REVEALING RESEARCH | MOMS & CUBS | LEARNING TO LEAD

TUNDRA TIMES

The Annual Newsmagazine of Polar Bears International

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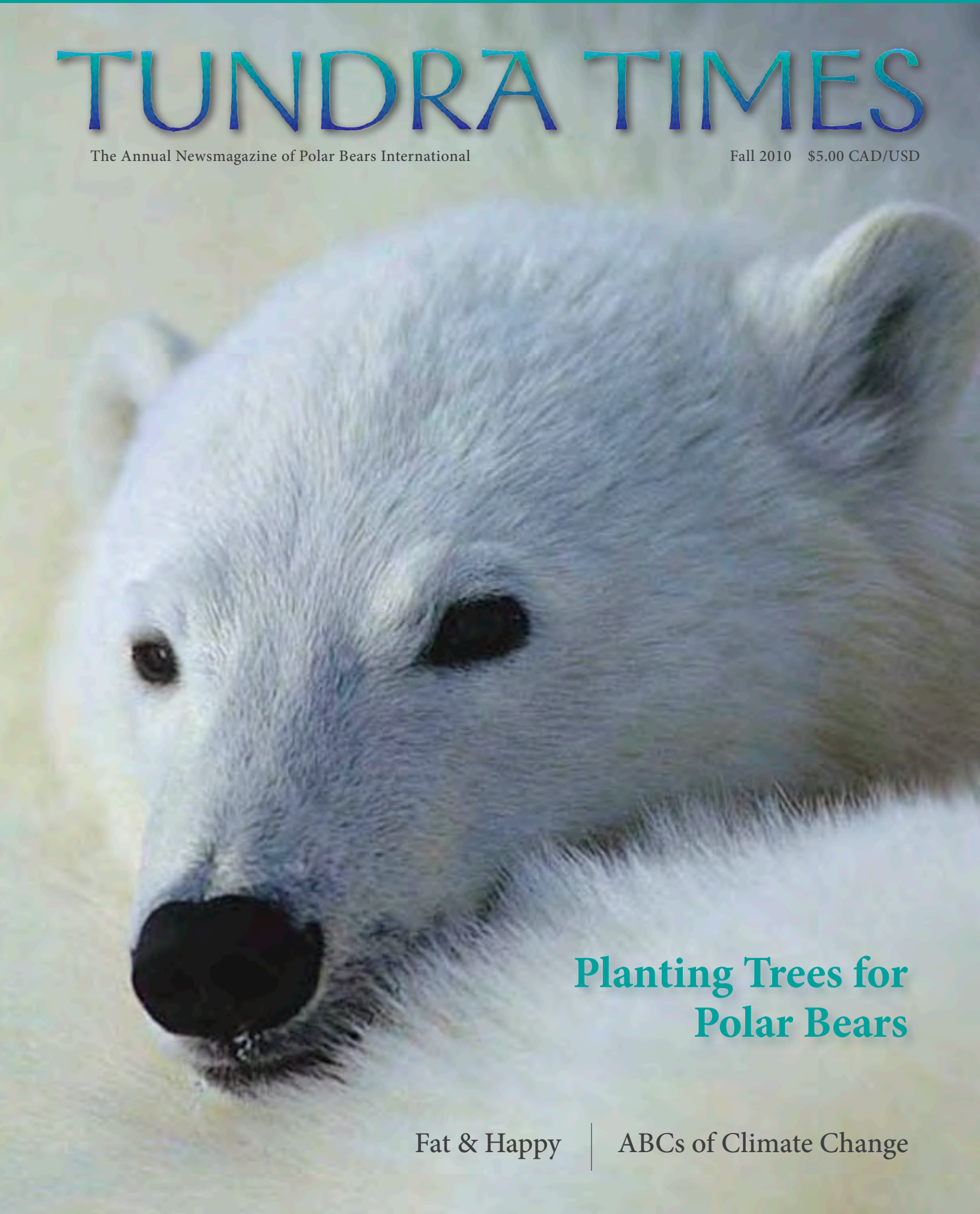

Planting Trees for Polar Bears

Fat & Happy | ABCs of Climate Change

LETTER

from the president

© Jim Schulz | Chicago Zoological Society

Robert W. Buchanan, 2010 recipient of the George B. Rabb Conservation Medal from the Chicago Zoological Society.

It's all about the polar bear.

These words guide our work every day. They help us imagine an Arctic where sea ice has been restored. A land where fat, healthy cubs follow their moms across a snow-swept landscape in search of seals.

