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TUNDRA TIMES

The Annual Newsmagazine of Polar Bears International

Fall 2014



Pathways for Polar Bears

The Long View...



photo by Kt Miller

Nearly forty years ago, scientist Ian Stirling had a novel idea: why not move an obsolete fire lookout tower to a remote location on Cape Churchill, where polar bears gather each fall to wait for the sea ice to form? His purpose: to watch the natural behavior of polar bears from the safety of the tower's hut.

"We did not know what polar bears did all day while waiting for the ice to form again," Stirling

recalls. "But camping in a tent on the ground, literally in the midst of a herd of polar bears, was an unattractive option."

Unattractive indeed. Polar bears, while beautiful, are also dangerous and powerful. Those features—coupled with the remoteness of their habitat—make studying them especially challenging.

This past summer, I thought of Stirling's pioneering work when we sent a crew to Churchill to help rebuild the Cape Churchill Tower. These days, travelers to Churchill can watch polar bears from Tundra Buggies® and the tower is an internet relay station that also serves as a mount for the



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Cape Churchill Polar Bear Cam. Funded by explore.org, the cam connects viewers around the world with the daily activities of polar bears—sleeping, sparring, cleaning their fur—in short, allowing all of us to see what polar bears do.

Tundra Buggies and the Polar Bear Cam connect people with wild polar bears, inspiring them to care about this magnificent, but threatened, species.

years, but many questions remain, especially in connection with the threats the bears face in a warming Arctic. At PBI, polar bear conservation remains at the heart of what we do, with insights from fieldwork guiding our efforts and informing the projects we help fund. Education and outreach are part of that effort, with polar bears and the Arctic the lenses through which we view the world and share that world with others.

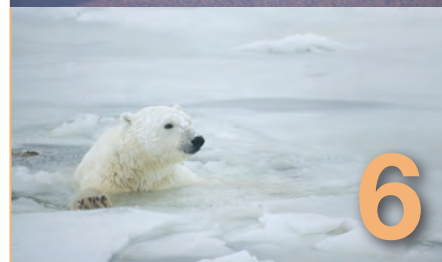
We invite you to join us in entering that world—the polar bear's world, our world—through this year's edition of Tundra Times.

Krista Wright
Executive Director

Inside



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ON THE COVER

Striding across the top of the world, the polar bear is the iconic symbol of a threatened Arctic. To the Inuit, he is Nanuk: wise, powerful, "almost a man." Norse poets called him the great lonely roamer, the sailor of the floes. To all of us at PBI, the polar bear, Nanuk, the sea bear, guides and inspires everything we do.

COVER PHOTO AND
CONTENTS PHOTOS ABOVE:
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Dan generously provides PBI with total access to his award-winning images free of charge.



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By Dr. Steven C. Amstrup

In 1980, when I began my polar bear research, I could see the summer-time sea ice while standing on the north shore of Alaska. If lucky, I might even see a polar bear hunting for seals out there.

Now, because of human-caused global warming, the summer ice is hundreds of miles away, made invisible from the shore by the earth's curvature.

Witnessing this dramatic change within my lifetime has been sobering. I am keenly aware that as the sea ice goes, so goes the polar bear. In fact, in 2007, I predicted that if we stay on our present path with greenhouse gas emissions, we could lose two-thirds of the world's polar bears by the middle of this century. And all might be gone by century's end.

And yet ... I am often asked if we can save polar bears from extinction, and my answer is an emphatic yes!

This is a human-caused problem and humans can fix it.

My work and the work of many other scientists shows that we still have time to halt rising global temperatures, to save the sea ice, and to save polar bears for our grandchildren and great-grandchildren to see. But it's up to our generation to take action—and the sooner we do so, the better.

This is a human-caused problem and humans can fix it.

Earlier this year the hundreds of scientists whose independent research composes the Intergovernmental Panel on Climate Change (IPCC) agreed.

Through steep and rapid greenhouse gas reductions, we can preserve the sea ice world that polar bears require. And doing so will also preserve

a climate in which humans can continue to flourish.

The stakes are high—for people and for polar bears—but I'm feeling increasingly optimistic. Recent limits on power plant emissions by the EPA suggest that the U.S. is recognizing its necessary role as a world leader in the battle to preserve our climate. Now we must all work to maintain this leadership momentum and continue toward a different path and a renewable future, a future that will save the polar bears, countless other wildlife species—and us.

Dr. Steven C. Amstrup is the chief scientist at Polar Bears International and was the Polar Bear Project Leader at the U.S. Geological Survey in Alaska for thirty years. In 2012, he was awarded the Indianapolis Prize, considered the Nobel Prize of Animal Conservation.

