

Natural History

Panel Organizers

Robert and Carolyn Buchanan

Polar Bears International

Speakers

Dr. Steven Amstrup, Biological Resources Division, U.S. Geological Survey, Anchorage, AK

Stacy Jack, Communications Manager, Wapusk National Park, Churchill, Manitoba, Canada

Dr. Harry Reynolds, President, International Association for Bear Research and Management (IBA), Alaska Department of Fish and Game, Fairbanks, AK

Dr. Andrew Derocher, Professor and Research Scientist, University of Alberta, Department of Biological Sciences, Edmonton, Alberta, Canada

Steve Amstrup, Ph.D.

Biological Resources Division, U.S. Geological Survey, Anchorage, AK

Amstrup studies distribution and movement patterns in polar bears with the ultimate goal of ensuring wise stewardship. He studies bears in three areas: Chukchi, South Beaufort Sea, and North Beaufort Sea.

The distribution of polar bears is tied to sea-ice distribution. Polar bears are the most mobile of all quadrupeds, so they can be difficult to track. Polar bears exhibit significant individual variation in their mobility patterns: some are extremely mobile while others are "homebodies."

Radio-transmitter collars that use satellite telemetry are the key to understanding polar bear movement and distribution. However, telemetry shows only where bears were, not their current position, so how do we make real-time management decisions? Scientists can now determine the relative probability of a bear being in a particular area through the use of "probability contours." These contour maps are useful for harvest management, for example, because they give us a quantitative basis for management.

The telemetry study showed that Alaska has quite a few maternal dens. To find inhabited maternal dens, scientists use a forward-looking infrared sensor hung on the nose of a helicopter. They are now mapping areas of highly probable polar-bear-den habitat. The den maps can help us tailor human activity so we avoid interfering with polar bear dens.

We have seen a 25-year decrease in the extent of sea ice in the northern hemisphere—ice melts an average of two to two-and-a-half weeks sooner. The result of this in the Hudson Bay population is that females are lighter and have fewer cubs. The Alaskan population has not exhibited similar changes.



Stacey Jack

Communications Manager, Wapusk National Park, Churchill, Manitoba, Canada

Wapusk National Park is one of the distinct regions protected and administered by Parks Canada. Wapusk means "white bear" in the language of the aboriginal people.

Wapusk National Park is on Hudson Bay in northern Manitoba. It has no visitor facilities, no trails, and no roads. Entrance to the park is only via approved operators. Polar bears concentrate in the park during the ice-free period (approximately July through October).

Communication is the primary tool for achieving conservation of polar bears and other natural resources. Parks Canada tailors messages to each type of visitor, with the overall message of environmental stewardship: "Keepers of the Land." Polar bears are a conduit to get this message out to vast numbers of people. Zoos, however, come in contact with many more people. Because zoos and Wapusk National Park are both "keepers of bears," we need to synchronize communications and send a common message. Our communications need to be accurate, and must both teach and engage.

Harry Reynolds, Ph.D.

President, International Association for Bear Research and Management (IBA), Alaska Dept. of Fish and Game, Fairbanks, AK

Besides being the current president of the IBA, Reynolds is a brown-bear research biologist who studies population management in Alaska.

The IBA (website) has 600 members in 60 countries. The organization's mission is to pursue bear conservation through science-based research, management, and education. IBA offers educational outreach and publications; funds bear-conservation projects; and provides science-based advice to governments, agencies, and others. It also is the parent organization of the World Conservation Union-sponsored Bear Specialist Group and Polar Bear Specialist Group.

Zoos are a powerful force for conservation. Scientists in the field expand our knowledge of bears, but the "real" conservationists are those who educate the public. Zoos need to communicate the plight of bears around the world. Zoo professionals who join IBA will gain professional collaboration and the most up-to-date research and information on bears; IBA will become a stronger organization with more representation by zoo professionals; and bears will benefit, because we can accomplish a lot more together than separately.

Andrew Derocher, Ph.D.

Research Scientist/Professor, University of Alberta, Department of Biological Science, Edmonton, Alberta, Canada

Derocher is a biologist who studies polar bears in the wild.

Polar bears are part of a short food chain in which they are the apex predator. Nutritionally, they require an extremely high fat content (they can eat approximately 20% of their weight in one meal



composed of 100% fat), and rely primarily on the ringed and bearded seal. However, their diet is diverse, and they may also feed on bowhead whale, beluga whale, kelp, and berries.

How polar bears get food varies with the type of food, the individual and its hunting skills, and the type of ice. Polar bear prey is dependent on sea ice. Sea ice is not like a frozen lake—it shifts and moves and can be quite rough. Sea ice is diverse and variable, and polar bears change their hunting behavior based on the ice condition and habitat changes.

Bears are moving all the time. Some polar bears cover huge distances. Because sea ice is constantly drifting, polar bears must fight against that movement to get anywhere. Polar bears are opportunistic and learn new things quickly. And because they live in a very dynamic environment, they must constantly adapt.

The time budget for a polar bear in the wild consists of: 1) feeding, 2) traveling, 3) hunting, 4) sleeping, and 5) breeding. In a zoo, they probably spend their time budget more like this: 1) sleeping, 2) unwanted activity, and 3) feeding. Habitat enrichment is possible for captive polar bears, but we must remember that bears are social, complex, and highly individualistic. For long-term enrichment, we must think about how we can create maximum diversity.

We need to show the public how polar bears "make a living," and make sure researchers' results get to zoos. Some of the areas of concern that affect polar bears, and that need to be communicated to the public, are climate change, toxic chemicals, oil development, over-harvest, Arctic shipping, and tourism.

Are polar bears solitary? Group aggregations do happen—if taken out of their typical competitive situation (for example, if they don't have to compete for food). Adult female polar bears spend much of their lives with offspring, so polar bears can be social—but only when conditions permit.