Polar bears rely on sea ice to hunt, breed, and, in some cases, to den. Without sea ice, there can be no polar bears. Yet a rapid warming trend in the Arctic threatens their very survival.

The world's climate scientists have overwhelmingly concluded that Earth is warming—and that sea ice is retreating—due to the buildup of CO_2 from human activity. The good news is that we still have time to reverse the trend and save polar bear habitat. But urgent action is needed. We're counting on *you*.

In this, our inaugural issue, you'll learn about some of the ways we're working to save polar bears—as well as how you can become part of the solution.

We believe that people have power. And, collectively, they can use that power not only to guide their own actions to help conserve polar bear habitat, but to influence corporations, industry, and governments to provide communities with greener options for transportation and energy resources that lead to the reduction of CO_2.

We're encouraged by the fact that leading zoo organizations—which have the power to reach millions of people and inspire change—have embraced climate change as a key initiative and are working with us. They include the Association of Zoos and Aquariums, the Canadian Zoo Association, and the American Zoo Keepers Association.

We're excited to be partnering with Winnipeg's Assiniboine Park Zoo to create the International Polar Bear Conservation Centre, the world's first polar bear rescue center. Now under construction, it will provide a transitional home for orphaned cubs and injured and compromised polar bears. It will offer a strong conservation message and provide scientists with research capabilities.

We're optimistic that momentum is building to create change. Programs like our Project Polar Bear contest, Leadership Camps, and Planting Trees for Polar Bears put a dent in CO_2 and inspire others. Our network of zoo-based Arctic Ambassador Centers plays an active role in these programs—creating a ripple effect in their home communities.

And we're proud and gratified that the world's leading polar bear scientists serve on our Advisory Council. In August, Dr. Steven C. Amstrup joined our staff as senior scientist. Their belief in our work—and their strong commitment to polar bears—gives us hope. Hope for polar bears, other wildlife and, ultimately, people and the planet.

We rely on you for support—financial support, most certainly. But also through your actions. Be green. Join us in saving this symbol of the Arctic for generations to come.

Robert W. Buchanan
President and CEO

inside

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ON THE COVER: Totally dependent on her mother, this cub endures long days and nights waiting for the ice to form on Hudson Bay. Freeze-up has been occurring later—and break-up earlier—limiting polar bears' access to their food source: seals.

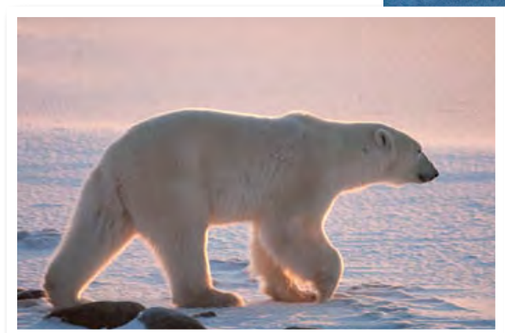
PHOTO BY:
Daniel J. Cox | NaturalExposures.com

We are grateful to Dan for allowing us such generous access to his award-winning images.

when fatter means fitter

Among polar bears, BIG is not only beautiful, it's the healthiest way to be.

Photograph by Dan Guravich, c.1980s



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When Dr. Ian Stirling began a long-term study of the polar bears of Churchill, Manitoba, in the late '70s, it wasn't unusual to see male polar bears with bellies so fat they almost dragged the ground—or females with pudgy triplet cubs. Those were the days when Hudson Bay froze in early November and provided productive seal-hunting well into the summer months.

By the late '80s and early '90s, however, Stirling and his colleague, Dr. Andrew Derocher, began to see to a troubling decline in the weight of Churchill's bears.

They wondered: Were the changes in the Western Hudson Bay (WHB) polar bears due to natural population fluctuations—or were they the harbinger of something more sinister, like climate warming?

PBI founder Dan Guravich, who had visited Cape Churchill for nearly a decade to photograph the fall gathering of bears, asked Stirling, *"Where have all the big bears gone?"* He and his photographer friends were no longer seeing large male bears at the Cape.

"I thought this was a telling observation and it reinforced my impression that something significant was indeed happening," Stirling recalls.

Data backed up those observations:

- Both male and female polar bears of all ages were losing weight
- Fewer females were having triplets
- Some female bears were losing their cubs—and bearing new ones two years in a row
- Fewer cubs were being weaned successfully at 1.5 years of age, a frequent occurrence in WHB.

