Polar Basin Ecoregions | PBI Beginnings | Tips from a Scientist

TUNDRA TIMES

The Annual Newsmagazine of Polar Bears International

Fall 2011

The Arctic Becomes a Melting Pot

Population at Risk | Tundra Connections

how it all began

It all started with a round of *snotch*—scotch served over snow—in an early version of a Tundra Buggy® at Cape Churchill on Hudson Bay. Outside, two male polar bears sparred in the snow, testing their strength in mock battles. As photographer and biologist Dan Guravich and a band of fellow polar bear enthusiasts watched the powerful males, they talked about the idea of a nonprofit group to focus on the needs of polar bears, the iconic symbol of the North and an animal revered by native peoples.

© Richard Beck

The so-called *Muktuk* was once the site of many snotch-filled evenings. This photo from the 90s demonstrates that the primitive conditions of early bear-watching trips did little to dampen the enthusiasm of pioneering Cape travelers—and once offered ever-curious bears an object of interest.

It was 1991. Within a year, they founded *Polar Bears Alive*—what we now call Polar Bears International® (PBI).

Today, PBI is the worldwide champion for polar bears, just as Guravich envisioned. Today, PBI is the *only* organization focusing solely on polar bears and their arctic habitat.

"When Dan formed PBI, scientists were only beginning to suspect that something was wrong," says PBI President and CEO Robert Buchanan. "About a year later, in 1993, scientists Ian Stirling and Andrew Derocher published the first paper suggesting a possible link between climate warming and polar bear health. That link has since been confirmed—and saving polar bear habitat by stopping or reversing climate change has become PBI's main focus."

By the time the U.S. listed the polar bear as a threatened species in 2008, PBI had gained the respect of leading scientists and built a team of committed professionals working together on behalf of the bears. Dr. Steven C. Amstrup, PBI's chief scientist, was the lead author of the nine reports that led to the U.S. government's decision to grant polar bears protection under the Endangered Species Act. At the most recent meeting of the IUCN Polar Bear Specialist Group, comprised of the world's foremost polar bear scientists, PBI was one of just two nonprofits invited to attend.

From the beginning, PBI has been a fact-based organization, committed to funding research that documents polar bear status and guides management decisions. And because polar bear conservation requires action on the part of individuals, corporations, communities, and governments to reduce greenhouse gas emissions, PBI spearheads educational and stewardship programs that inspire the reduction of CO_2 and raise the awareness that every action we take, positive or negative, has an impact on the bears and their habitat.

Twenty years ago, Guravich's small group had only an inkling of the problems polar bears face today. Now the group they formed is at the very forefront of polar bear conservation. Now, polar bears and their arctic habitat have a fighting chance. And an indefatigable champion in PBI. For that we're deeply grateful.

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ON THE COVER: PBI is fully committed to its philosophy of espousing and supporting fact-based, data-driven, scientifically sound research and information with regard to polar bears and their arctic realm. Yet, when confronted with a tender moment like this between mother and cub, it's hard for our human selves not to see things just a little anthropomorphically. Like a mother's love.

COVER PHOTO:
Daniel J. Cox | NaturalExposures.com

Dan generously provides PBI with total access to his award-winning images free of charge.

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A Population at Risk

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Before It's Too Late

Dr. Steven C. Amstrup was Polar Bear Project leader with the U.S. Geological Survey in Alaska where he observed firsthand the changes occurring in the Arctic over his tenure of 30 years. Now he is chief scientist for Polar Bears International.

"The aha! moment for me came when I realized that the difficult time I'd been having getting out onto the sea ice to conduct my autumn fieldwork was not just during an odd year or two—but instead, was becoming a prolonged and worsening trend. Shortly thereafter, we began to see biological changes in Beaufort Sea polar bears."

no sea ice, no polar bears

Scientists say it's as simple as that.

