



WWF

MAGAZINE

No. 1

2021

50 YEARS OF
POLAR BEAR
RESEARCH

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PATROLLING FOR
POLAR BEARS IN
CANADA'S ARCTIC

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THE CIRCLE

PUBLISHED BY
THE WWF ARCTIC
PROGRAMME

POLAR BEARS: FACING A CHANGING ARCTIC



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Publisher:
WWF Arctic Programme
8th floor, 275 Slater St., Ottawa,
ON, Canada K1P 5H9

Internet: www.panda.org/arctic

ISSN 2073-980X = The Circle

Date of publication:
April 2021

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COVER: A two-year-old polar bear on the shore of Hudson Bay.

Photo: Andrew Derocher

ABOVE: Polar bear footprints.

Photo: Andrew Derocher

The Arctic is changing. Can polar bears change with it?

THE FIRST TIME I saw a polar bear, I was doing field work in the Canadian Arctic. In fact, we were visited by six bears within 24 hours as the summer sea ice broke up and bears began moving to land. I felt fortunate that three Inuit researchers were in the camp with us. They were completely confident in their understanding of the bears' behaviour and their ability to deter them safely. Thanks to their expertise, I watched these Arctic animals in their natural habitat respectfully and without fear.

As the climate crisis accelerates, I often wonder how much my experience with polar bears in their element will become just a fond memory. The climate crisis makes it increasingly difficult to predict how these bears will fare as their habitat shrinks. That said, there is broad agreement that the loss of habitat will have a negative impact on polar bear populations across the Arctic. Indeed, in some subpopulations, impacts have already been evident for more than a decade. The accepted estimate is that under the current global climate trajectory, one third of polar bears will be lost in the next 30 years. But what will the pathway to that point look like for polar bears, and what new challenges can we expect and prepare for?

To explore that question, this issue of *The Circle* highlights some of the situations unfolding across the Arctic as polar bears experience the effects of climate change. In two Eastern Canadian subpopulations, as annual sea ice replaces multi-year ice, polar bears are in better shape than they were two decades ago, partly due to the greater abundance of prey. Around Svalbard—despite the loss of sea ice and the resulting disconnection of summer habitats from traditional maternal denning sites—cub production and population sizes are stable. In contrast, the general condition of western Hudson Bay polar bears

suggests they are either eating fewer seals or expending more energy to live.

So on the whole, are polar bears adapting to the loss of sea ice? It appears they are trying. How successful their efforts will be in the long term remains to be seen. Meanwhile, some of their coping mechanisms are creating new challenges and exacerbating existing pressures. Spending more time on coastlines and islands among walrus haul-outs and bird colonies is bringing the bears into closer contact with communities, making it hard

for people and bears to co-exist without dangerous consequences. In their search for new prey, polar bears are decimating some seabird breeding colonies, with as-yet unknown ecological outcomes. As the appetite for industrial development of the Arctic increases, so too will the overlap between mineral deposits and denning habitats, with polar bears shifting from

unstable sea ice onto land to give birth.

September's sea-ice minimum was the second lowest in recorded history. Glaciers continue to recede at a record pace and temperatures in the Arctic continue to soar. Clearly, there are legitimate reasons to be concerned about the long-term persistence of polar bears. We must move beyond concern and take global actions to reduce greenhouse gas emissions. The disappearance of polar bears—even if from only certain parts of the Arctic—would be a blow for the global south, but a concrete and immeasurable loss for Arctic Indigenous Peoples. We must all work together so polar bears can maintain their place in the Arctic ecosystem. ○

The disappearance of polar bears—even if from only certain parts of the Arctic—would be a blow for the global south, but a concrete and immeasurable loss for Arctic Indigenous Peoples.



MELANIE LANCASTER is a conservation biologist and senior specialist in Arctic species with WWF.

THE ARCTIC FOOD CHAIN

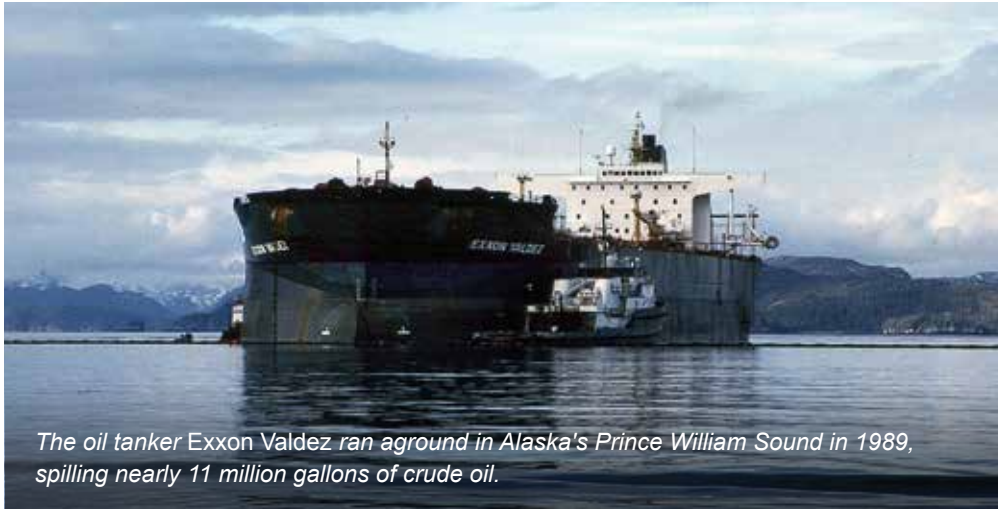
Human medications detected in Spitsbergen crustaceans

RESEARCHERS WITH the Norwegian Polar Institute and University Centre in Svalbard have discovered evidence of a variety of drugs in Arctic crustaceans near the settlement of Ny-Ålesund on the west coast of Spitsbergen. Comparatively few people live in the area, so the team was surprised to find traces of anti-inflammatories,

antibiotics and an anti-depressant.

Crustaceans occupy the lowest levels of the food chain, so any drug compounds they absorb are passed along to larger animals. Copepods (small aquatic crustaceans), in particular, are rich in fats and are an essential food source for Arctic fish and seabirds.

Little is currently known about the concentrations and levels of exposure of Arctic wildlife to pharmaceutical drugs or how big a problem it may be. The project's findings may be used to influence the future management of the Arctic regions and inform national and international regulatory governance on land and at sea.



The oil tanker Exxon Valdez ran aground in Alaska's Prince William Sound in 1989, spilling nearly 11 million gallons of crude oil.

INNOVATION

Could a nano-engineered sponge soak up Arctic oil spills?

A WARMER ARCTIC will increase the risk of oil spills as tankers find it easier to navigate increasingly ice-free waters. But a British research team has come up with a possible solution to oil spills in polar areas.

The technology is essentially a sponge that can absorb oil from cold water.

At low temperatures, crude oil's heavier compounds begin to crystallize, creating large, sticky masses that other technologies have struggled to pick up.

Developed by scientists at Imperial College London, the sponge seems able to tackle a spill directly, capturing the oil with no

pre-heating. The team engineered it with a paraffin-like nano-coating designed to bind to any sticky oil it encounters. In tests, the sponge absorbed up to 99 per cent of Texas raw crude oil in 100 millilitres of water within 3 hours at temperatures as low as 5°C.

A pod of narwhals.

NARWHAL SCIENCE

Studying tusks

ACCORDING TO A STUDY

published in *Current Biology*, researchers have found that narwhals' tusks hold vital clues about their food intake—and also shed light on the state of their environment over the past half century, including how quickly Arctic sea ice is melting.

The narwhal's distinctive

CHANGING RIVERS

Heavier rains alter

CANADIAN RESEARCHERS

have found that increased rainfall in the Canadian High Arctic is altering river hydrology and water quality, a finding that has implications for northern communities.