Concerned about these trends, Stirling and Derocher wrote the first paper suggesting a possible link between climate change and polar bear health. *(Possible Effects of Climate Warming on Polar Bears, 1993)* They, along with Stirling's students, continued to monitor the WHB population ecology and physical condition.

In 1999, Stirling, Dr. Nick Lunn, and John Iacozza published the first results that clearly tied warming climate and earlier ice breakup to a loss of condition and reproductive changes in WHB polar bears. The WHB population declined by 22% between 1987 and 2004.

Since then, Stirling says, several more scientific papers based on long-term data established and sustained by his project, have clearly confirmed statistically significant cause-and-effect relationships between warming climate in Hudson Bay and . . .

- Progressively earlier breakup dates that limit the polar bears' ability to feed at a crucial time of year
- Reduced reproduction
- Reduced survival of cubs, subadults, and old bears due to early breakup of sea ice on the Bay

New modeling by Dr. Andrew Derocher and Ph.D. student, Dr. Peter K. Molnar, predicts that the WHB population will be reduced to a mere handful of bears by 2035. More worrisome, several straight years of longer ice-free seasons—or one very long ice-free season—could lead to a population collapse much sooner.

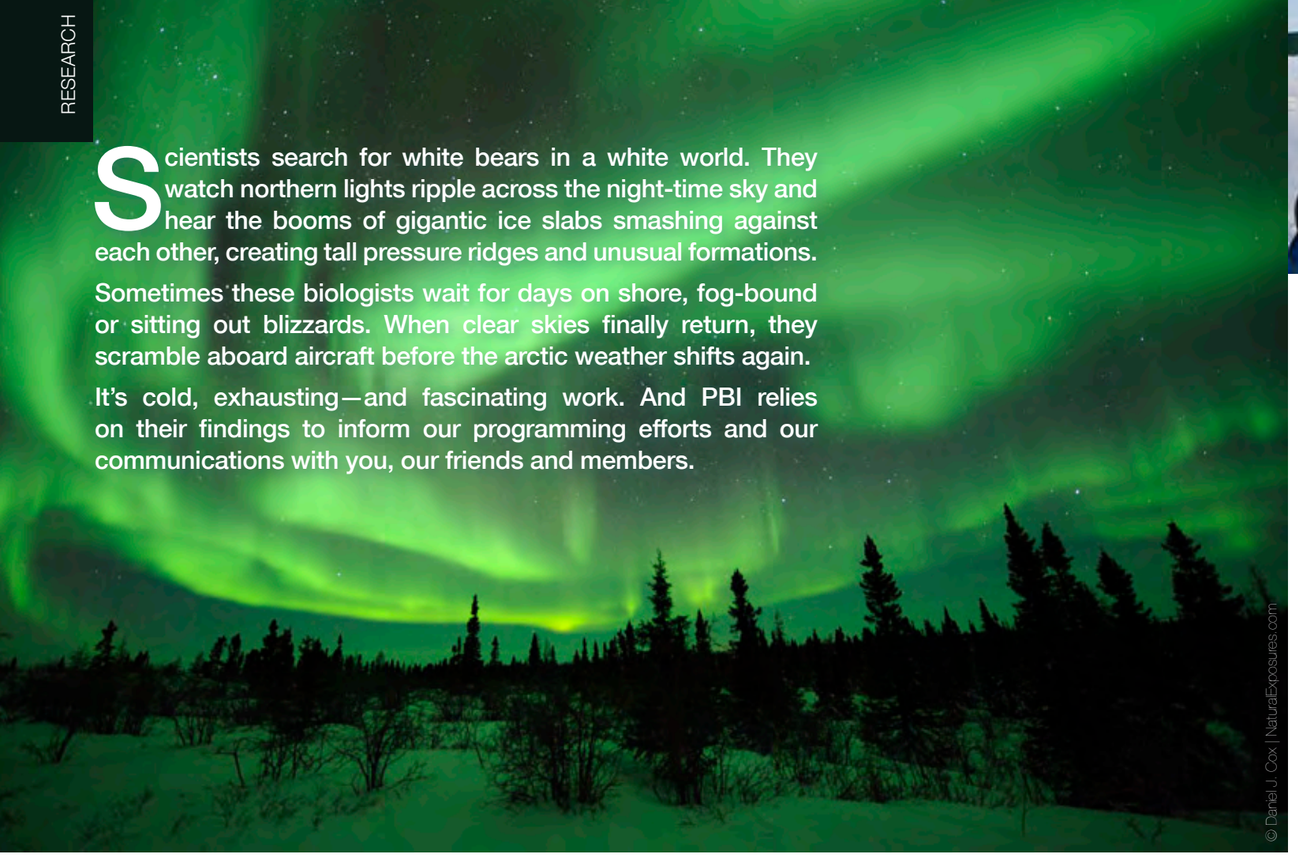
What Does This Mean?

