

## Trouble at the Top: Polar Bears In A Warming Arctic



27 February, 2020

7:30 p.m.

Red Deer College  
Room 2602

a joint presentation sponsored by the  
Science Department (RDC)  
and Red Deer River Naturalists



*Dr. Andrew Derocher*



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Since 2002, Andrew Derocher, Ph.D. has been a Professor of Biological Sciences at the University of Alberta in Edmonton. Dr. Derocher joined the University after 7 years at the Norwegian Polar Institute as a research scientist studying polar bears in Svalbard and western Russia. His research over the last 36 years has focused on the ecology and conservation of polar bears across the Arctic. His current research is focused on understanding the effects of climate change on polar bears. He has published over 150 peer-reviewed papers on polar bears and is a member and past chair of the IUCN/SSC Polar Bear Specialist Group.



Everyone Welcome

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# SEASONAL SIGHTS AND SOUNDS OF ALBERTA: MUSKRAT STRATEGIES FOR WINTER SURVIVAL

By Dr. Sally Stuart

In early January, while driving slowly up our gravel road, we spotted a small dark shape in the distance. It turned out to be a muskrat (*Ondatra zibethicus*) ambling slowly along. It seemed to be oblivious to the rest of the world.

Musk rats are one of Alberta's 39 species of rodents. They are not, as is commonly believed, related to beavers but are in fact large voles. Normally hidden from view at this time of the year, Musk rats spend the winters living in lodges constructed from cattails and other vegetation, held together by a little mud and ice.

Musk rats are endotherms that, even in winter, must maintain a constant body temperature at about 37 C. However, they neither hibernate nor store food. In order to survive, they must continually dive and feed on submerged vegetation in the frigid waters beneath the ice. Diving in ice-bound cold water presents two significant physiological problems: hypothermia and the lack of available oxygen.

During the winter, up to six adult muskrats will live together in a lodge. They spend most of their days (13-14 hours) resting and huddling for warmth. These crowded conditions lead to a shortage of oxygen (hypoxia) which, interestingly, may trigger physiological mechanisms beneficial for diving.

Obtaining sufficient oxygen is a challenge for muskrats. Although they have the ability to remain submerged for several minutes, in the winter they appear to limit dive time to about 40 seconds, probably due to the risk of hypothermia.

Brian MacArthur at the University of Manitoba has published numerous papers on muskrat physiology. According to MacArthur, most winter physiological adaptations centre around the ability to store extra oxygen. Blood samples taken from overwintering muskrats showed an increase in the number of erythrocytes (red blood cells) and hemoglobin (the protein pigment found in erythrocytes which oxygen attaches to), probably due to the hypoxic conditions encountered in the lodges.

Skeletal muscle contains more of the protein myoglobin. Similar to hemoglobin, myoglobin acts as an oxygen res-



ervoir for skeletal muscles. Musk rats may also undergo bradycardia (slowing of heart rate), which decreases oxygen usage by the cardiac muscle.

Fascinatingly, studies have also shown that changes can occur to the physical structure of their digestive tract so that the small intestine, cecum and large intestine all increase in size during winter months! Finally they may engage in coprophagy, eating their feces for additional sustenance.

To counteract hypothermia, muskrats raise their body temperature slightly prior to diving, and their unique pelage allows a layer of air to be trapped against the skin while the guard hairs repel water. Upon emerging from the water, they shiver violently. These energy-intensive behaviours are possible because of carbohydrate-rich cattail rhizomes, one of their main winter food sources. To accommodate their diet, muskrats have an upper and lower pair of orange pigmented, large and continually growing pig incisors and 12 grinding molars.

In order to obtain sufficient oxygen sources during the long winter months, muskrats construct a series of mini lodges close to the main lodge—these mini lodges provide locations for them to surface for oxygen when foraging. Even more fascinating are the “pop ups” (smaller mini-lodges) which they construct over cracks in the ice. It is possible for them to surface at these pop ups if the ice is thin, or the pop ups may provide access to trapped bubbles of air under the ice.

As the temperature plummets, I find myself being frustrated after only a couple of days of confinement in my own “lodge.” I think of the muskrats, trapped beneath the ice and stacks of cattails. These remarkable creatures will survive because of the extraordinary transformations of their physiology to winter conditions.

## MELCOR'S DEVELOPMENT PROPOSAL AND THE MOLLY BANISTER DRIVE EXTENSION

By Rod Trentham

After many years of opposing this road next to the Bower Natural Area – and through the Piper Creek escarpment – Dorothy and Ruth Bower have sold their 155-acre (63 HA) farm to Melcor Developments Ltd. in July of 2019. The farm has been in the Bower family for 120 years. The Bower sisters have been the stewards of the Bower Natural Area behind and around their farm for decades. The Bowers offered the Bower Natural Area to the City, but they turned it down due to the loss in tax revenues.

Since the days of Michael O'Brien and timed driving tours in 1991 after noticing the Molly Banister Drive Extension (MBDEx) on the planning maps, RDRN – and many other citizens and organizations – have vociferously opposed this needless 4-lane arterial road right through Waskasoo Park. Melcor wants the Molly Banister Drive Extension off the map for good, so they can proceed with development.

Melcor proposes to add 40 acres (16.2 HA) of Environmental Reserve to Waskasoo Park, another 10 acres (4.05 HA) of Municipal Reserve; and they would develop the remaining 105 acres (42.5 HA). Melcor estimates that, if the MBDEx alignment is protected, the City of Red Deer would forego \$50 million in future tax revenues

because of how their development would be adversely affected. This is exactly what Melcor told the Bower sisters when they purchased the land. RDRN is with Melcor on this one, a win, win, win!