Polar bears need a platform of sea ice to reach the prey that sustains them: ringed and bearded seals. But sea ice itself varies across the Arctic, with some regions subject to summer melt-offs and others with year-round ice along the shore. The vagaries of wind, weather, and currents affect ice coverage, too, leading to locally good ice years and bad ice years—all against the larger backdrop of a warming Arctic.

Within this complex system, scientists have identified 19 populations of polar bears and four ice regions. Some populations are well studied, with datasets going back decades. Others are so remote that scientists know very little about them. But the key to understanding how the populations are faring is to understand the four ice regions and how they affect the survival of the total population of polar bears.

Region One: Seasonal Ice

These habitats occur at the southern extreme of the polar bear's range and include places like Canada's Hudson Bay, where the ice melts each summer and the bears must wait for winter's freeze-up until they can hunt again. Polar bears in these areas are probably at the greatest risk, with longer and longer ice-free seasons testing the limits of their fat reserves.

Region Two: Retreating Shoreline Ice

In these areas, sea ice forms along the shore but then retreats, especially in summer. As the ice retreats farther and farther from shore in a warming Arctic, the area's polar bears are faced with a choice of coming ashore and fasting until the sea ice returns in winter—or swimming long, exhausting distances to reach the remaining pack ice. Ice that's located far offshore, however, often covers deep water that doesn't sustain much sea life, so bears in these regions may successfully complete a marathon swim, but still be unable to find any seals to hunt. Polar bears that live in these areas are at great risk: from longer and longer swims, prolonged fasting periods, lower survival rates of cubs, and increased encounters with humans on shore.

Region Three: Collecting Shoreline Ice

Sea ice formed in other parts of the Arctic collects along the shore of these habitats, providing polar bears with access to seals. Polar bears in these areas are faring well now, but scientists predict that ice here will disappear within 75 years—and, with it, resident polar bear populations—unless action is taken to reduce CO_2.

Region Four: High Arctic Islands

Islands in the Canadian High Arctic and Greenland are far enough north that sea ice remains along the coast even in summer, providing hunting for the bears. This is predicted to be the last stronghold for polar bears, but it, too, is expected to melt within 100 years unless greenhouse gases are greatly reduced. If action is taken to reverse climate change, these remnant pockets of polar bears could repopulate the Arctic when the sea ice returns.

Scientists remind us that hope remains for saving polar bears—and that the story of the sea ice and polar bears varies from one part of the Arctic to the next.

Polar bears that now live in seasonal ice areas are bellwethers for those in other sea-ice regions and are sounding a warning, loud and clear: No sea ice, no polar bears. We must act now to stop or reverse the melt-down in the circumpolar north.

Huge slabs of ice creak and groan as they grind against each other. Ice conditions vary across the Arctic, affecting the health and survival rates of polar bear populations.

Churchill's polar bears are facing longer and longer ice-free seasons.