The Western and the Southern Hudson Bay populations of polar bears live at the lowest latitudes. Research shows that the problems affecting Western Hudson Bay are now impacting Southern Hudson Bay.

"Unless climate warming is stopped or reversed, the same trend will follow in several other populations in the foreseeable future," Stirling says.

This means that the time for action on climate change—by individuals, corporations, and governments—is NOW.

Dr. Ian Stirling, PBI senior advisory council scientist, is research scientist emeritus with Environment Canada and adjunct professor in the Department of Biological Sciences, University of Alberta, Edmonton. He has conducted research on polar bears and polar seals for 44 years.



Scientists search for white bears in a white world. They watch northern lights ripple across the night-time sky and hear the booms of gigantic ice slabs smashing against each other, creating tall pressure ridges and unusual formations.

Sometimes these biologists wait for days on shore, fog-bound or sitting out blizzards. When clear skies finally return, they scramble aboard aircraft before the arctic weather shifts again.

It's cold, exhausting—and fascinating work. And PBI relies on their findings to inform our programming efforts and our communications with you, our friends and members.

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Census Taking

PBI supports polar bear census work in the Southern Beaufort and Chukchi Seas—through studies led by the U.S. Geological Survey and the U.S Fish and Wildlife Service—to track changes in the polar bear populations there.

Standing on a shuddering ice pan is not your typical workplace. It's not your typical work. And because polar bears are mostly solitary and live at low densities in a remote and difficult environment—and also because they blend well with their surroundings—scientists have largely relied on multi-year capture-recapture studies to assess a population's size and health.

The findings provide governments with key data for making decisions. Research by Dr. Steven C. Amstrup that revealed signs of stress in the Southern Beaufort Sea population, for example, helped lead the U.S. to the decision to list the polar bear as a threatened species.

Satellite Tracking

Charting polar bear movements—and how those movement patterns may be changing—is another important part of understanding how polar bears are responding to habitat changes caused by global warming.

Scientists work in the numbing cold to place ear tags or collars carrying small radio transmitters on a limited number of bears so they can follow their movements through satellite tracking.

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The Big Picture

Long-term data sets are necessary to help scientists gain insight into what's happening with polar bear populations. A single year's census is only a snapshot in time and must be viewed within the context of a much longer time period.

Data on the Western Hudson Bay polar bear population, for example, goes back 30 years. It reveals a 22% drop in the size of the population over that time period, as well as a steady decline in measurements of body condition.

It's vital that we continue to support census and tracking studies each year to help polar bear scientists document trends—and ring alarm bells as necessary.

When you support PBI, you support the work of leading field scientists—invaluable sources of fact and reason.

© BJ Kirschhofer

Capture-Recapture

What is this technique?

Even after decades of working in the Arctic, Dr. Steven C. Amstrup, PBI senior scientist, feels a surge of excitement when handling his first polar bear of the season.

"It's always a feeling of, wow, here's a real, wild polar bear," he says. "I can't think of any work that's more exciting."

Amstrup says that most of what we know about polar bears comes from capturing them and then releasing them alive at the capture site.

Capturing polar bears allows scientists to collect biological samples, such as blood or fat, and measure physical stature and body condition. Recapturing the same bears at another time lets scientists make comparisons and track changes.

Perhaps most important, capture efforts that are repeated regularly over multi-year periods allow scientists to estimate population size and vital rates like reproduction and survival. For more, visit our website.

notes from the field

Maternal Den Study

Howling winds, drifting snow, and temperatures that hover at 50 below zero. It's all in a day's work for Dr. Thomas S. Smith and his team, who study polar bear maternal den sites on Alaska's North Slope.

Smith says that when he's shivering in frigid weather, chilled to the bone, he imagines polar bear families nestled snugly in ice dens made dark and silent by a thick blanket of wind-driven snow.

"Young cubs have little more than white fuzz for insulation," he says. "They could never survive in the harsh arctic environment outside the den. That's why it's critical that they're not disturbed."

Smith's research for PBI is helping scientists understand polar bear denning behavior—largely a mystery until he began his work 10 years ago. He and his team use remote cameras to record den activity without disturbing the mothers and cubs.