Photo: Dr. Kristin Laidre/NOAA/CARVER

to understand Arctic sea-ice changes

tusk is actually a canine tooth that projects from the left side of the upper jaws of males, and is thought to help them obtain food. Narwhals have a lifespan of more than 50 years, and much like the rings of tree trunks, their spiralled tusks add new layers each year.

The scientists analyzed

tusks from 10 narwhals in northwest Greenland to deduce what the whales had eaten throughout their lives and understand how the ice cover and impact of toxic compounds had changed over time. The tusks provided clues about the state of sea ice because the presence of mercury in the tusks starting

around 1990 indicated that the narwhals' diet had begun to shift from prey linked to sea ice—like halibut and Arctic cod—to include open-ocean prey that are lower in the food chain, such as capelin and polar cod. The ice in northwest Greenland began its decline around the same period.

The amount of mercury in the narwhals' tusks after 2000 continued to increase significantly without a corresponding shift in diet. Researchers hypothesized that this could be due to coal mining combustion in southeast Asia or a shift in the Arctic's environmental mercury cycle caused by the warming climate.

High Arctic landscapes

The multi-year study, published last month in *Nature Communications*, documented and analyzed hydrological changes happening at the Cape Bounty Arctic Watershed Observatory on Melville

Island in Nunavut. It found that at higher latitudes, spring snowmelt is no longer always the main source of water. In some years, heavier rainfall is the dominant source of river flow.

Understanding these changes is vital for northern communities trying to adapt to the climate crisis. Somewhat counter-intuitively, heavier rains may create less secure water supplies

downstream by causing rivers to deposit mud into lakes. On the other hand, they may create more favourable conditions for aquatic life by carrying more nutrients and minerals to lakes and ponds.

Youth view

Our changing

Save the polar bears! The media demands action to save the cuddly-looking white bears before they vanish. But as NUIANA HARDENBERG and ILUUNA SØRENSEN write, the irony is that humans are the cause of their decline. Youth are determined to help bring about a solution.

AROUND THE WORLD, humans mistreat Mother Earth and perpetuate the climate crisis by building and supporting CO₂-emitting industries so capitalism can continue undeterred. Meanwhile, climate change is pushing polar bears into cities in search of food, and the residents are shooting the bears to protect themselves.

“Have you ever seen a polar bear?” is a question we are often asked when travelling outside of Greenland. If we say no, then we feel we have not lived up to the stereotype. If we say, “Yes, but only a dead one,” people may be shocked, and see us as savages contributing to the extinction of polar bears. We have to explain that sometimes, killing a bear is necessary for our people’s safety. Our generation didn’t cause the climate crisis that is leading bears into conflicts with humans, but we must live with it.

Greenland is home to one of the largest ice sheets on Earth. This year, the icebergs that broke off from this ice sheet had already formed in late January—something that typically shouldn’t happen until May. Such signs of climate change are a constant reminder of the consequences of our actions. As human

■ “When I was 10, I remember school was cancelled in Sisimiut so we could see a polar bear that had been killed. The students got a chance to see the process of preparing the polar bear’s meat. It was a way to pass the traditional knowledge on to the younger generation. It was a rare experience to see such a majestic animal up close.”—*Iluuna Sørensen*

If not for the climate crisis, polar bears would have plenty of ice for seal hunting and would not be found prowling in populated areas.

Photo: Natta Summerky

relationship with polar bears

beings, in many cases we can adapt to our changing climate. But we cannot expect the same for all plants and animals. Polar bears cannot just find another way to hunt or go further and further north.

HUMAN-BEAR CONFLICTS INCREASING

For Indigenous People in Greenland, hunting polar bears has long been part of a traditional lifestyle. But our traditional way wasn't to kill polar bears when they came to us. Unfortunately, more and more polar bears are coming into our communities—with tragic consequences for the bears. For example, in 2014, a polar bear that wandered into Sisimiut and attracted a crowd of onlookers was shot for safety reasons. The situation is unnatural and unintentional. If not for the climate crisis, polar bears would have plenty of ice for seal hunting and would not be found prowling in populated areas.

If we as humans don't act to change our lifestyles, should we be surprised if polar bears become extinct? Or if they try to avoid such a plight by adapting to life on land, like big white grizzly bears?

Although the situation seems hopeless, as Greenlandic youth, we remain hopeful. Our local organization, Greenland4Nature, offers workshops and conferences. Our goal is to spread awareness of the impacts of climate change across Greenland and convey youth voices internationally.

There is a lot of work to be done locally and globally. We won't dismiss our responsibilities. If our nation's leaders do not live up to theirs, we will continue to speak up loudly—for Greenland, for our youth and for our polar bears. ○

You can find Greenland4Nature on Facebook and Instagram.

Our generation didn't cause the climate crisis that is leading bears into conflicts with humans, but we must live with it.

NUIANA HARDENBERG is soon to be a student at Hult International Business School. She is currently at home in Nuuk, Greenland, on a sabbatical.

ILUUNA SØRENSEN is based in the Netherlands and will soon graduate from the United World College Maastricht.

They co-founded Greenland4Nature, a youth NGO focused on sustainability, biodiversity and climate change, with Kira Lennert Olsen.



Iluuna
Sorensen

A polar bear swims between ice floes north of Svalbard.



Life on the edge

Svalbard polar bears have proven themselves resourceful, but there are limits

The Barents Sea is home to one of the world's 19 recognized polar bear populations. But in recent decades, sea ice has been diminishing more quickly here than anywhere else in the Arctic. As [JON AARS](#) explains, it hasn't yet led to population declines, but it is affecting the bears' lives in several ways.

THE BARENTS SEA polar bears live in Svalbard, Norway and the western Russian Arctic. In Svalbard, in the century

JON AARS is a senior research scientist who leads the Norwegian polar bear program at the Norwegian Polar Institute.



before the 1973 agreement to conserve polar bears (see box), commercial hunters killed more than 30,000 of these bears.

The population increased after the agreement was signed—only to face the rapidly acceler-

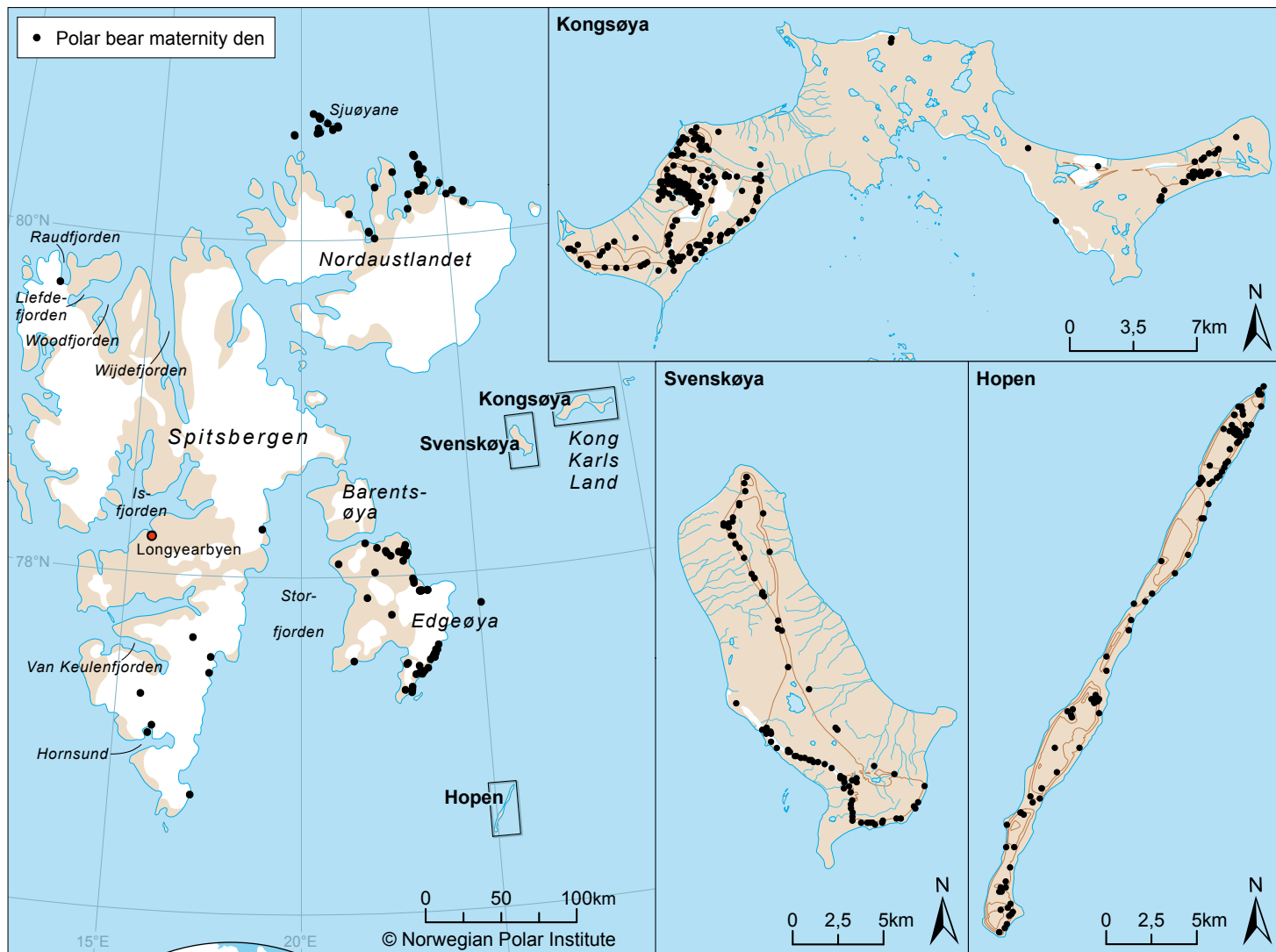
ating loss of their sea-ice habitat in the ensuing years. Given scientists' predictions that the ice will continue to recede in future decades, polar bears in the area are bound to face further challenges, and their numbers will likely decline. We just don't know when.