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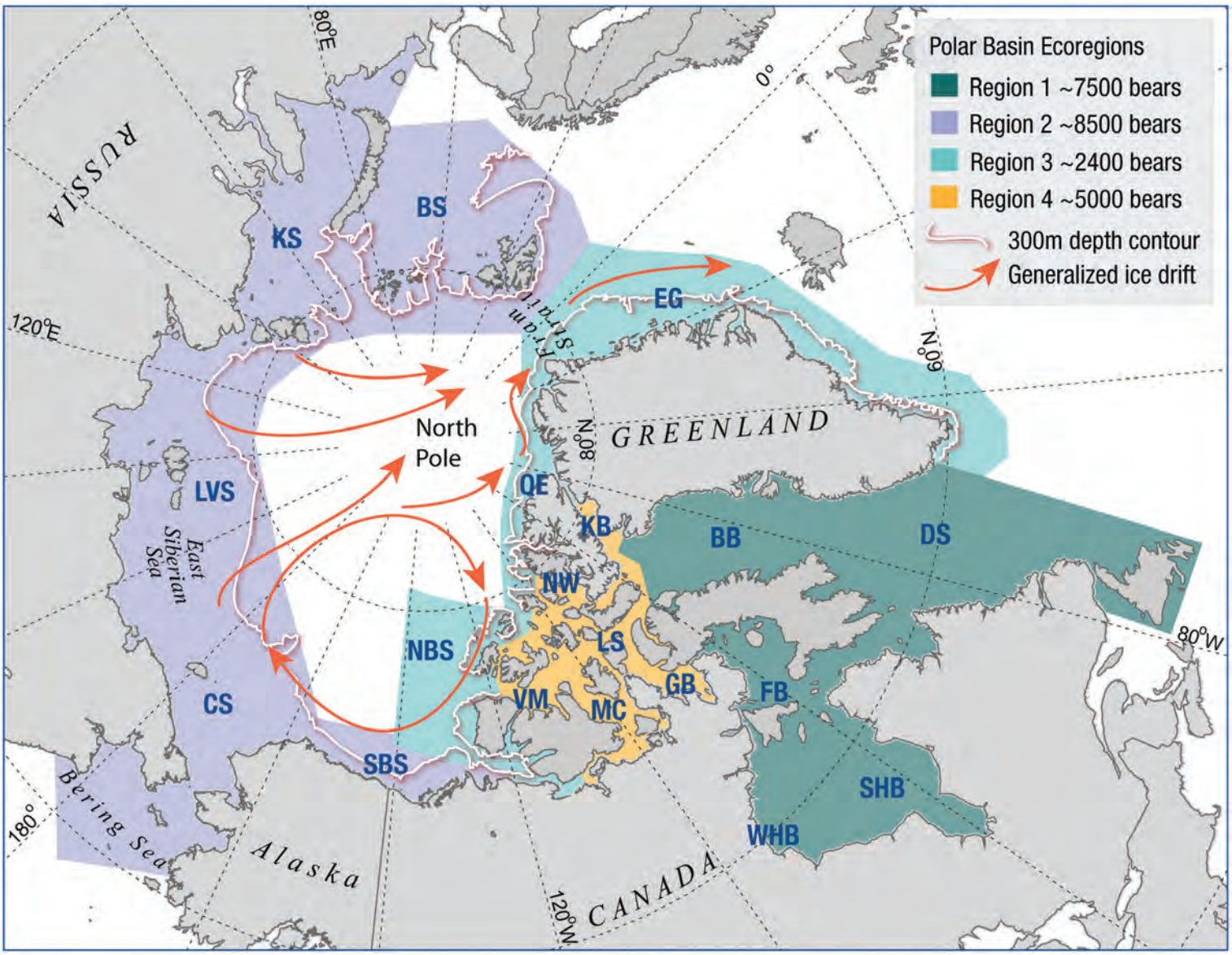

Region 1: Baffin Bay, Davis Strait, Foxe Basin, Southern Hudson Bay, Western Hudson Bay
Region 2: Barents Sea, Chukchi Sea, Kara Sea, Laptev Sea, Southern Beaufort Sea
Region 3: Eastern Greenland, Northern Beaufort Sea, Queen Elizabeth Islands
Region 4: Gulf of Boothia, Kane Basin, Lancaster Sound, M'Clintock Channel, Norwegian Bay, Viscount Melville Sound

Early travelers who ventured into the frozen north returned with tales of an unforgettable world, harsh and unforgiving, but almost dreamlike in its beauty. They spoke of floating icebergs seemingly lit from within by a blue glow. Of vast bands of green and violet pulsing across the night sky. And of animals so exotic—from the narwhal to the musk ox—that they seemed a fantastical mirage.

Scientists who work in the Arctic today are similarly struck by the haunting beauty of this frigid world and the wildlife that has adapted to its harsh demands.

They're also poignantly aware that it's a world at risk unless we take the necessary actions to save it.