After a fire storm of protest in 1996, including a wonderful image of RDRN President Joan Hepburn standing under the Molly Banister sign with an RDRN binder, on January 27, 1997 in an 8-1 margin, City Council voted the protection of the Bower Natural Area and took the Molly Banister Drive Extension off the future planning maps. It mysteriously reappeared six years later in 2003/2004. We need to send letters to Council at this juncture.

Email: mayor@reddeer.ca; buck.buchanan@reddeer.ca. If you have any questions, are looking for context, samples of letters or more details don't hesitate to email rod.trentham@gmail.com or call or text me at 587.377.5555.



*Don Wales in the mixed forest that MBDEx would go through above the Piper Creek escarpment. Rod Trentham photo.*



*Left: RDRN President, Tony Blake, receives a \$1,500.00 donation cheque from Elysha Snider (left) and Chelsey Key of Shed your Threads. Shed Your Threads is a pop-up consignment shop that supports the Red Deer community. Our thanks for this generous donation!*

## THE GREAT BACKYARD BIRD COUNT : FEBRUARY 14–FEBRUARY 17

The Great Backyard Bird Count (GBBC) is a free, fun, and easy event that engages bird watchers of all ages in counting birds to create a real-time snapshot of bird populations. Participants are asked to count birds for as little as 15 minutes (or as long as they wish) on one or more days of the four-day event and report their sightings online at [birdcount.org](http://birdcount.org). Last year, more than 160,000 participants submitted their bird observations online, creating the largest instantaneous snapshot of global bird populations ever recorded.

<https://www.audubon.org/conservation/about-great-backyard-bird-count>



## DID YOU KNOW?

By Susan van der Hoek

A group of chickadees can be called a **banditry of chickadees**. This collective noun probably refers to the mask-like appearance of chickadee species. There are seven species of chickadees in the world.

**Fact:** The increasing number of "dee" notes at the end of a chickadee call indicates increasing levels of agitation. For instance, a chickadee may end its call with just one "dee" when a known person fills a favorite bird feeder. An owl roosting near the feeding station would warrant many more "dee" notes.

OXFORD LIVING DICTIONARIES

## PROPOSED SANDHILL CRANE HUNT IN ALBERTA

Once again, the hunting of Alberta's "sensitive" Sandhill Cranes is being proposed. A previous proposal was turned down by the Minister of Sustainable Resource Development in 2009. But renewed pressure from hunting groups has rekindled considerations to allow crane hunting, this time by the federal government.

Why oppose a Sandhill Crane hunt? There are many reasons:

**Continuing vulnerability of Sandhill Crane habitat.** The Alberta government's report, *General Status of Alberta Wild Species 2010*, states that the Sandhill Crane is "vulnerable to wetland loss" and so, if nothing is currently being done to address this vulnerability, the precautionary principle would suggest that introducing a hunt now is inappropriate.

**Risk of incidental killing of endangered Whooping Cranes.** The Alberta government's 2001 report, *Status of the Whooping Crane in Alberta*, states "accidental shooting due to misidentification and poaching are still of concern." The risk of even one misidentified Whooping Crane being shot is quite simply too high for such a critically endangered population. It is only to be expected that accidental Whooping Crane deaths are likely to be under-reported.

**Reasonable doubt about the population status of the mid-continent population of Sandhill Cranes.** The US Fish and Wildlife Service 2012 report, *Status and Harvest of Sandhill Cranes*, advises that the long-term (1982-2008) trends for the mid-continent population indicate that harvest has been increasing at a higher rate than population growth. According to Janice Hughes, author of the 2008 book, *Cranes: A Natural History of a Bird in Crisis*, "hunting can place undue stress on local populations even if the species as a whole appears plentiful."

**Why is a Sandhill Crane hunt needed?** One justification for introducing a new Sandhill Crane hunt is crop damage from migrating Sandhill Cranes. However, there are very few complaints of Sandhill Cranes damaging crops in Alberta. Of course, if crop damage was a serious problem it could be addressed without killing members of this sensitive species.

The public consultation process is open from Jan 18 to Feb 16, 2020. Be sure to voice your opinion on this topic. <https://www.canada.ca/en/environment-climate-change/services/migratory-game-bird-hunting/>



### THE JANET TACK (NEE JAFFARY) BEQUEST

The RDRN has received an extremely generous bequest from the estate of Janet Tack (nee Jaffary) of Lacombe, AB.

The bequest amounts, after legal fees, to approximately \$650,000.00. A special committee of RDRN members has been formed to oversee the bequest to ensure that it is managed with diligence and transparency.

The Red Deer River Naturalists, the first natural history organization to be established in Alberta, was incorporated as a society in 1906. The objectives of the society are to foster an increased knowledge, understanding and appreciation of natural history, and to support conservation measures dealing with our environment, wildlife and natural resources.

Annual membership is \$15.00 for individuals and \$20.00 for families.

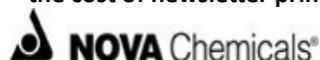
Regular meetings are held at 7:30 p.m. on the fourth Thursday of most months at the Kerry Wood Nature Centre, 6300-45 Ave., Red Deer, AB. Non-members are welcome.

Members are encouraged to contribute to this newsletter. The deadline is the last Friday of the month.

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