"The research is important as more and more industry moves into the north," says Smith. "We need to understand the denning process to make sure that human activity doesn't disrupt it."

Oh, and about those temperatures: Smith says he loves it when extreme cold sets in.

It's polar bear weather, after all.

Dr. Smith, like all of us, wants the vast arctic landscape to remain ice-bound, frigid, and snowy.

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Hearing Study

Scientist Megan Owen, a mother herself, empathizes with female polar bears curled up with their cubs in snow dens. Hidden from the world—warmed by their own body heat, and wrapped in silence—Owen thinks that snow dens make perfect nurseries.

What happens, though, when heavy oil industry field equipment rumbles by? Or when helicopters fly overhead—whomp, whomp, whomp?

Does the thick blanket of snow insulate polar bear families from those sounds? Or do they reverberate inside the once-tranquil dens?

To find out, Owen traveled to the North Slope in late winter to begin a study that complements Dr. Thomas S. Smith's work for PBI on polar bear denning behavior.

Prior to this, Owen, a conservation program specialist for the San Diego Zoo, had conducted a PBI study that documented the polar bears' hearing range. She worked with zoo bears on that project because such research would be next to impossible with polar bears in the wild.

Now she's applying those findings to the real world. She and her team dug several artificial snow dens on the North Slope and equipped them with sensitive recording devices. They then made recordings of various sounds near industrial sites—from trucks to buses to aircraft and even the crunch of human footprints on the snow—to determine what sounds penetrate the dens and from what distances.

"Our next step," Owen says, "is to integrate these noise profiles with the data we've collected on polar bear hearing."

This will help scientists understand what sounds reach polar bears in their dens—and the size of the buffer zone needed to keep from disturbing them during this sensitive period.

polar bear safety nets

The young, thin polar bear drifted close to Iceland's coast on a melting floe, then swam to shore, drawing crowds of excited residents—and nervous local authorities.

In Iceland and Svalbard, the Yukon and Greenland, northern Alaska and Nunavut, polar bears are showing up in coastal villages and at camping sites, forced ashore by shrinking sea ice—and attracted to the smell of food.

As the Arctic continues to warm, melting the polar bear's habitat and stranding them on land, scientists expect human-polar bear encounters to spike sharply, risking the lives of both bears and people.

"Too often these encounters end tragically—but they don't need to," says Amy Cutting, PBI Sustainability Alliance (PBSA) chair. "Our role is to provide local authorities with the support they need. We're building networks, holding training sessions, and identifying needed tools."

PBSA includes a broad range of animal care specialists from PBI's network of Arctic Ambassador Center zoos, as well as field biologists, nonprofit partners, and wildlife authorities.

Team members are gearing up to help:

- Starving and injured polar bears
- Orphaned polar bear cubs
- Polar bears affected by oil spills

"We're preparing now for the difficult challenges ahead." — *Amy Cutting, PBI Sustainability Alliance Chair*

First-Ever Polar Bear Rescue Center

Sustainability Alliance members are also lending their expertise to the world-class International Polar Bear Conservation Centre that will open in Winnipeg, Manitoba, this fall. And not a moment too soon.

Based in Assiniboine Park Zoo, with funding from the province, it will serve as a transitional home for polar bears in need of human care—from orphaned cubs to compromised yearlings and adults.

"We're proud to be involved with such a bold, necessary, and exciting endeavor," says Amy Cutting.

In addition to rescue work, the center will support and facilitate zoo-based research efforts that contribute to the survival of polar bears in the wild. It will also:

- Develop and distribute materials that educate the public about polar bears and climate change
- Increase awareness of the fragile arctic ecosystem
- Motivate people to help conserve polar bears by reducing their carbon footprint

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Polar Bear Conservation now, more than ever, needs everyone pulling in the same direction.

The entire spectrum of people and organizations concerned about wildlife must be involved—from biologists to NGOs to zoos.

But most important, the public must be engaged if we're to be successful.

—Dr. Andrew Derocher
PBI Scientific Advisory Council and Past chair, IUCN Polar Bear Specialist Group

Shovel ready. That sums up the enthusiasm of volunteers who join our tree-planting programs. These helping hands show up on spring days armed with *reusable* water bottles, garden gloves, and apple-red cheeks.

Why trees? Because they're so beneficial—and planting them is a simple, direct way to remove CO_2 from the atmosphere.