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the melting Arctic

No other place on the planet has been as affected by climate warming as the Arctic. Temperatures in arctic regions have risen almost twice as fast as the rest of the planet, leading to a dramatic retreat in summer sea ice coverage. These vast stretches of dark, open water absorb more heat, accelerating the warming trend. As a result, the new ice that forms each winter is thinner than it was before, and thick, multi-year sea ice is disappearing. Changes are taking place on the tundra as well, with melting permafrost and shifts in vegetation threatening a rich diversity of arctic wildlife.

For species that are ice-dependent like polar bears, ringed seals, and walruses, the melting ice means the loss of the platform they need to hunt, give birth, or rest. For other animals like the arctic fox, it means the incursion northward of the red fox, as well as a reduction in food scraps from polar bear seal kills. For the caribou and musk ox, it means crusts of ice from snow that melts and refreezes, making it hard to reach tundra vegetation.

The polar bear is the iconic symbol of this spectacular ecosystem—and the species on which we focus our efforts. But we're keenly aware that by saving polar bears, we'll also save the unique array of other arctic species and the vast, mysterious world that they call home.

The Arctic is a beautiful, yet fragile, ecosystem—and a place experiencing the effects of rising temperatures faster than anywhere else on the planet. To help inspire a deep love of the Arctic and to raise awareness about the need to take action on climate change, award-winning professional photographer Daniel J. Cox of Natural Exposures is creating a record of this extraordinary ecosystem as it undergoes rapid change.

Modeled after earlier documentary projects including the historic photos taken during the Great Depression and William Henry Jackson's work in Yellowstone National Park, Cox has begun archiving the still images, video, and written descriptions from the project into a PBI Media Library that we provide, free of charge, to our zoo-based Arctic Ambassador Centers and other outreach partners.

You can help support this project by purchasing a special Lowepro camera bag from our online PBI Gift Shop.

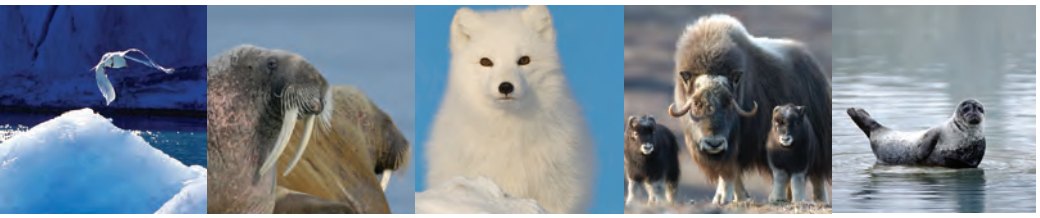

Photo credits: Snowy Owl, Arctic Fox, Musk Oxen © Daniel J. Cox / Natural Exposures; Kittiwake, Walrus, Seal © Richard Beck

Why We Have Hope, Culturally

Every year, the teens that take part in our Project Polar Bear contest affirm our belief in the power of youth to take action for the planet. While governments talk (and talk, and talk), these kids forge ahead, creating and carrying out projects that reduce CO_2 in their communities. Most impressive of all? The way the teens stay involved long after the contest ends, inspiring their communities to make green choices a way of life.

Here are just a few of the actions taken by these amazing teens:

- Helped set school policy to turn off and unplug computers, printers, and other electronic devices at night
- Established No Idle zones at local schools for waits longer than 30 seconds.
- Created whimsical *Polar Bearrels* out of used Coca-Cola drums to encourage community recycling
- Learned how to conduct energy audits to help families and businesses reduce their energy costs
- Pitched in to launch tree-planting campaigns and light bulb giveaways
- Turned lunchroom waste into compost used in school gardens
- Collected energy-reduction pledges via websites

So far, the simple actions of our finalist teams have reduced CO_2 by over 200 million pounds, saving money in their communities at the same time. We love them for their positive actions and can-do attitudes. Inspired by their ideas? They would be the first to say (with teenage spunk and spirit): **It's your planet, too. Get involved, already!**

Learn more at: www.polarbearsinternational.org/programs/project-polar-bear.

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Our goal is simple.