Some 3,000 polar bears—a ninth of the world's total stock—belong to the Barents Sea population. The majority depend on the ice edge to hunt for most of the year. However, all adult female polar bears build their dens on the Norwegian (Svalbard) or Russian (Franz Josef Land) islands. They give birth in

midwinter to a couple of small cubs, generally every third year if the cubs live until they are weaned at the age of two.

THE LONG TREK TO FIND A DEN

Female polar bears who live at the ice edge may have to travel hundreds of kilometres to reach their denning areas in Svalbard. This distance was easier to cover when the ice edge extended further south. The bears could walk on the ice to reach the islands in autumn. These days, they sometimes have to swim hundreds of kilometres to get there—a feat that is not only risky, but costs them consider-



The 1973 Agreement on the Conservation of Polar Bears

■ In 1973, the five polar bear range states (Canada, Denmark, Norway, the United States and the former Union of Soviet Socialist Republics) signed a multilateral treaty on the conservation of polar bears. It prohibits unregulated sport hunting as well as hunting from aircraft or large motorized vehicles, and requires the nations to protect the bears' ecosystems, with special attention to migration routes, denning and feeding sites. See page 16 for more information on the agreement.

able energy. We also suspect that more bears have begun going to Franz Josef Land than to Svalbard to den. This is a successful workaround for now, but in 10 to 20 years' time, they may face a long swim to get to Franz Josef Land too.

About 300 polar bears remain in Svalbard year-round rather than hunting

on the ice edge. We know more about the Svalbard bears than the ice-edge bears because we are usually working in Svalbard when we capture and mark bears for research purposes—and the challenges they face as temperatures climb are very different from those encountered by their ice-edge peers. For

example, females do not need to travel as far to find dens, but the retreating sea ice is shortening their hunting season, which could leave them with less fat reserves to survive the winter and provide milk for fast-growing cubs. They may be in their dens without food for as long as half a year.

► PREDICTING THE FUTURE OF SVALBARD BEARS

So far, the Svalbard bears are not in poor condition, and they are still reproducing. The question is: why do they seem to be thriving despite having access to less sea ice? There are a few possible answers. It could be that the density of bears is still low compared to what it was before people started to hunt. That would mean less competition for food resources. Another relevant factor is that polar bears are good at adapting and using every resource they can find.

For example, we have seen a change in their feeding strategies. Hunting ringed seals in spring is still important. Polar bears also used to hunt seals near glaciers on the fjord ice in summer. Now that the sea ice is often lacking, they spend more time plundering bird colonies for eggs and chicks. We also see them hunting harbour seals, which are becoming more common in Svalbard even though they are not an Arctic species. The bears also take reindeer, something they were not known to do in decades past. Walrus—which are themselves quickly recovering from earlier unsustainable hunting—are also food for Svalbard polar bears.

It will be interesting to see how the local Svalbard bears do in future years as the sea ice continues to diminish. Unlike polar bears in some other Arctic areas, they have few competitors (such as brown bears, wolves or wolverines). But the fact that polar bears depend on sea ice in all the areas they occupy suggests there will be a threshold for this population too. They have proven resilient in the face of challenges so far, but to continue to thrive, they will need access to sea ice to hunt seals for at least a period in spring and early summer.

For now, polar bears in the Barents Sea area seem to be coping with their habitat loss. However, as the sea ice continues to disappear, it is likely they will be challenged at some point. Being a polar bear in Svalbard today is already a very different experience compared to 30 or 40 years ago, and the environment is changing swiftly. ○

Overcoming pandemic challenges to study polar America and Russia work



Photo: Gernady Federov

Staff of the Wrangel Island Statue Nature Reserve ready for ground-based observational surveys of polar bears on Wrangel Island in 2020. Left to right: Ulyana Babiy (scientist), Pavel Kulemeev (scientist) and Denis Vasiliev (ranger).



Eric Regehr monitors a sedated polar bear during live-capture research in the Chukchi Sea.

Photo: US Fish and Wildlife Service.

together during challenging times

Studying polar bears is not easy, even in ideal conditions. The Arctic is immense and remote in a way that is hard to fathom in our world of fast travel and instant communication. Research is expensive, often dangerous and takes months of planning. **ERIC REGEHR** explains how, like so many other things, research became even more difficult with COVID-19—and how teamwork kept it going.

ALTHOUGH 2020 saw most field research projects cancelled across the Arctic, not all the news was bad. The Chukchi Sea polar bear subpopulation was a welcome bright spot, not only in terms of how the bears are faring, but because of a unique collaboration that allowed research to continue even as the pandemic ground most activities around the world to a halt.

The Chukchi Sea polar bear subpopulation inhabits the ice of the Bering, Chukchi and East Siberian seas, with bears moving freely between the United States and Russia. In 2008, when polar bears were listed as threatened under the *Endangered Species Act*, the American government started live-capture research on the subpopulation that involved immobilizing bears on the sea ice. That study provided a wealth of information on the habitat use and



An adult female polar bear and her cubs rest on Wrangel Island.

Photo: Pavel Kulemev

In the past decade, large areas of spring ice west of Alaska have transitioned from a solid platform capable of supporting a helicopter to an unstable surface that even polar bears are reluctant to cross.

nutritional ecology of these bears, not to mention the first proper estimate of their abundance: it turns out there are about 3,000 bears, one of the world's largest subpopulations.

Intriguingly, from 2008 to 2017, researchers found that Chukchi Sea polar bears maintained good body condition (fatness) and reproduction rates despite climate change, likely due to the region's high biological productivity. Although sea-ice loss has not yet had negative effects on these bears, it has, ironically, limited scientists' ability to study them. In the past decade, large areas of spring ice west of Alaska have transitioned from a solid platform capable of supporting a helicopter to an unstable surface that even polar bears

are reluctant to cross. With the ice literally melting beneath our feet, it was clear that we needed a new approach to continue studying this subpopulation.