What can be done to help polar bears?
How can we balance the competing
interests of polar bears and people in a
warming Arctic, respecting indigenous
traditions and keeping a wary eye on
the growth of industry? How can we
solve a problem caused in the South—
climate change—to save the sea ice of
the Far North?

During my more than twenty years of arctic fieldwork, I've come to appreciate the complexities of the unique environment where polar bears roam and the need to work collaboratively to help them.

Over the past year alone, I've been fortunate to take part in a number of conservation planning efforts for polar bears, working at levels from local to global. Each meeting provided the chance to clearly outline the threats now and in the future—and to develop solutions.

Range of Threats

Scientists clearly see climate change, arctic warming, and the loss of sea ice as the primary long-term threat to polar bears. However, that threat will unfold at different rates and scales across the Arctic. Due to natural variation, the projected sea ice losses will fluctuate between years and possibly stabilize at times while still continuing their long-range downward trend.

Although global warming is the greatest long-term problem for polar bears, we will also need to monitor and address a number of current management concerns. These include hunting, industrial pressures like shipping and offshore oil development, human-bear conflicts, and a larger human presence in polar bear country.

Successful conservation will require a blend of local to global actions that address today's threats and those looming across the current century.

Geoff York is the senior director of conservation at Polar Bears International. He has twenty years of arctic field experience, most recently as the arctic species and polar bear lead for WWF's Global Arctic Program. Prior to that, he worked as a biologist and program manager for the U.S. Geological Survey's Polar Bear Project.

PATHWA



Top Four Priorities

Looking out over the next ten years, there are some clear priorities for polar bear conservation, with concrete opportunities for everyone who cares about these amazing animals:

Climate change. The world's nations must reach a global agreement to aggressively reduce greenhouse gas emissions, starting at the 2014 climate planning talks in Lima, followed by the signing of a new document at the 2015 Paris conference.

At the same time, regional and local governments must continue their leadership—reducing emissions and adaptively planning for changes already in the climate system.

Polar Bear Range States Conservation Plan. The five polar bear nations have verbally committed to create and implement a range-wide conservation plan for the bears concurrent with national research, monitoring, and management efforts already underway.

We must support these efforts, adding pressure where necessary, to ensure plans are complete and fully implemented by 2016. This will require a team effort from everyone involved.

Closing information gaps. Of the nineteen polar bear populations, only three are well-studied. Many remote regions are virtually devoid of data. In

addition, we still have much to learn about the polar bear's use of land during key aspects of its life cycle, including important denning areas and time spent onshore in summer.

Regular monitoring is also a struggle due to the remote logistics and high costs. Blending new aerial and satellite study methods and more traditional approaches promises to help solve this age-old problem.

Planning for new challenges. As polar bears in some regions spend more time onshore and in larger numbers, new challenges are emerging. Human-bear conflicts are on the rise around the Arctic, requiring increased investment in education, outreach, tools, and training to prevent tragic outcomes.

Concentrations of bears on shore also pose unique risks for the spread of disease among polar bears and exposure to toxic chemicals, especially with the increased potential for oil spills. Plans to deal with the mass oiling of polar bears or incidents of bears in poor condition onshore are generally lacking.

Reasons for Hope

The challenges to polar bear conservation are complicated and can be daunting, but there are reasons to feel hope. Unlike so many large charismatic species, polar bears currently roam across much of their historic range and in relatively large numbers. Negative changes are affecting the bears in some regions, but not all—giving us a window of time to take positive actions.

In addition, the world has started to pay attention to the Arctic and the plight of polar bears, and governments are responding with increased planning, collaboration, and investment—though much more is required.

Most important, a growing number of individuals, corporations, and leaders have started to take the threats of climate change seriously, greatly stepping up investments in renewable energy, sustainable practices, and energy efficiency. These steps are reminders that we can live well while using less and lowering our carbon footprint.

While we at PBI are focused on the bears, we understand the issues facing them are not unique to the Arctic, nor will the impacts stay in the Arctic. Instead, their significance is global and signals the changes coming to our own backyards. If we conserve umbrella species like the polar bear, we'll be protecting the broader arctic ecosystem and the cascading threads that stretch across the globe. In whatever way you can, we invite you to join the effort.

MYTHS

about Polar Bears

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PBI is committed to conveying the most accurate information we can to our constituents. In that spirit, our chief scientist, Dr. Steven Amstrup, responds to frequent questions and clears up myths.

Aren't scientists still debating global warming?