We aim to preserve the arctic sea ice that polar bears call home, saving not only the polar bear, but the extraordinary web of wildlife that makes this ecosystem so uniquely beautiful and worth keeping.

How? By motivating reductions in CO_2. Studies have shown that lifestyle changes by individuals can, collectively (and this means more and more of us), add up to have an impact on the build-up of greenhouse gases that wrap the globe in a thick, warming blanket. And, so, we also focus on conservation education to help inform, inspire, and empower an ever-widening circle of people to reduce their carbon footprint and become catalysts for change.

One way we accomplish this is through our select network of Arctic Ambassador Centers (AACs) in aquariums, zoos, science centers, and museums. These partners have embraced our mission wholeheartedly and continue to amaze us with their creativity and outreach.

Take a look at some of the things they're doing . . .

- Installing solar panels to help power staff offices, exhibits, and dining areas—and explaining why with signs
- Challenging schools to ***Bundle Up for Polar Bears*** by turning thermostats two degrees up in summer, two degrees down in winter
- Setting up ***No Idle*** zones for cars and buses to encourage visitors to turn off engines for waits longer than 30 seconds
- Including information on climate change—and, most important, actions people can take—in their public outreach
- Conducting energy audits to create plans to reduce energy dependence
- Organizing tree-planting days for staff members and volunteers, an activity that removes CO_2 from the atmosphere and helps educate the public about the link between planting trees and saving habitat
- Creating incentive programs that encourage staff to carpool, ride bikes, and use public transportation
- Taking CO_2-reduction pledges on facility grounds and at local festivals
- Achieving zero garbage production in commissaries and guest services

Actions like these have ripple effects in communities. AACs often honor local businesses with PBI Paw of Approval Awards in recognition of their accomplishments in CO_2 reduction and environmental leadership.

BUILDING MOMENTUM

Arctic Ambassador Centers Lead the Way

Tundra Connections

Igniting a passion for change is a large part of PBI's work—and one of the most impactful ways we do this is by connecting with thousands of students from around the world as we broadcast live from a Tundra Buggy® via satellite during the polar bear migration along Hudson Bay.

Discovery Education, Apple Education, the Association of Zoos and Aquariums, and other partners join us . . .

in this outreach, giving classes the chance to interact live with scientists and educators—and to see wild polar bears outside.

Best of all: the students learn which actions to take to have the most powerful effect on helping polar bears.

Clockwise: Broadcasting from the tundra; old viewing tower on Cape Churchill with satellite dish; filming a polar bear; Tundra Buggies

A SCIENTIST'S TIPS FOR HELPING POLAR BEARS

Even though most of us live thousands of miles from polar bears' arctic home, the actions we take on a daily basis have an effect on the bears and the sea ice habitat they need for their survival.

THE LINK IS SIMPLE. When we burn carbon-based fossil fuels, we release CO_2—and the laws of physics dictate that the more CO_2 in the atmosphere, the warmer the world will be.

Scientific research shows, however, that it's not too late to take action to save the arctic sea ice and polar bears.

PBI Senior Scientist Dr. Steven C. Amstrup, offers this list of the most meaningful actions individuals can take to help polar bears, right now.

Take a look. Find out how many you're already doing—and then challenge yourself to add two or three more. These simple steps will soon become habits and, eventually, part of a stewardship ethic that guides your daily choices and informs your everyday decisions.

© Valerie Beck

TRANSPORTATION

- ✔Walk or ride a bike
- ✔Use public transportation
- ✔Drive the most fuel-efficient vehicle for your needed task and drive at the most efficient speed for your vehicle
- ✔Avoid drive-through businesses; don't let your vehicle idle for more than 30 seconds
- ✔Keep your car tuned up and maintain proper tire inflation