Planting Trees for Polar Bears has three components:

Polar Bear Forest is a collaborative effort between PBI and the Wisconsin Department of Natural Resources. The goal is to plant 500,000 acres on public and private lands in Wisconsin. The program is also educational. We're helping the public make the connection between planting trees and saving polar bear habitat.

Trees for You & Me, devised by two PBI Field Ambassadors, is a friendly competition among AAZK chapters to see which one can raise the most money for the Polar Bear Forest program. Last year, they raised enough to plant 10,000 trees.

Acres for the Atmosphere is the idea of the 2009 PBI Zoo Keeper Leadership Camp graduates. It's a roll-up-your-sleeves tree-planting and educational effort involving chapters of the American Association of Zoo Keepers (AAZK), zoos throughout North America, and PBI Arctic Ambassador Centers, located in over 30 zoos. Participants organize tree- and shrub-planting events through their local zoo.

Get involved. Plant some trees!

- Add trees to your home or your community. *It takes about seven trees per year to offset your carbon footprint.*
- Take part in a tree-planting day through a participating zoo
- DONATE to our Polar Bear Forest campaign

Green trees. Blue ice. White bears. What could be more gratifying?

Go ahead. Grab a shovel!

acres for the atmosphere | POLAR BEAR FOREST | trees for you and me

© B.J. Kirschhoffer

leaders *in the making*

They launch recycling drives. They plant trees. They green up schools, zoos, and communities. Graduates of our Leadership Camps—held each fall for teens and zookeepers, and, this year, for educators and communicators as well—return with great ideas from a week on the tundra near Churchill, Canada. They're filled with hope and purpose—and a crystal clear mission:

Polar bears need our help. Humans must change their behavior. The time for action is now.

We could tell you about the intensity of the students as they learn first-hand about polar bears, the Arctic, and climate change. We could describe their brainstorming sessions, the leadership skills they gain—and the action plans they create—to tackle CO_2 reductions back home.

But it's better if you hear it from them.

What an emotional experience to see the animal that we care so much about in its natural environment! The moment was silent except for some sniffles from the emotional overload and the clicking of our cameras. Tears ran down our cheeks. Men cried in front of women—and it was OK. This polar bear was our inspiration. She was the reason we had traveled to Churchill. Her future depends on us—and the burden of knowing this was part of the emotional rollercoaster we all experienced. After seeing our first polar bear, we zoo keepers felt ready to face the challenges ahead.

—Angela Johnson and Josianne Romasco
Graduates, PBI Zoo Keeper Camp

Frontiers North's Tundra Buggy® Adventure is the leading sponsor of PBI Leadership Camps.

© Polar Bear

"Coming up here has made me realize how important the Arctic is, how magnificent the animals are, and how they really need our help. The polar bears are counting on us! I have a new outlook on life and a strong belief in what I can do if I really try.

"Now it's time to head back Down Under, but I'll never forget the beauty I saw on my adventure in the Arctic. I'm returning to my own community to create change."

—Stephanie Walker, graduate, PBI Teen Leadership Camp

© Jim Schulz | Chicago Zoological Society

Arctic Ambassador Centers

Hand to paw. Paw to hand. We can't think of a more powerful moment than this at one of the PBI Arctic Ambassador Center zoos. These extraordinary zoos have each pledged to take action on climate change—and to inspire and educate visitors to do the same.

Their message is simple: "Together we can save polar bears and the Arctic, but we must act soon."

Our network of Arctic Ambassador Center zoos includes nearly 30 zoos across the U.S. and Canada. What do they do?

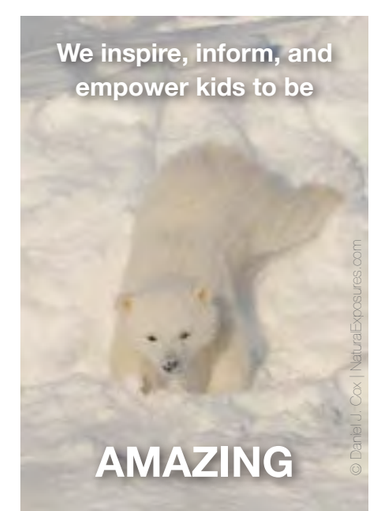
- Feature bear-friendly exhibits that showcase the beauty and power of the polar bear
- Follow a strong stewardship ethic in their day-to-day operations and public outreach
- Lead their communities in behavior and actions that reduce CO_2
- Support PBI research projects to help conserve wild polar bears
- Play a key role in the PBI Sustainability Alliance, a front-line team helping to save polar bears in a rapidly warming Arctic

These zoos also take part in PBI programs—including PBI Leadership Camps, our Project Polar Bear contest, and Tundra Connections broadcasts.

