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CARMA Newsletter September 2010

1 message

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In this Issue

Feature Project - *Intestinal Nematodes*

Feature Person - *Roy Aschenfelter*

Herd News - *2010 Population Estimates*

Steering Committee Update - *Synthesis moving along and CARMA drifting south*

13th North American Caribou Workshop - *CARMA highlighted*

CARMA 7 - is coming up soon!

From the Mind of Doug Urquhart

Contact Us

Feature Project - Intestinal Nematodes

Bryanne Hoar, PhD candidate, at work in the field.



Intestinal Nematodes. Hmm - doesn't sound so good and what does it have to do with caribou, and us?

PhD candidate Bryanne Hoar's research focuses on the impact of northern climate change on the development, survival, and transmission of a roundworm parasite called *Ostertagia gruehneri*, or *O. gruehneri*. The adults live in the stomach of the caribou and infect almost all caribou and all caribou herds. So it appears to be an excellent tool with which to assess the impact of climate change. To do this, Bryanne uses a combination of field and laboratory studies

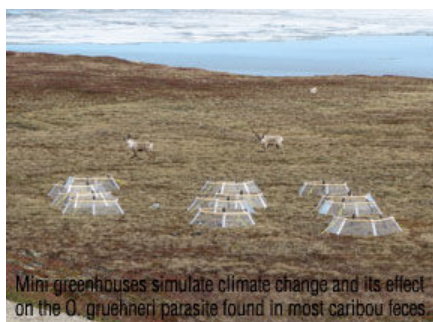
to determine development and survival rates for *O. gruehneri* under a variety

of natural and climate change-like conditions.

In conjunction with CARMA, she is also determining the current levels of infection in the Bathurst caribou herd.

“This parasite may help drive the population cycles of the caribou,” says Bryanne. “Caribou populations naturally go through cycles of high and low populations ... usually about a 40-year cycle. This organism might help drive this cycle. Right now the barrenground caribou are in decline. One possible reason for the natural portion of the decline may be this parasite. And if this parasite has a population explosion of its own, causing an increase in infection levels, it may have an effect on the caribou’s ability to rebound from their population decline.”

“This means we want to look at how climate change may affect the level of transmission for this parasite. We’re looking mainly at the effect of increased temperatures. How the parasite develops from one stage to the next in its lifecycle depends on temperatures. Increased temperatures help it develop faster.”



Mini greenhouses simulate climate change and its effect on the *O. gruehneri* parasite found in most caribou feces.

Bryanne started off with field experiments. She set-up fecal plots containing *O. gruehneri* eggs on the tundra in the NWT and sampled them weekly to determine development and survival rates. Five sets of plots were set-up throughout the summer of 2008. Half the plots were directly on the tundra. Half the plots were set up in greenhouses that passively warm the air, to

simulate climate change.

With the field work, the first thing Bryanne found is that the change in average temperature didn’t seem to have much effect on parasite development. However, the change in extreme temperatures, especially high/maximum temperatures, did cause changes in the parasites’ development. Development actually slowed down. So above certain temperatures the parasite may have trouble developing.

This is significant, says Bryanne, for who knows what the intricate relationship of the parasite is with other parasites and with the caribou host, and therefore the absence of the parasite could also have detrimental effects on the caribou.



Donating their “poo” to science.

“We also wanted to see what the winter survival rate of the parasite was. We found their survival rate is almost 100% over the winter and unlike other related parasites, two developmental stages rather than just one are capable of surviving. To do this, we left feces samples on the tundra over the winter and went to collect and analyze them the following June.”

In addition to the field work, Bryanne is simulating these situations in the lab - so growing, observing and analyzing parasite eggs and larvae under more controlled conditions.

Bryanne is still in the process of collecting and analyzing data so there isn't much available on the CARMA website. However, here is a link to the [Basic Life Cycle of *Ostertagia gruehneri*](#).

Bryanne Hoar is a PhD candidate in the Department of Biological Sciences, University of Calgary, under the supervision of Drs. Susan Kutz and Kathreen Ruckstuhl.

Feature Person - Roy Ashenfelter



Roy Ashenfelter is not an idle man.

