who hunt and trade polar bear, and the impacts uplisting would have on them. Polar bear populations in Canada are co-managed with Inuit, to whom the polar bear is of central cultural importance. An Inuit member of the Canada delegation explained to the meeting that Inuit hunt polar

WOULD ALIENATING THE COMMUNITIES WHO MAN-AGE 2/3 OF THE POLAR BEAR POPULATION HELP?

bears under quotas established at sub-population levels based on population assessment through this co-management system, which integrates traditional knowledge and scientific knowledge. For Inuit, the harvest is primarily a meat harvest, with trade of skins, skulls or other parts of the bear providing additional income in a region with high unemployment and very limited economic opportunities. The right to hunt is established under land claim agreements and would not be affected by an Appendix I listing. This means that an Appendix I listing would be unlikely to affect the level of hunting by Inuit, but would remove a source of income to these communities. As a delegate from South Africa said, the projections of the impact of climate change



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on polar bear were dire, but it was hard to see that alienating the communities who managed 2/3 of the polar bear population would help, and it could do the opposite by removing incentives for conservation.

Other Inuit speakers highlighted the central role of the polar bear in their

culture, the importance of the revenue from hunting, and the message a CITES uplisting decision would send to the Inuit – a message of lack of faith in and support for their management. The proposal was defeated, but with lobbying pressures remaining high we may well see a similar proposal in the future. ○



■ Nineteenth-century whalers referred to the polar bear as *the farmer* because of his slow, pigeon-toed gait.

CANADIAN VIEW

Icon or income?

The polar bear is a visually appealing and charismatic animal recognized throughout the world. Various companies have successfully used the image of the polar bear for their marketing campaigns. However LEONA AGLUKKAQ says for the people who live in the Arctic, particularly the Inuit, the polar bear holds strong cultural and traditional significance.

INDIGENOUS PEOPLES have lived among these majestic animals for thousands of years and they continue to play an important part in our diets, clothing and traditional economies. Not only is Canada committed to sustaining healthy polar bear populations, so are the people who still depend on them for their livelihood.

We see clear evidence of this in the northern Canadian territory that I call home, Nunavut. The Nunavut Wildlife Management Board (NWMB), an institute of public government created through the Nunavut Land Claim Agreement, has a mission to conserve wildlife and habitat for the long-term benefit of all Nunavut residents while fully respecting Inuit harvesting rights and priorities. Notably, the NWMB believes that proper wildlife conservation must be done not only through the application of accurate scientific research but by also incorporating Inuit Qaujima-jatuqangit (traditional knowledge). There is much to be learned from the people who have lived around polar bears for so long.

Unfortunately, certain advocacy

groups have tried to use polar bear conservation to advance issues such as climate change and are trying to portray the polar bear situation as dire to make their point. These groups ignore the impact their actions have on the conservation of the species and the well-being of the people around them. In reality, it is not possible to conclude that the status of the species has deteriorated over time. In fact, the status of the polar bear varies greatly across the vast Arctic.

In the late-1960s there were estimated to be between 5,000 and 25,000 polar bears in the circumpolar Arctic. This wide range of uncertainty was due to a general lack of information on the status of subpopulations, and unregulated hunting in several regions. Great efforts have since gone into carrying out surveys and research and each country responsible for polar bears has put in place a harvest management system.

Current estimates suggest that the global population of polar bears is approximately 20,000 – 25,000.

In parts of the Canadian Arctic, some polar bears subpopulations are experiencing population increases (2

of 13), in others declines (4 of 13), and 6 of the 13 Canadian subpopulations are stable. The status of the remaining subpopulation is currently unknown but population surveys in this region will begin shortly. While the overall global population is considered stable, data does not currently exist for all of the 19 subpopulations across the circumpolar Arctic. Canada has increased efforts to survey polar bears in recent years as we have recognized that up-to-date population and trend estimates are essential for effective management and conservation actions.

Canada will continue to work with other countries with polar bear populations to enact appropriate conservation measures and ensure this important species is sustainable for generations to come. ○



LEONA AGLUKKAQ,
Minister of the Environment,
Minister of the Canadian Northern
Economic Development
Agency and Minister for
the Arctic Council

THE PICTURE

Living legend



POLAR BEARS continue to hold a prominent place in traditional Arctic Indigenous folklore, as in this depiction of a Russian fable about a boy's initiation into manhood.



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