Enriched exhibits. Public outreach. Leadership in reducing CO_2. They are making a difference for people and polar bears.

YOU CAN HELP. Find the Arctic Ambassador Center zoo near you from the list on our website. Then, get involved!

www.polarbearsinternational.org



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PROJECT POLAR BEAR

If you're looking for a reliable source of good, clean energy, look no further than Project Polar Bear teens. Every year, this PBI-sponsored contest challenges teens to reduce CO_2 in their communities.

Teens across the U.S. and Canada participate. They launch projects to reduce CO_2 and track their energy savings along the way. And if you think their efforts are limited to changing light bulbs, think again. Some past contestants:

- Created *NO IDLE* zones at schools to encourage parents to turn off their engines while waiting in carpool lines
- Organized community coin drives to put coins back into circulation and reduce the environmental impact of minting
- Conducted energy audits for local businesses
- Launched tree-planting projects and recycling drives

They have fun. And they make a difference. Our 2009 contestants reduced CO_2 by nearly 100 million pounds!

As Grand Prize winner Emily Goldstein said, "My team saved enough CO_2 to fill a football stadium." Now that's something to cheer about.

Visit Project Polar Bear on our website.

good-and-green-natured

The Vickery Sisters: Miranda, Rachael, Madison, and Rebekah

These four indomitable sisters live in a farm community near Winnipeg, Manitoba. Each has participated in PBI Teen Leadership Camp, the PBI Project Polar Bear Contest—or both. At our request, they wrote this article to describe their projects and activities. Prepare to be exhausted—and awed.

Spider webs are spun from multiple layers of silk. This combined twining gives the overall structure its strength. We approach our projects with the underlying goal of creating webs. These webs, or ties, connect various groups and individuals and combine talents and skills towards a common goal: protecting the environment. We're delighted that so many of our projects have grown in size and impact, and that so many individuals have joined together to save polar bears.

1 Our school recycling program started with Rebekah's efforts after she returned from PBI Teen Leadership Camp. It's now entering year three and it keeps growing.

- The junior/senior high campus recycles ink cartridges, paper, cardboard, and aluminum.
- The elementary campus, which is shared with the church, has changed ALL the bulbs to CFCs.
- The elementary campus also added huge bins to handle paper, plastic, and tin recyclables from students and the thousands who attend services and teaching sessions on campus each week.
- The coffee bar now boasts environmentally friendly products.

Bonus: Our role as EnviroSpies lets us reward students and teachers caught in random acts of greenness.

2 Many schools have embraced our idea of recycling coins and donating them to charity. We love how collecting coins can heal both earth and heart! This project certainly makes cents. (Putting coins back into circulation reduces the environmental impact of minting.)

3 Living in a farm community means much of our emphasis is agricultural. Our mobile livestock mowing service now cuts over 100 acres. Additions to this project include weeding by geese; reduction of food scraps by hogs; and bug control by goldfish, praying mantises, and even chickens. What's more, many of these ideas were suggested by our neighbors.

4 Our *Everything Old is New Again* program has revealed an inventive streak in Manitobans. We're constantly amazed at how people recycle and reinvent second-hand items. One couple took 30-year-old shelves and made an adorable garden-themed toddler bed. Heck, they also made the adorable toddler! Now that's dedication.

5 Politicians are joining in, too. One has introduced a bill to ban plastic bags. Another has invited us to share our carbon-reducing pledge with the prime minister and legislators.

We once read that it takes 28 days to create a new habit. We can see that. Over the past few years many people in Manitoba have developed new habits that embrace the environment, and they take pride in the polar bears that have made our province famous.

This year, when we attended ***Boo at the Zoo*** for the second time, parents made a point to bring family and friends to our booth to ask "What's new with the polar bears and the polar bear girls?" Then they would brag about their green accomplishments over the past year!

It's time to sing a new song, Kermit; truly, it's easy being green! You can do it, too.

We've kept 92 million pounds of CO_2 from entering the atmosphere in just two years.

Basic Science

a Climate Primer

the ABCs of what science and Earth are trying to tell us

A Basic laws of physics dictate that when levels of greenhouse gases increase, the world warms. How does this work?

Energy from the sun that reaches Earth is balanced by energy that radiates back into space.

Atmospheric gases like CO_2, however, temporarily trap the energy that arrives from the sun as short-wave radiation. This energy then radiates back into space in the form of long-wave radiation.