WRANGEL ISLAND: A SANCTUARY

Enter Wrangel Island, a 7,600-square-kilometre island with the greatest level of environmental protection in Russia. Each summer when the



ERIC REGEHR is principal quantitative ecologist with the Polar

Science Center at the University of Washington and principal investigator on American–Russian polar bear research on Wrangel Island. He has worked with 11 of the world's 19 polar bear subpopulations.

► ice melts, most Chukchi Sea bears come to Wrangel to rest until the ocean freezes again. Pregnant females give birth in snow dens on the island, emerging with new cubs in the spring. In 2016, American and Russian scientists began collaborative research on Wrangel under a bilateral treaty. By 2019, they had collected data on habitat use, body condition and reproduction for 1,600 polar bears. They used non-invasive methods to collect genetic samples from another 100.

In addition to collecting data needed for management and conservation using systematic survey methods, the project has sought to build capacity among Russian scientists. This paid dividends in 2020 when experienced staff from the Wrangel Island State Nature Reserve conducted research without American participation (due to COVID-19 restrictions). The researchers collected observational data on a record 747 bears and genetic samples from 113 bears.

Climate change is the primary threat to polar bears. Even subpopulations like the Chukchi Sea, which appear to be doing well for now, are expected to experience stress and declining numbers as sea-ice loss continues. As the summers lengthen, Wrangel Island is providing bears with a critical terrestrial refuge and researchers with an opportunity to collect data needed for managing and conserving the Chukchi Sea subpopulation. American-Russian research on the island represents the type of international cooperation and capacity development that will be increasingly important as climate change affects both polar bears and our ability to study them. ○

This study is supported by the Wrangel Island State Nature Reserve, the University of Washington, the US Fish and Wildlife Service, WWF, the All-Russian Research Institute for Environment Protection, Polar Bears International, the Alaska Department of Fish and Game and the Campion Foundation.

Tensions in northern Russia

Growing conflict between people and polar bears

Crumbling coasts, thawing permafrost, rising sea levels and thinning sea ice: these are the modern realities of the Arctic as it faces the climate crisis. VARVARA SEMENOVA explains how they are also increasing conflicts between people and polar bears in northeastern Russia.

FOR POLAR BEARS, the diminishing sea ice is not just a problem—it's an existential threat. In some areas, the ice now disappears completely in the summer and autumn months, and where it does remain, it is younger and thinner. It melts earlier and freezes later, forcing the ice-dependent top predators to seek new ways to adapt and survive. Unfortunately, some of the bears' coping strategies are bringing them into conflict with people.

WHAT'S GOING ON?

Let's consider the Chukotka region in northeastern Russia. Ryrkaypiy is a rural coastal settlement in the area, just opposite Wrangel Island (often referred to as a polar bear maternity ward). Because of this proximity, polar bears are frequent guests in Ryrkaipiy. Throughout most of the summer and autumn, anywhere from five to 60 polar bears live along Kozhevnikov Cape, within 700 metres of the settlement. On the same cape, a walrus haul-out forms annually. Their carcasses serve as a food source.

Many residents of the village can recall that 20 years ago, there were no walruses or polar bears here—just ice,

■ *"The polar bear, an eternal wanderer among the ice of the Arctic Ocean, is as inseparable from the Arctic landscape as the ice itself. Large, energetic, extraordinarily strong and at the same time peaceful, this beast is a magnificent living emblem of the Arctic."*

This is how the famous Russian polar bear specialist Savva Uspensky described the polar bear in 1977.

But a lot has changed since then. The polar bear is now associated less with ice and more with coastlines, islands and settlements—and there is more talk about the bears' conflicts with humans than about their peacefulness.

which did not leave the bay even in the summer months.

These days, a "polar bear patrol" works in the village to prevent the polar bears from getting too close. It keeps them away from garbage cans and responds to calls about bears that may threaten villagers' safety.

Patrol members say that generally, it's



easier to drive the polar bears away than to explain to fellow villagers why they shouldn't shoot them. This is especially true when a dozen polar bears have congregated near a village and people are afraid for their families.

"I tell them, 'Be patient, the polar bears have nowhere to go. Look at the sea, there is no ice there,'" says Tatyana Minenko, head of the village's bear patrol. "I point out that here, they can at least get enough to eat and wait for the ice to appear."

Maxim Deminov, another patroller, says he feels that living alongside each other for 15 years, humans and bears have somehow learned to co-exist.

"We have an unspoken agreement with the bears: we don't bother them on the cape, and they don't come into the village. If a bear violates this agreement, we drive it off hard with a snowmobile and some pretty painful rubber bullets. Fortunately, in recent years, no people or bears have been hurt."

In recent years, residents of Billings, another rural settlement in Chukotka,

"I tell them, 'Be patient, the polar bears have nowhere to go. Look at the sea, there is no ice there,'" says Tatyana Minenko, head of the village's bear patrol.

have been on the alert constantly from August to the end of November. Sometimes during those months, polar bears have had to be driven out of Billings every single day—even several times a day. But there is no walrus haul-out nearby, so the animals don't usually stay for long.

Patrol member Boris Ivashev says he thinks some bears have become less afraid of people.

"I try to scare them off with my ATV, but they look at me and don't react," he says. "This year, there was an incident

where a polar bear came into a village early in the morning and started going into the entryways of houses and checking the trash cans. People were frightened. We tried to chase him away for a long time, but he clearly didn't want to leave."

MORE CONFLICT AS HUMAN SETTLEMENTS EXPAND

In western parts of the Russian Arctic, human activity has spread rapidly in recent years. New work camps and military units are being built, and offshore oil and gas exploration and production are underway.

The internet is replete with footage from these places showing polar bears walking from house to house, eating cookies from human hands, or digging through garbage as people cheer them on. These sorts of human behaviours seem to habituate some of the bears so they are no longer afraid of people. This can lead to greater conflict, with the potential for deadly consequences on both sides. The most striking images have come from the Novaya Zemlya archipelago, where dozens of polar bears now live in garbage dumps. The fact that this has happened leaves no question as to why some bears are no longer afraid of people. It is obvious that human behaviours are pushing the bears toward conflict, with the potential for deadly consequences on both sides.

As sea ice continues to shrink, encounters between people and

polar bears on land are likely to become more frequent. The outcomes of such encounters will depend largely on the choices people make. We can learn from the patrols in Chukotka and drive bears away from places where people live and work without harming them, or we can keep provoking them into conflicts by attracting them with food. Hopefully communities and individuals can learn to make the right choices. ○



VARVARA SEMENOVA is WWF-Russia's Arctic species coordinator.

Regional polar bear responses to Arctic sea-ice changes

■ Sea ice is essential habitat for polar bears—but across the Arctic, it is disappearing quickly. As a result of rising temperatures caused by the climate crisis, sea-ice concen-

trations in the Arctic have declined in every decade since the start of satellite records in 1979. The ice that remains is younger, thinner, melts earlier in spring and refreezes later in autumn.

■ The changes we are seeing are not uniform. Polar bears are experiencing and responding to them in different ways and at different rates depending on what part of the Arctic they inhabit. Encounters between people and bears are on the rise across the region.

Southern Beaufort Sea: Denning onshore



In summer, less sea ice remains over the continental shelf, where polar bear prey are found.¹



Many bears stay with the ice in summer and ride it north. Others come onto land to feed on the carcasses of subsistence-hunted bowhead whales.²



Female polar bears have shifted onto land to make their dens.³

Southern Beaufort Sea

Last Ice Area: Last refuge?



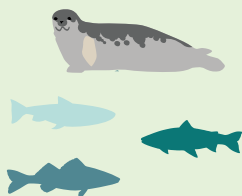
This part of the Arctic has the oldest, thickest sea ice. It is the place where summer sea ice is expected to last the longest.¹²

Last Ice Area

M'Clintock Channel and Gulf of Boothia: Less ice, more food



The past three decades have completely transformed the seascape. Old sea ice is replaced by annual ice that melts and forms anew each year. The ocean is more open.