Not at all. Ninety-seven percent of climate scientists, the experts in their field, have reached a consensus that global warming is real and is human-caused.

Can't polar bears just start eating berries and other land-based foods like other bears?

We don't have evidence that such foods could provide enough nutrients to sustain any of the existing populations of polar bears. It's true that polar bears have evolved to eat seals, but they are opportunistic hunters and if seals are not available because the sea ice is absent, they will eat almost anything—including vegetation, berries, geese, and bird eggs. Unfortunately, few polar bears have been observed eating more nutritious foods like birds or eggs, and those foods are not abundant enough or distributed widely enough to be a population benefit. And plant foods are just not nutritious enough to compensate for lost seals. Much like a human eating a stalk of celery versus a juicy steak, the nutritional benefit is not the same.

Hasn't the earth's temperature stabilized?

No, satellite measurements show that more energy has been coming in from the sun than is escaping back to space. The earth's heat load, therefore, has continued to increase in step with greenhouse gas increases. Luckily, over the past few years, air temperatures—the temperatures we feel—have risen more slowly, but the heat

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is still there, most of it in the oceans. At some point the ocean will release more of that heat into the air, and we will feel a surge of warmth.

Haven't polar bears faced warmer times in the past and survived?

Polar bears never have faced periods as warm as we could see in the next fifty years. There have been warmer periods in the past, but they were not only cooler than what we will experience if we don't reduce greenhouse gas emissions, they were part of natural cycles of warming and cooling. These cycles were driven mainly by the variations in the earth's orbit around the sun and by events like massive volcanic eruptions. The current warming is not part of a cycle, and there can be no cooling unless humans take action.

Hasn't the climate always changed?

The current warming is different from anything we have ever faced. It is manmade, caused by a build-up of greenhouse gases from burning fossil fuels. Changes in the earth's orbit around the sun dictate that we should be undergoing a gradual cooling phase—yet we are overpowering that natural cooling with our greenhouse gas emissions.

S and Misconceptions and Climate Change

How warm will it get?

The earth's temperature can only continue to increase as long as greenhouse gas concentrations rise. The earth won't heat up to some new stable level and then hold steady. Without our action, the planet can only continue to become hotter and hotter, beyond anything polar bears (or humans) have experienced before.



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If global warming is real, why was it so cold last winter?

Scientists base their measurements on the global average temperature, not local or regional weather. Last winter when the American Midwest and East were so cold, much of the Far North was cooking. The global average temperature in January 2014 was the fourth warmest of any January ever recorded despite the natural variation that led to a deep freeze in some areas.

Aren't there more polar bears now than ever?

We have never had firm numbers on the global population of polar bears. We do know that some polar bear populations, like those that I studied in Alaska for 30



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years, were known to have grown after excessive hunting was controlled in the early 1970s. But we only recently have developed estimates of several populations and still have no estimates for others. Regardless of how many bears may have been around in times past, however, as long as temperatures warm and sea ice habitat continues to decline, polar bears ultimately can only decline. Wild polar bears will become extinct unless we take action to reduce greenhouse gas emissions.

Could polar bears survive by mating with grizzlies?

Increased interbreeding will not preserve the magnificent life form that is today's polar bear. It might preserve some polar bear genes in an animal similar to today's grizzly bear—but that is not what we are after. Scientists have observed a few polar bear-grizzly hybrids in the wild, and genetics studies indicate some interbreeding has occurred for millennia. Regardless, given the rapid pace of current sea ice losses, polar bears will starve out of their present range long before grizzlies swamp their genes.

Is it too late to save polar bears?

Definitely not! We have the power to stop human-caused climate change and save the arctic ecosystem by greatly reducing greenhouse gas emissions.

Ice. Ice. Ice. It's critically important to polar bears. But all ice in the Arctic is not the same.

Arctic ice comes in freshwater and saltwater varieties, and the two are very different. *Freshwater ice* comes from glaciers. When glaciers “calve” or shed ice into the ocean, they create massive chunks called icebergs or smaller bergy bits. Both float in the sea with most of their mass under water.

Saltwater ice or *sea ice* forms when seawater freezes. Once formed, sea ice is either annual ice, which melts and forms every year, or multi-year ice that survives several years without melting.

Sea ice may be relatively flat or heavily deformed depending on how winds and currents have moved it around and slammed different sections or floes together. Tides, currents, winds, and other weather factors continually shape and reshape it.

Within the two basic varieties of arctic ice—freshwater and sea ice—mariners have identified more than forty forms. But what's in a name for a polar bear? All that matters to this arctic predator is whether the ice is suitable for hunting seals—the polar bear's favored prey.