The greenhouse effect of this temporarily trapped energy is the reason that Earth's temperature range allows life to exist. That's a good thing.

But when we keep increasing these heat-trapping greenhouse gases (GHGs), we increase the amount of time that the sun's energy stays in Earth's atmosphere, which means that Earth warms.

Logically, a world with higher GHG concentrations is going to be warmer than it would be with lower GHG concentrations. Although it's uncertain how sensitive Earth's climate is to the increase in GHGs—and therefore we don't know the precise rate of warming—there's no uncertainty that Earth will warm.

GHGs, Climate, and Weather

B Although the laws of physics say that Earth will warm as GHGs are added to the atmosphere, natural chaos in the climate system adds to uncertainty about how fast Earth will warm. Natural fluctuations can mask the warming trend.

It's important to remember that climate is not the same as weather.

Natural fluctuations in atmospheric circulation patterns, such as El Niño (the Southern Oscillation) and the Arctic Oscillation, have huge effects on short- and medium-term weather, as well as regional weather and even global climate.

Natural fluctuations in ocean circulation patterns, such as the Gulf Stream (or North Atlantic Drift), also have longer-term effects on weather and climate. Natural variations in climate make it difficult to perceive from the weather in any one place that Earth—as a whole—is warming.

But, what's important to remember about these natural fluctuations is that as GHGs increase, they will occur over a higher and climbing baseline. Eventually the effects of increases in GHG will become clear. It's not a matter of *whether* it will become clear—only *when* it will become clear.

Crossing Climate Thresholds

C Because global warming is a certainty in an increasing GHG world, it's guaranteed that we will exceed certain thresholds (such as the global mean temperature increase of 2 degrees, or ice-free summers in the Arctic) at some point. Again, we can't predict exactly when these things will happen, but if GHGs keep rising, they most certainly will.

We can also be sure that the more time passes, the more likely we'll have exceeded particular thresholds.

What Are We to Think?

Without question there are uncertainties regarding global warming. But it's unquestionable that Earth will warm as GHG levels rise. It's a basic law of physics. And, ominously, the longer GHG levels are allowed to increase, the less sea ice will remain.

Because all available data indicate that polar bear populations as we know them will not be sustained in an ice-free Arctic, the longer GHG levels are allowed to increase, the greater the threat to polar bear welfare.

"The longer we wait to do something," says PBI President Robert Buchanan, "the more thresholds we'll have exceeded, and the bigger the problems we'll have created for our children and grandchildren. They will increasingly be the ones forced to attempt to cope with a world that's very different from the one in which humans became the dominant life force on Earth."

Dr. Steven C. Amstrup is retired from the USGS as senior polar bear scientist and was the past chair of the IUCN Polar Bear Specialist Group. He is known worldwide for his 30 years of research on polar bears. In August 2010, he joined the staff of PBI as senior scientist.

This article is adapted from Amstrup, S. C., H. Caswell, E. DeWeaver, I. Stirling, D. C. Douglas, B. G. Marcot, and C. M. Hunter. 2009. Rebuttal of Polar bear population forecasts: a public-policy audit. Interfaces 39(4):353-369.

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Climate Change Fact & Fiction

- A National Academy of Sciences poll shows that 97% of climate scientists—experts in their field—agree that global warming is very likely mainly caused by human activity.
- A review of 11 different methods of measuring the planet's temperature—on land, in sea, in air—converge to show a warming planet. Each indicator is based on three to seven data sets.
- An independent review of the much-maligned report of the Intergovernmental Panel on Climate Change (IPCC) found only a few minor mistakes in roughly 500 pages of text. What's more, the errors don't undermine the panel's overall conclusions.
- Three highly respected independent panels cleared the climate scientists involved in so-called *Climate Gate* of wrongdoing. They found that statements were taken out of context.
- Data confirms that global temperatures in the first half of 2010 were the hottest since record-keeping began more than a century ago.
- Arctic sea ice has declined at a rate of 6.4% *per decade* since satellite tracking began in 1979.

The science is clear.
Let's get busy.

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- Visit our zoo partners
- Purchase a gift membership
- Donate goods or services
- Tell others about PBI

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Churchill Northern Studies Centre, Eskimo Museum, Four Points by Sheraton, Frontiers North's Tundra Buggy® Adventure, L & D Cable, Manitoba Conservation, Nanuk Polar Bear Lodge, North Star Tours, Parks Canada, Polar Cinema, Port of Churchill, Tamarack Rentals, Town of Churchill, Wat'chee Lodge