There is higher productivity among fish and seals, leading to better hunting opportunities for polar bears.^{4,5}



The bears in M'Clintock Channel are fatter than they were in the mid- to late 1990s,⁶ and their numbers have risen over the past 2 decades.⁷

M'Clintock Channel

Gulf of Boothia

Hudson Bay: Less ice means lower survival rates



Sea ice is freezing later in autumn and melting earlier in spring.⁸



Polar bears have less body fat⁹ and populations are declining.¹⁰ Cub survival rates are lower. Polar bears are spending more time on land and turning to terrestrial food sources.¹¹

Hudson Bay

1. <https://doi.org/10.1029/2009.JC005436>

2. 10.1007/s00300-008-0439-7

3. <https://doi.org/10.1093/mammal/gyx181>

4. <https://www.nwmb.com/en/public-hearings-a-meetings/meetings/regular-meetings/2021/rm-001-2021-march-10-2021/english-14/8779-tab3c-gn-final-report-gulf-of-boothia-polar-bear-study-2015-2017-eng/file>

5. <https://www.nwmb.com/en/public-hearings-a-meetings/meetings/regular-meetings/2021/rm-001-2021-march-10-2021/english-14/8776-tab2c-gn-final-report-mclintock-polar-bear-study-2014-2016-eng/file>

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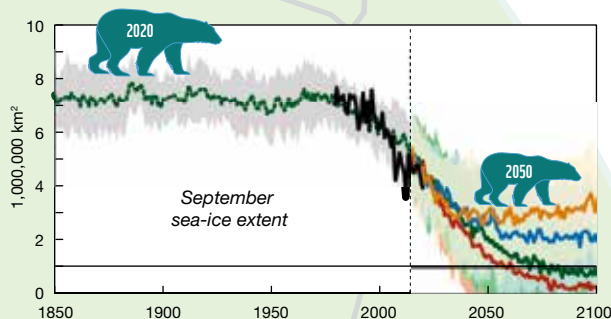
8. 10.14430/arctic935

9. 10.14430/arctic935

10. <http://pbsg.npolar.no/en/status/population-map.html>

30% fewer bears in 30 years

- Scientists predict that by 2050, as a result of sea-ice loss, the world will lose a third of its polar bears.
- Ice-free summers are expected as soon as 2035.
- The trajectories of sea-ice loss vary from 2050 onward, depending on the mitigation measures we take to reduce greenhouse gas emissions globally.



Laptev Sea



Not much is known about the polar bears here. Scientists anticipate that this area will be an important refuge as climate change continues to cause profound loss of sea ice.¹³

Laptev Sea: Using walrus breeding grounds



In summer and early fall, sea-ice cover is steadily declining.¹⁴

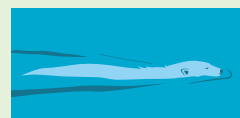


Polar bears spend the summer months in walrus breeding grounds along the coast and feed on young, sick or dead walrus.¹⁵

Svalbard: Future challenges



Svalbard is home to the fastest-diminishing sea-ice habitat among all 19 polar bear subpopulations in the Arctic. In the last 30 years, the ice-free season has lengthened by 20 weeks.¹⁶ Sea ice no longer connects to some denning habitats on islands in the Svalbard archipelago.¹⁷



Where some bears used to be able to walk to denning locations on sea ice in autumn, they now have to swim.



Polar bears here are continuing to recover from past commercial and recreational hunting.¹⁸

Svalbard

East Greenland: Getting closer to people



There has been dramatic loss of sea ice in the southeast in the past 2 decades. Sea ice is freezing later in autumn and melting earlier in spring.¹⁹



The lack of ice is bringing polar bears closer to villages,²⁰ increasing the number of dangerous interactions with people and the potential for conflict.

East Greenland

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Design: Ketill Berger, filmform.no

The Polar Bear Range States Agreement

A circumpolar plan to manage polar bears

In 1973, Canada, Denmark, Norway, the United States and Russia (then the Union of Soviet Socialist Republics)—collectively known as the Range States—came together to sign the **Agreement on the Conservation of Polar Bears**. Because more than two-thirds of the world's polar bears can be found in the Canadian Arctic, Canada has a significant stake in the agreement's success. **CAROLINE LADANOWSKI** is Canada's head of delegation and current chair of the Polar Bear Range States Agreement. As she tells *The Circle*, the agreement is not only key to shaping international and domestic polar bear research and management—it is critical to the bears' long-term survival.

Why do you think international conservation efforts are so important for polar bears across the Arctic?

Many of the threats facing polar bears, such as climate change, pollution and shipping, are circumpolar in nature, so the most effective way to manage them is through international cooperation on research and management initiatives. This will ensure we have access to the best available information to inform decisions about conserving and managing polar bears and their habitat.

For example, the most effective approach to monitoring essential habitat for polar bears would be for all

Range States to document any changes in the amount and quality of essential habitat within their borders—such as feeding, mating and denning habitats, migration corridors and terrestrial refugia. This would generate the most accurate picture of the state of polar bear habitat internationally.

What successes do you think the original 1973 Agreement has led to in Canada?

When the agreement was signed, one of the largest threats to polar bears was thought to be unsustainable harvest in some subpopulations. Since then, Canada has built a robust system for sustainable harvest management. We have also made considerable progress in establishing domestic and inter-jurisdictional arrangements for polar bear research and management, often through legally binding and non-binding instruments.

In 2013, the Range States made a joint declaration at the International Forum on the Conservation of Polar Bears. How did it change the focus of the Range States when it comes to addressing the threats to polar bears?

There were three key components to the declaration. First, it committed the Range States to developing



Caroline Ladanowski.

The Circumpolar Action Plan (CAP) for polar bears

■ The polar bear Range States met in March 2020 in Svalbard to discuss their ongoing cooperation to conserve polar bears. WWF published a blog about the meeting and the progress to date, including an assessment of whether international polar bear conservation efforts were working. See [Polar Bears Need the World to Act](#).

a Circumpolar Action Plan for polar bears. This was developed in 2015 and is now known as the CAP. That plan's goal is to secure the long-term persistence of polar bears in the wild and preserve their diversity. Second, it recognized that climate change is the main threat to polar bears—and that there's an urgent need for effective global mitigation of greenhouse gas emissions. Finally, the declaration recognized the importance and value of traditional ecological knowledge in informing management

Climate change is an international problem that all countries must work together to solve.

decisions, something that is important to Canada.

Why is it critical that the Range States work together to address climate change?

Climate change is an international problem that all countries must work together to solve.

Range States can communicate to the public, policymakers and legislators around the world the importance of mitigating greenhouse gas emissions. They are currently working closely with non-governmental organizations, Indigenous Peoples, academics and other partners to develop a strategy to convey the impact of climate change on polar bears and the Arctic environment.

We are also managing and reducing the impact of other potential stressors on polar bears and their ecosystems, such as oil and gas and mining development, unsustainable harvesting, pollution and other anthropogenic disturbances.

You mentioned that in 2015, the Range States developed the CAP. What has it achieved?

So far, the Range States have collaborated on research initiatives about the impacts of tourism on polar bears, the impacts of climate change on human-polar bear conflicts, the levels and effects of contaminants on polar bears and their prey, and sea-ice indicators of polar bear habitat. We have also worked together to produce tools, techniques and best practices related to human-polar bear conflict, a compendium of studies summarizing Indigenous Knowledge related to polar bears, and a website with information about the work of the Range States.



Photo: Peter Prokosh, www.girda.no/resources/4437

Polar bears wander the tundra near Churchill, Hudson Bay. Polar bears in this region may be among the first to show negative effects associated with climate warming and the consequent loss of sea ice.

What more do the Range States need to do to ensure they can meet the agreement's targets?

During the 2020 Range States' Meeting of the Parties, we developed seven objectives to guide our work from 2020 to 2023. These involve work on climate change communications, protection of essential habitat, sustainable harvest, management of human-bear conflicts, international trade of polar bears, and coordination of research and monitoring. Focusing on these objectives will enable us to make significant strides.