The Right Ice

Only sea ice is useful to polar bears. The skin of ice on top of the ocean forms a barrier through which seals must maintain breathing holes; this barrier is also a platform on which the bears can walk and search for those holes. Bumps and ridges on the surface catch drifting snow. Ringed seals create lairs in these drifts to give birth to their pups—providing plump and easy prey for polar bears.

Sea ice must also be the right thickness to provide good habitat for polar bears. Ice that is too thick—like old multi-year ice—doesn't allow light to penetrate into the water and stimulate productivity. Thick ice also makes it difficult for seals to maintain breathing holes. But sea ice that is too thin won't support a polar bear's weight. More important, thin ice melts too soon in summer, leaving polar bears without a platform from which to hunt.

The productivity of the water under the ice is also critical. Sea ice that stretches across biologically rich near-shore areas is prime habitat for polar bears. But sea ice over deep, less productive offshore waters is nature's equivalent of a nearly empty grocery store.

Four Sea Ice Regions

It also helps to understand that polar bears range in nineteen different populations across the Arctic, within four different sea ice regions. They include:

Seasonal Ice Eco-region

These areas occur at the southern end of the polar bear's range—where the ice melts each summer and the bears are forced ashore. Polar bears in seasonal areas are the most endangered, with longer and longer ice-free seasons testing the limits of their fat reserves.

Polar Bear Divergent Ice Eco-region

In these areas, sea ice forms along the shore but then retreats, especially in summer. Bears here must come ashore or follow the pack ice as it retreats north—often over deep unproductive areas. Polar bears that live in these areas are at great risk from longer and longer swims, prolonged fasting periods, and encounters with humans on shore.

Polar Basin Convergent Ice Eco-region

Sea ice formed in the Divergent Ice Eco-region collects along shorelines here, providing polar bears with access to seals. This region could retain ice until the end of the century—one of the last places where polar bears will find ice in a continually warming world.

Archipelago Ice Eco-region

Ice has historically covered the channels between islands in the Canadian High Arctic and adjacent to Greenland year-round. The northern parts of this region are predicted to be the one of the polar bear's last strongholds. But even here, where ice has remained for perhaps a million years, the sea ice is likely to disappear within one hundred years unless greenhouse gas emissions are greatly reduced.



A Field Guide to Arctic Ice

SPEAK UP FOR POLAR BEARS

Polar bears can't walk to the climate change talks in Lima and Paris to ask for help! You can speak up for them by signing our **Petition for Polar Bears**. We'll deliver the signatures to world leaders at both meetings.

This year's talks in Lima will lay the groundwork for the global agreement in Paris in 2015. That's why we're gearing up now to make an impact. And what better time to launch our petition than during this year's **Polar Bear Week, November 2-8?**

Polar Bear Week is our annual celebration of the polar bear, the iconic symbol of the Arctic. But it's also a push for their conservation. You can help by:

- Signing our **Petition for Polar Bears** in support of a renewable future
- Taking the energy-saving challenges in our **Save Our Sea Ice Campaign**

Visit our website to sign the petition and for details on our Save Our Sea Ice Campaign. Together we have the power to make an impact.

POLAR BEARS ARE COOL: OUR FAVORITE FACTS

BY PBI STAFF MEMBERS

“Polar bear moms spend two and a half years teaching their cubs how to live and hunt in the Arctic. The long tutelage is impressive—and essential for giving cubs the skills they need to survive in such a challenging environment.”

~ Krista Wright, *Executive Director*



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“Polar bears can be food-deprived for longer than any other mammal. After feasting on seals throughout the spring, pregnant females in the Hudson Bay region come ashore in summer and don’t feed again until the following February. This means they go eight months without feeding, during which time they give birth and nurse new cubs.”

~ Dr. Steve Amstrup, *Chief Scientist*

“One of the many things that impresses me about polar bears is their sheer strength. This can be seen when two males spar and push each other around or when a mother polar bear shoves three months’ worth of drifted snow from the entrance to her den. Even a polar bear’s dinner (the ringed seal) weighs much more than an average person can comfortably lift: up to one hundred and fifty pounds!”

~ BJ Kirschhoffer, *Director of Field Operations*

“I’m amazed by the polar bear’s astonishing navigation skills. Drifting pack ice may carry a female sleeping in her den more than 600 miles, yet when she emerges, she somehow finds her way right back to her starting point. How she does this is a mystery, which makes the feat even more impressive.”