He works in Nome, Alaska for the Norton Sound Economic Development Corporation (NSEDC) as Community Development Coordinator. This means he assists with programs funded by NSEDC to benefit the villages that are in the NSEDC. NSEDC is a commercial development quota group that receives an amount of funds from the state fishery from which they make distributions to villages within the area. His role is to assist the CDQ villages that apply for funds from the Community Benefits program.

Roy is also a board member on Regional and Village Native Corporation and, he is chairperson of the Western Arctic Caribou Herd Working Group - an important member of CARMA.

The Western Arctic Caribou Herd Working Group is made up of stakeholders - hunters, state officials, university members, and conservationists - people representing groups that have an interest in the herd. Roy travels and represents the working group at functions, including CARMA conferences.

“The herd is doing quite well,” says Roy. “I believe we have 380,000 animals. The census was just done. It’s stabilizing now although it declined somewhat from it’s high in the 400,000s.”

Roy is from a village - White Mountain - which on a map of Alaska is in the area of Seward Peninsula, the part of Alaska closest to Russia, NE of Nome by about 60 miles.

He now lives in Nome, Alaska. Born and grade-schooled in White Mountain, he attended high school in Anchorage, went to college at the University of Alaska in Fairbanks, and then found employment in Nome in '82.

“I’ve been there ever since. My main job was with Kawerak. I worked for them for 21 years. They’re the local non-profit that provides assistance and subsistence, social and education programs in the Seward Peninsula. I was the director of Land Management Services. I helped Alaska Natives who applied for property labeled as Native allotments.”

“As a member of the Western Arctic Caribou Herd Working Group what excites me is the opportunity to help evolve management of the herd. The herd migrates through three regional corporations, BLM, State, several Conservation System units (territories) with many users and industrial interests so it’s more like managing people than the herd, to some degree ... working with different interest groups that take caribou in different ways for different reasons, and you have conservationists, and business interests that want to do things that could affect the herd. So we work with all of them to help minimize effects on the herd.”

“In my day-to-day I work in the fisheries corporation, and I like that I help provide funds to the CDQ villages. I help provide valuable opportunities in villages that didn’t exist before. I really like that.”

Roy says the most important thing the Western Arctic Caribou Herd Working Group does is review its management plan on a yearly basis and review current issues that may affect the herd, such as industry development plans where the herd has a calving area.



“There are many, many other things the herd needs from people in terms of intervention, like disease identification, but right now our biggest challenge is watching industry in its plans for development in the calving area or migration routes and wintering areas, to make them aware of potential impacts they may have and address solutions to minimize impact on the herd.

Roy’s been in a committed relationship for 29 years. He has two daughters aged 21 and 28.

“I’m 55,” says Roy. “I do a lot of fishing, hunting and outdoor activities throughout the year. I’m a villager at heart. We just cut and hung 600 fish. I hunt moose, caribou, sea mammals, etc. I’m an outdoor person that really enjoys the area we live in. What makes me happy is being here and living this kind of outdoor life. I think that’s what I bring to the table for the herd, too. Not just management skills, but also an intimate knowledge and love of the subsistence life. I am Inupiat.”

Herd News - 2010 Population Estimates

A population estimate was attempted for four herds across North America this

summer.



The Porcupine herd has not had a successful count since 2001 when 123,000 animals were recorded. Attempts have been made almost every year since then, but without success. The Porcupine Caribou Technical Committee - a group of biologists working in Yukon, NWT and Alaska -

decided to try both a calving ground and a post-calving census this year. In a calving ground census cows are surveyed during the peak of calving and the number of breeding females are determined. In the post-calving census - the normal method used on the Porcupine Caribou Herd - all animals are photographed and counted when they form large groups during the insect season in late June and July.

During early June bad weather resulted in breeding females being scattered from northern Yukon to the eastern edge of the herd's range in Alaska and many of the collared cows could not be located with the marginal flying conditions. Plans for the calving ground count had to be abandoned. However the herd was cooperative and the Alaskans were successful this year in photographing large groups of caribou during the post-calving period - all animals were accounted for, and the photographs turned out.