When the next meeting takes place in Canada in early 2023, it will commemorate the 50th anniversary of the signing of the 1973 Agreement on the Conserva-

tion of Polar Bears. At this time, the Range States will assess their progress toward the CAP targets over the plan's first eight years. We will also develop a clear path forward for the remaining two years.

How hopeful are you that the necessary steps can be taken to ensure polar bears' long-term survival?

I am very hopeful that through the collaborative work of Canada, Greenland, Norway, Russia and the United States—and through the efforts of people around the world to reduce their greenhouse gas emissions—polar bears will persist in the wild for the foreseeable future. ○

So far, the Range States have collaborated on research initiatives about the impacts of tourism on polar bears, the impacts of climate change on human-polar bear conflicts, the levels and effects of contaminants on polar bears and their prey, and sea-ice indicators of polar bear habitat.

A haven for polar bears

Polar bears have a “refuge” in the

The Arctic National Wildlife Refuge Coastal Plain has become a haven for polar bears looking for a safe place to den with their cubs as sea ice continues to retreat. The oil and gas exploratory activities that could kill these bears have come to a halt, but as **MICHAEL CRISPINO** explains, the threat remains.

IT'S ALMOST BREEDING SEASON for polar bears. Come fall, pregnant females will begin creating dens where they will give birth to and protect their cubs until they're ready to venture out alone in the Arctic's unforgiving environment. The world that cubs are born into next winter will look much different than it did a couple of decades ago.

Sea ice is essential habitat for polar bears—they need it to find mates, travel, hunt and create maternal dens. But the ice is retreating, and scientists estimate that roughly one-third of all female bears in the Southern Beaufort Sea

population along Alaska's North Slope Borough have adapted by making their dens on land along the Coastal Plain of the Arctic National Wildlife Refuge.

It's an attractive spot.

A LONG HISTORY OF VALUE

The US government first protected the Arctic National Wildlife Refuge Coastal Plain and surrounding areas in 1960. But that was hardly the first time the value of this landscape was recognized. The rich productivity and biodiversity found in the Arctic Refuge have sustained Indigenous communities for mil-

lennia. Indigenous People living in the United States and Canada—including Gwich'in, Iñupiat and Inuvialuit—continue to maintain close connections to the bounty of the environment.

The changing climate and the prospect of profits first began drawing the oil and gas industry to the Coastal Plain in the 1960s. While the goal is extraction, the first step is conducting seismic testing to locate oil deposits. This activity requires heavy, destructive tracked vehicles to conduct surveys and drag large camps across the tundra to house hundreds of workers. This equipment

Often described as barren, the Arctic National Wildlife Refuge Arctic Coastal Plain is far from it. The Hulahula River in the area is designated for petroleum extraction.

US Arctic—for now

is heavy enough to disturb and possibly even crush dens, potentially killing mothers and their cubs.

Not all Alaska Natives are opposed to drilling. It can bring much-needed revenue into remote communities that would otherwise have few economic alternatives. In fact, an Alaska Native corporation is currently seeking permission to conduct seismic testing—and ultimately, to drill—in the Coastal Plain.

A TURNING TIDE

Still, over the last few years, industry has largely backed off its interest in the area. Big-name financial firms have pledged not to support activities in the Refuge, and in January 2021, the oil and gas industry largely failed to show up for a rushed sale of oil and gas leases. Industri-

al development of the area is now widely viewed as a failed idea, and any hope that remained for those who still want to drill was quickly dampened with the arrival of a new presidential administration.

During its first days in office, the Biden administration paused all activities that advance oil and gas development on the Coastal Plain of the Arctic Refuge. It's a temporary reprieve, but it gives all forms of life in the Refuge some room to breathe—for the first time in a long time. And lawmakers in the US Congress have introduced the *Arctic Refuge Protection Act*, which would repeal the oil and gas programme in the Refuge and protect the Coastal Plain from any future oil and gas exploration or development.

No one is quite sure just how much

oil is beneath the surface of the Coastal Plain, but there is a strong scientific consensus that it should remain where it is. The climate crisis is rapidly changing the entire region, and its implications are global. More oil to burn would only fuel the crisis and put the Refuge and everything in it at risk from toxic spills and mishaps. Large-scale industrial development would also degrade the Coastal Plain's majestic landscape and undermine its ecosystem functions.

If permanent protections are secured, and if Alaska Native communities have the support they need to reduce their economic reliance on fossil fuel production, then polar bear cubs born into the next generation may find that a different world awaits them—perhaps a less threatening one. That part is up to us. ●



MICHAEL CRISPINO is senior director, Oceans communications for WWF-US and leads its communications on the Arctic.

No one is quite sure just how much oil is beneath the surface of the Coastal Plain, but there is a strong scientific consensus that it should remain where it is.

Polar bears evolved to exploit an abundant food resource that was once spread widely across the Arctic sea ice: ringed seals and bearded seals.





Understanding what fuels polar bear energy

Playing the long game

Polar bears evolved from a brown, terrestrial omnivore to become a white, marine carnivore that has long thrived in the Arctic's icy environment. But as [ANDREW DEROCHE](#) explains, given the pace of change in the Arctic, evolution doesn't favour this highly specialized bear of the ice. ➤

POLAR BEAR RESEARCH has long been subject to unplanned interruptions: the nature of these fascinating animals and the environments they live in mean unpredictability is par for the course.

I once waited more than three weeks in a remote field camp for the fog to lift before I could start my work. A colleague once spent a month with a helicopter on standby waiting for good weather, and finally had to give up without even seeing a bear. Conservation takes a three-generation-length perspective—and for polar bears, that means 33 to 45 years. Arctic ecosystems are also incredibly dynamic, and snapshots in time can be misleading. As a result of all these factors, studying polar bears requires patience—and drawing conclusions about them requires long-term data.

My research team recently investigated the population energy dynamics of polar bears in western Hudson Bay. Energy dynamics examines the total amount of energy stored in each bear in a population and its variation over time. Studying these changes allows us to understand the links the bears have to their prey and how changing ice conditions are affecting the population.

Our project built on the results of long-term research by Environment and Climate Change Canada and the University of Alberta. Monitoring the number of bears in a population is common, but we applied a new spin: we estimated the energy in each bear of a given sex, age and reproductive group in a population. Then we merged these data to estimate the energy in the overall population.

TAKING AN ECOSYSTEM APPROACH

At this point, you might be wondering: Why study polar bear energy?

Gathering information about population abundance is useful for understanding harvest rates and population status, but it provides limited insights into the mechanics of a change over time. Increasingly, conservation biologists are interested in a broader ecosystem approach. The energy at one



A.E. Derocher, University of Alberta, Canada

The snow shows traces of a successful ringed seal kill made by a polar bear along a refrozen lead (crack in the ice). Such leads are prime polar bear hunting habitat because ringed seals maintain breathing holes in the young, thin ice.

level of an ecosystem is affected by the level below. For example, the number of wolves that an area can support may be determined by the number of deer, moose and elk—and in turn, the number of herbivores in the area will be affected by the available vegetation.

In our study, we found that the energy held by the western Hudson polar bear population declined by more than 50 per cent between 1985 and 2018. That's a major change—and obviously, if there is less energy in the bears, it means they're either taking less energy from the seal populations (their main food source) or they're using more energy. That's the next question that needs answering.

Arriving at such insights requires us to take a long-term perspective, archive data, standardize methods and follow an incremental approach. Each research step takes us closer to understanding the natural and unnatural history of the bears.

From a conservation perspective, we're most concerned about the complex effects of the climate crisis, which are increasingly complicated because of the possibility of new diseases and para-

sites travelling to the Arctic as southern species move north. We also know the bears are exposed to high levels of pollution, which weakens their immune system. Given that levels of pollutants circulating in polar bears' blood increases as their condition declines—and that sea-ice loss also leads to skinnier bears—it's easy to see the potential for new concerns.