SOCIAL INTERACTIONS

- ✔Vote for political representatives who recognize that our carbon-based society isn't sustainable and who will work to establish an appropriate price for carbon
- ✔Explain the facts about global warming to your friends and relatives
- ✔Encourage members of your social circles to adopt sustainable life-styles—and lead by example
- ✔To help create a stewardship ethic in your community and raise awareness of how lifestyle changes can make a difference, take part in local green initiatives like planting trees, recycling drives, or ride-your-bike to work days—or start your own project

MARKETPLACE

- ✔Minimize consumption: reduce, reuse, and recycle
- ✔Research vendors and buy from those with sustainable business models
- ✔Avoid products with excess packaging
- ✔Buy products created closer to home: for example, if you live in the U.S. or Canada, purchase goods made in North America instead of those from far away

HOME AND WORK

- ✔Insulate buildings and heat/cool with efficient systems (e.g., rated by Energy Star)
- ✔Generate your own power with wind and solar
- ✔Let your utility company know that you want to subscribe to green power
- ✔Use energy-efficient (e.g. Energy Star) appliances and equipment. Turn appliances off when not in use. Use low-tech methods when possible (e.g., line-dry clothes)
- ✔Replace light bulbs with compact fluorescent or other energy-efficient bulbs (see Energy Star)
- ✔Use no more water than needed

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FOOD CHOICES

- ✔Buy and cook only what you'll eat. Don't waste food.
- ✔Eat foods that are minimally processed and packaged (e.g., potatoes vs. potato chips)
- ✔Purchase fruits and vegetables grown locally on small-scale farms
- ✔Avoid products that result from tropical deforestation (e.g., palm oil, coffee that isn't shade-grown, South American beef)
- ✔Consume less meat. Eat three meatless meals per week.
- ✔Consume products like pasture-fed beef, free-range poultry, and wild salmon rather than CAFO (concentrated animal feeding operations) meats.

"We were only able to establish the relationship between climate warming and polar bears in Western Hudson Bay because we had a database that extended for over 20 years on bears and over 30 years on ice breakup dates.

"It's also significant that looking for climate-related effects wasn't an original goal of the study. In fact for the first 10-15 years, no one even thought about that aspect.

"However, because of the long-term monitoring I had originally hoped would be instructive about natural variation in the ecosystem, we had enough years of data in the bank to be able to continue what we were already doing and apply the results of the total data set to climate warming.

"The most important underlying message is that, in ecological research, long-term studies are critical and pay off the most—and keeping your mind open to the possible importance of unpredicted results is a crucial component."

—Dr. Ian Stirling

POLAR BEARS INTERNATIONAL
PO BOX 3008
BOZEMAN MT 59772
www.polarbearsinternational.org

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Polar Bear Fact & Fiction

- Polar bear paws are furred and their pads are covered with small bumps called *papillae* to keep them from slipping on ice.
- Polar bears have powerful claws—strong enough to haul a 40-90 kg (150-200 lb.) seal from the water.
- Polar bears are insulated with two layers of fur to help keep them warm. They also have a thick fat layer. In addition, their compact ears and small tail prevent heat loss. In fact, polar bears have more problems with overheating than they do from being cold—especially when they run.
- Persistent myth: a polar bear's white fur is fiber-optic. Research shows that the clear, hollow hairs don't funnel heat to their black skin.
- Polar bears' fat layer is just that—fat, not blubber. Blubber has more protein, giving it a springy texture. Blubber is found in seals and whales.
- Although polar bears are champion swimmers, the marathon swims many are now forced to endure to reach sea ice are taking their toll, especially on cubs.
- Polar bears can't survive on goose eggs or other terrestrial foods. If that were the case, they would already be doing so in periods when they're driven ashore.

Polar Bears International is the Champion for Polar Bears

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Ways You Can Help PBI

- Make an automatic monthly pledge
- Adopt a polar bear
- Shop online in our **Gift Shop**
- Give a gift membership
- Donate goods or services
- Tell others about PBI
- Share our posts and tweets on Facebook and Twitter

To receive our fun and informative monthly online newsletter, **PBiNews**, as well as occasional updates, please complete the *sign-up* form on our website.

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