~ Barbara Nielsen, *Director of Communications*



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“Polar bear milk is thirty-three percent fat compared with human milk at three to five percent fat. This is how cubs grow so quickly, from about one to two pounds at birth to twenty to thirty pounds in just a few months. That’s like a seven-pound human baby growing to over seventy pounds in just three months!”

~ Alysa McCall, *Field Programs Manager*

"The seemingly white hair of a polar bear is actually transparent with a hollow core. These attributes cause the hair to scatter and reflect visible light, much like what happens with ice and snow. Perfect camouflage!"

~ Kt Miller, *Assistant Media Manager*

"I love the fact that polar bears can easily eat up to ten percent of their body weight in just thirty minutes. That would be like me eating thirteen pounds of food in half an hour! Astounding."

~ Marissa Krouse, *Program Manager*

"On the icy streets or in the rushing rivers of PBI's Montana headquarters, who wouldn't want a set of polar bear paws? Big as record albums, they help distribute the bear's weight on thin ice, and the tiny bumps on their pads improve their grip. Put those giant paws in the water, and they serve both as mammoth paddles and effective rudders to power through the icy arctic waters."

~ Amy Shellenberger,
Assistant Director of Marketing & Development



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"Polar bears have an exceptionally powerful sense of smell. They can find a seal's breathing hole under three feet of snow from more than half a mile away!"

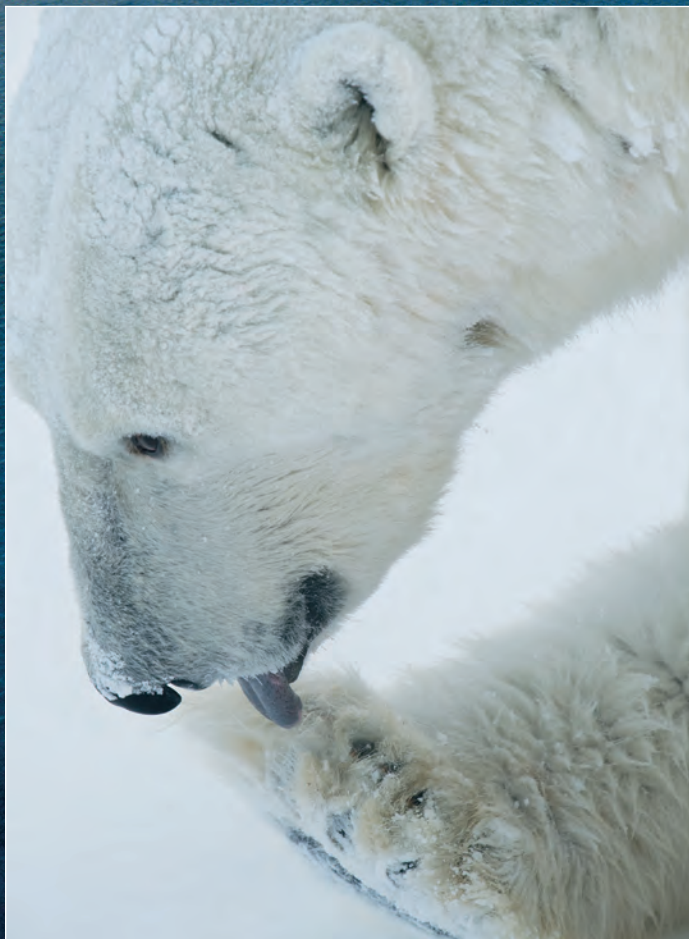
~ Kelsey Borge, *Gift Shop Manager*

"I love how polar bears are fastidious about keeping their white fur clean. One of the ways they do this is by sliding on their bellies and rolling around in the snow."

~ Jane Crawford, *Office Manager*

"My favorite fact is that polar bears exist at all. They have evolved not only to live on sea ice, but historically they have thrived in one of the most challenging environments on the planet. When you fly out over the sea ice searching for bears, the jumbled ice and snowscape stretch out in all directions—visually devoid of life. How can anything, let alone a massive bear, make a living here? Yet an entire ice-dependent ecosystem is churning away, largely out of sight, producing lipid-rich plankton that ultimately transfer that energy up through the arctic food chain to polar bears on the ice surface. Truly amazing."

~ Geoff York, *Senior Director of Conservation*



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*Conservation through research,
education, and action*



Nature's Reality Show

Every fall, the Polar Bear Cam captures live action like this during the polar bear migration. Visit polarbearstv.org for a front-row seat! Special thanks to explore.org for funding the cam, and to our partners Frontiers North Adventures and Parks Canada.



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