MERGING LOCAL KNOWLEDGE AND LONG-TERM RESEARCH AND COMBATING MISINFORMATION

Research provides a constant flow of insights, but we need to temper them against what has been seen in the past.

Polar bears may eat a variety of species as the sea ice disappears, but they can only survive as long as they have an abundance of energy from seals as their primary prey.

Traditional ecological knowledge from northern people offers valuable context, and historic understandings can give us clues about modern observations.

But increasingly, observations made in the Arctic are communicated to the world without appropriate context. For example, we know that polar bears can eat more than 80 different species—from mushrooms to puffins to porcupines. However, does such a varied diet bode well for the future of polar bears in a warming Arctic?

It would be nice to think so, but we need a long-term perspective to be certain. Polar bears evolved from a grizzly bear (brown bear) ancestor. While it's hard to be certain about exactly when the two species diverged—because of hybridization events in the distant past—it's clear that polar bears retained the ability to eat almost anything in their environment that provides energy.

We found that the energy held by the western Hudson polar bear population declined by more than 50 per cent between 1985 and 2018. That's a major change.

Reports of polar bears eating a variety of foods are interesting, but they don't provide meaningful insights into the bears' likely future. Polar bears evolved to exploit an abundant food resource that was once spread widely across the Arctic sea ice: ringed seals and bearded seals. The seals' blubber layer allows them to survive in the cold waters of the Arctic—and that same energy-rich blub-

ber makes it possible for polar bears to survive.

Polar bears may eat a variety of species as the sea ice disappears, but they can only survive as long as they have an abundance of energy from seals as their primary prey. And we do know one thing for certain: polar bears used to live as far south as Sweden, but they disappeared from there as the ice melted. There are clear links between fossil fuel use and sea-ice loss, which means reducing greenhouse gas emissions is a critical part of polar bear conservation. We have an opportunity to act—and the sooner we do, the better the odds for polar bears. ○



ANDREW DEROCHER is a biological sciences professor at the University of Alberta in Edmonton, Canada. He has been studying polar bears for 38 years.

An adult bearded seal rests near a flaw lead north of Cape Churchill, Manitoba. These seals can weigh more than 400 kg and are a common prey item for polar bears.



A. E. Derocher, University of Alberta, Canada

Sustainable polar bear management

Combining scientific and Indigenous knowledge to conserve polar bears

Polar bears became the poster children for climate warming because it's easy to understand their dependence on sea ice as a platform from which to hunt their main food source: seals. But doing in-depth research on the subject in Canada is complicated.

IAN STIRLING explains why he thinks that to protect the bears as their situation grows more precarious, we need to go back to the formula that led to early success: cooperation between researchers and Indigenous hunters.

I'VE SPENT THE PAST 50 YEARS researching polar bears to help guide management decisions and environmental assessments in Canada. From the beginning of my research on polar bears in western Hudson Bay and the Beaufort Sea in 1970—and later in other parts of the Canadian Arctic—a top priority was to determine the boundaries of possible subpopulations, then estimate their sizes in order to calculate sustainable harvest levels for Inuit hunters. But where do you start from a position of little first-hand knowledge on such a huge, expensive and important task?

The answer was obvious: from the beginning, each of these projects benefited enormously from invaluable local ecological knowledge that experienced hunters shared willingly. Their knowledge of denning locations, the bears' prime seal hunting areas and aspects of seasonal movements and distribution was thorough and totally reliable. However, on other topics, neither Inuit nor scientists had the answers, so studies were needed. For example, questions about offshore movements could only be addressed using satellite radio collars. When the first results became available, hunters were fascinated. Often, they were surprised to realize that they shared a subpopulation of polar bears with hunters from other areas or juris-

dictions.

Because of concerns about the possible overhunting of polar bears, temporary quotas were established in 1968 in the Northwest Territories and Yukon to control the harvest until revisions could be made using research results. Hunting polar bears is of primary cultural and economic importance to Inuit hunters, so estimating sustainable harvest levels was a priority for both hunters and scientists. To obtain that information, we needed to temporarily immobilize many bears in each area and tag individuals, not just for population studies but to collect essential specimens—for example, a small, non-functional, pre-molar tooth from which the age of each animal could be determined and used to calculate rates of annual survival and reproduction.

Later, the widespread use of satellite

collars provided essential information on the year-round movements of many individual bears, greatly improving the accuracy of our knowledge of preliminary borders, which had been based mainly on the locations where previously captured bears were recaptured or shot by hunters. Not everyone liked the idea of the animals being handled, but it was widely accepted that the results of the tagging and radio-tracking studies—when evaluated alongside local ecological knowledge—were needed to meet our objectives together. (Nevertheless, because Inuit hunters and scientists alike had concerns about whether handling the bears might have unknown negative side effects, several studies were undertaken to evaluate that question. To date, nothing negative related to the bears' survival, body condition or reproduction has been identified.)

From the beginning, each of these projects benefited enormously from invaluable local ecological knowledge that experienced hunters shared willingly. Their knowledge of denning locations, the bears' prime seal hunting areas and aspects of seasonal movements and distribution was thorough and totally reliable.

*To protect polar bears,
we need cooperation
between researchers and
Indigenous hunters.*



Photo: Staffan Widstrand

BRINGING THE ENVIRONMENT INTO THE PICTURE

We also needed to increase our knowledge of how natural fluctuations in the polar bears' environment might affect them, not only for harvest management but to inform environmental assessments of large offshore industrial activities. For example, in the Beaufort Sea, we found that between 1974 and 1975, reproduction of ringed seals plummeted by about 50 per cent because of natural causes. The proportion of young-of-the-year seals harvested by Inuvialuit hunters dropped from the normal rate of about 30 per cent in the open-water hunt in 1974 to less than five per cent in 1975 before beginning to recover in 1976. Not surprisingly, the reproduction and cub survival of polar bears plummeted as well. Significantly, a highly knowledgeable Inuvialuit hunter told me at the time that he had seen this before, noting that "it happens once in a great while." It was clear that we needed to know more about such events and how they might influence management considerations.

In response, we began a long-term population study in the early 1980s in western Hudson Bay to monitor the polar bear population in relation to natural environmental fluctuations. At the time, we were not even thinking about climate warming. At first, as expected, our results indicated fluctua-

tions between years as a consequence of natural variability. However, by the mid-1990s, we were detecting negative effects on the population that resulted from the loss of sea ice because of climate warming. Slowly but steadily, the bears' body conditions and their cubs' survival rates declined, as did the size of the population.

Since then, similar results have been confirmed in other populations. Not all populations are showing negative effects yet, but if the Arctic continues to warm as predicted, all will be negatively affected eventually. To prevent this, we need to stop anthropogenic climate warming. Without access to 20 years of data collected the same way every year, we would not have been able to confirm what is happening. This fact underlines the critical value of long-term studies on polar bears and the effects of environmental change in the ecosystem.

Unfortunately, in areas where population declines have been confirmed, reductions in harvest quotas have been implemented or recommended—because it is simply not possible to have a sustainable harvest from a declining population. Such conclusions have precipitated conflicts in places like the western Hudson Bay coast: local people have seen more bears in recent years and conclude that their numbers are increasing. However, the science tells

us that there are more bears in towns because as temperatures rise and the open-water period lengthens, many are running out of the fat stores they need to survive through the summer. Thus, some bears enter towns because they are looking for food.

The results of more than 30 years of careful research, including some done by the Nunavut government, confirm that the population is indeed declining. These differing views on the numbers of polar bears have made polar bear management more contentious. Consequently, managers have to make difficult decisions because of a rapidly changing environment.

LOOKING BACK TO MOVE FORWARD

Looking back, I was privileged to be part of what was probably the most exciting time to be involved in polar bear research in Canada. The challenges were new, and interested parties worked together nationally and internationally to conserve and manage the bears sustainably. Experienced hunters shared valuable information and worked with scientists. We learned from each other. Canada was widely regarded as a world leader. But we didn't get there by accident.

More recently, concerns have been expressed about whether data-based management is still working. To me, the answer is simple: we need to simply go back to working together, and we need to use the most effective non-harmful methodologies available, including the temporary immobilization of polar bears for tagging, collection of specimens and deploying satellite collars to study movements. That is what worked earlier, and it can still work moving forward. ○



IAN STIRLING is a research scientist emeritus in the Wildlife Research Division of Environment and Climate Change Canada and an adjunct professor at the University of Alberta in Edmonton, Canada.

An uneasy balance

Patrolling for polar bears in Whale Cove,

In fall 2019, WWF responded to a request from the Issatik Hunters and Trappers Organization to fund a locally run polar bear patrol program in Whale Cove, Nunavut, on the western shore of Canada's Hudson Bay. For two months every summer and fall, two patrollers work in shifts to look for bears that come too close to the community. The goal is to deter the polar bears from entering the community and avoid having to destroy those that may pose a threat to residents.

JAMES ENUAPIK joined the program in 2020. Originally from Coral Harbour on Nunavut's Southampton Island, he moved to Whale Cove more than 35 years ago, when the hamlet of 455 was just a quarter of its current size. He spoke to *The Circle* about his experience with the program—and the changes he's seen in the region's polar bear population.

What are some memorable encounters you had as a patroller?

I live right on the shoreline, basically in the neighbourhood where we ferment our whale blubber. One day there were kids playing around that area and they didn't know there was a polar bear there. I was lucky enough to have an Elder come by who lives around that area. He came to my house to tell me that there was a polar bear. Out of my window, I could see little kids playing on the hill, and the bear was invisible to them. That jolted me. I almost shot at

the bear instinctively. But knowing that I was the polar bear patrol guy, I had to tell the community members not to shoot it and that I would try and deter it with my own firearm, which I did. Luckily, the polar bear swam away from us, from the community. Nobody was harmed, and neither was the bear.

What changes have you seen in polar bears over your lifetime?

Over the years, I've absolutely seen the changes to the polar bears' sizes. Back

when I was a bit younger, when the season opened up, all the hunters would come back with 10, 12 or 13 footers. Now, the polar bears that are caught during the season are only six to nine feet. I'm pretty sure it's got to do with the global warming, right? Because the foods they eat throughout the season are on the sea ice and the sea ice is redistributing much faster now than before. The polar bear's main food is the seal. But the seal is always on the sea ice, and with the sea ice receding, the polar bears tend to go into hibernation or go inland, where they eat much less protein.

Nunavut



James Enuapik

I'm 100 per cent sure that those polar bears are going hungry and they're having to go into communities to try and feed themselves, which endangers both the community and bears.



Photo: Brandon Laforest/WWF-Canada

How have interactions between polar bears and the community changed over the years?

Back in the day, polar bears were absolutely scared to come into contact with human beings. When a polar bear came into the community, the Elders would say it was because he wanted to be eaten. Nowadays, our customs have changed. We are now intending not to kill the bear. We are trying to get the polar bear away from the community so it cannot harm anyone or itself. But we have been having more interactions with the polar bears because they need to eat whatever they can—and landfill has rotting food

that smells. I'm 100 per cent sure that those polar bears are going hungry and they're having to go into communities to try and feed themselves, which endangers both the community and bears.

Given the changes you're seeing, what do you think the future holds for polar bears where you live?

In the future, I see them declining in numbers. I see them declining in size. And due to global warming, I'm pretty



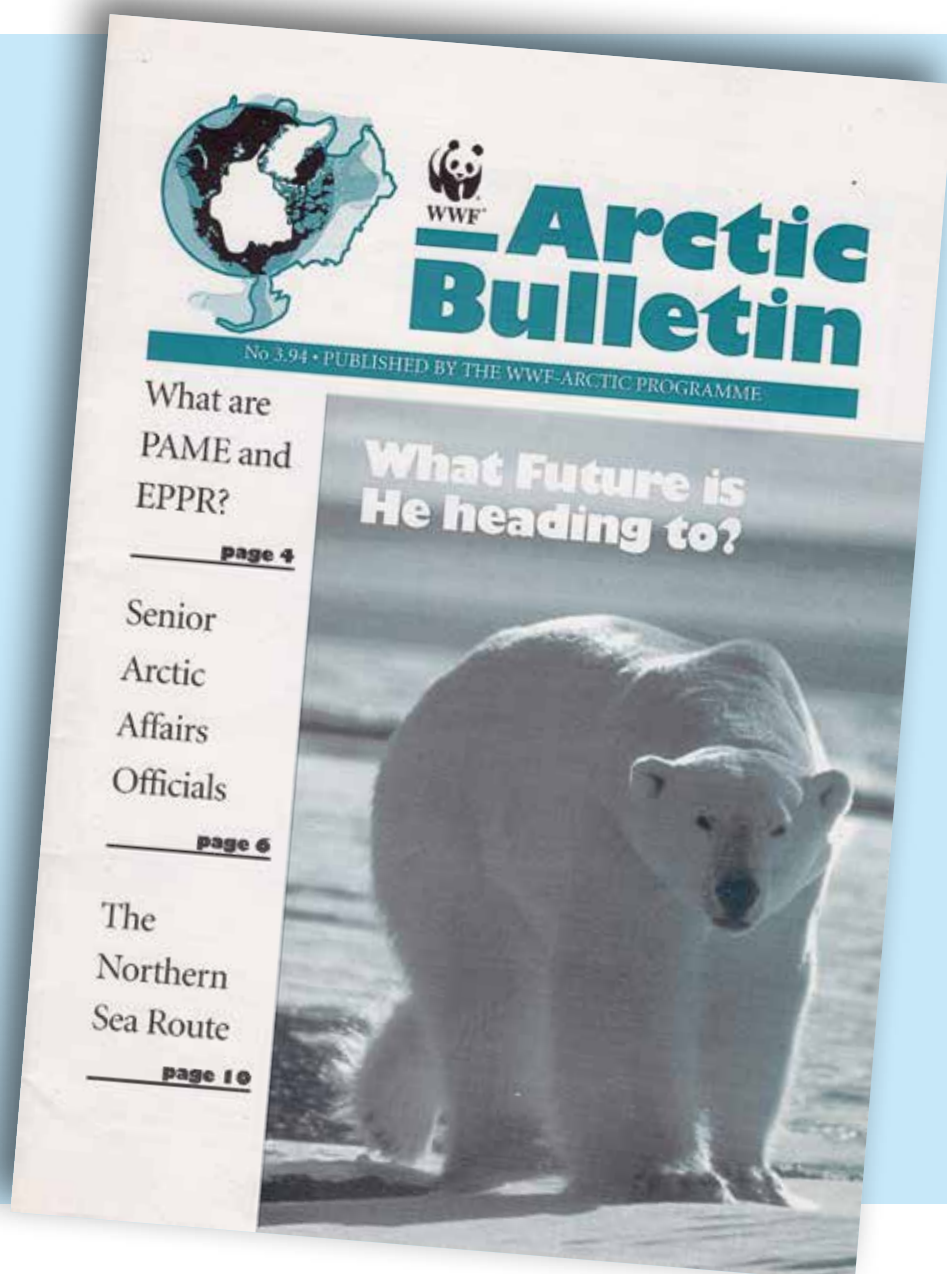
Children walk along the road in Whale Cove.

sure that's going to adversely affect their ability to hunt. We're probably going to see a decline in numbers overall in the Arctic Circle due to the ice receding faster and more human activity. That will mean more unwanted shootings as polar bears attack humans, thinking they are food. And we humans have to defend ourselves with rifles and we have to shoot them. And that's not right. ●

THE PICTURE

Our first polar bear cover

Before it became *The Circle*, The WWF Arctic Programme's magazine was called the *Arctic Bulletin*. The third issue in 1994 was the first time a polar bear appeared on the cover. The question posed by the headline is one we are still trying to answer, 27 years later.



Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

www.panda.org/arctic