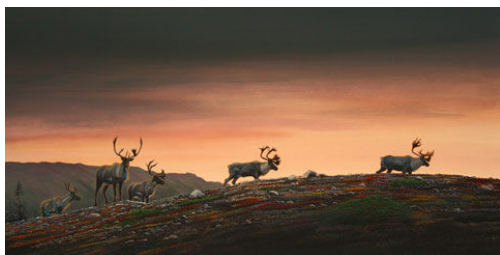
In a brief note Jason Caikoski, a wildlife biologist with the Alaska Department of Fish and Game (ADF&G) reported "ADF&G completed a photo census of the PCH. The herd was split, we photographed the south side of the Brooks Range on 2 July and the north side on 3 July. We'll get a look at the developed photos in a few weeks, but we are expecting a good census." We are eagerly awaiting the count to be completed to learn the status of the herd.



A similar post-calving story unfolded within the range of the Bluenose-East herd. Favourable weather and irritating bugs ensured the caribou bunched up for their photographs, unlike the failed attempt in the summer of 2009.

GNWT ENR completed both a calving photo-survey and a post-calving survey on the Bluenose-East herd in June and July 2010. The two surveys were done in part because a July 2009 attempted post-calving photo survey on this herd failed due to weather and a lack of caribou aggregating, and it was unlikely that both surveys would fail in one year, increasing the likelihood of getting a new population estimate. In addition, this provided an opportunity to do a side-by-side comparison of the two methods in one year. A population estimate is not yet available but initial review of the data suggests that the Bluenose-East herd has not continued to decline at the annual rate of decline (7.5%) it showed between 2000 and 2006. 7000 Photos were taken during the calving photo-survey in early June, and photography of post-calving aggregations was completed in early to mid-July using a Helio-Courier and a Cessna 206. This herd was estimated at

65,000 +/- 3500 in 2006.



On the Ungava Peninsula there were mixed results in efforts to photograph post-calving aggregations of the George River and Leaf River Herds.

According to Vincent Brodeur, a biologist for the government of Quebec, "the census for the George went well,

we were able to take good quality pictures of a representative sample size. We are starting the count and should have a number to share early this fall. We were also up in the Ungava peninsula for the Leaf River herd but unable to take pictures. The animals were all grouped in a workable area but no aggregations at a finer scale. No mosquitoes were present during July so the project aborted.

According to Brodeur and Steeve Cote, University of Laval, there will be an attempt again next year on the Leaf River Herd. The George River and Leaf River herds have not been counted since 2001.

Steering Committee Update

Synthesis moving along

Although not at the lightning speed that we hoped when we left the CARMA 6 meeting last December, the synthesis efforts are progressing. CARMA is working with regional biologists pulling together seasonal distributions for all the migratory tundra herds. These herd distributions are the basis of documenting each herd's unique climatic characteristics. Downloading this massive dataset is Dr. Paul Whitfield, working with a statistics grad student from Simon Fraser University, Jing Cai. The MERRA dataset, developed by NOAA, covers the last 30 years and is a daily record of a tremendous number of weather variables. With this dataset, CARMA will highlight the similarities and differences among the herds as well as provide the data online for whoever wishes to explore their own unique analysis.

CARMA drifting south

At the last two CARMA meetings we briefly talked about expanding into the woodland caribou world. Through the efforts of Dr. Fiona Schmiegelow and student Yannick Neveau, developing a woodland component will soon be a reality. The woodland component of CARMA would be a stand-alone entity operating largely independent of the existing CARMA activities although making use of CARMA products (protocols, etc.) where appropriate.

CARMA brochure available

If you're off to an event where you'd like to profile CARMA, [click here and download the brochure PDF](#) from the CARMA website, send it to your local print shop with how many you want ... and take them along. They print 2-up, double-sided, on a 12x18 sheet. If

you have any questions or want pre-printed brochures, contact us at askcarma@gmail.com



13th North American Caribou Workshop

CARMA is working with the organizers of the next North American Caribou Workshop (Winnipeg, October 25-28, 2010) and are developing a special CARMA session. Although the abstracts and actual presentations titles have not been finalized, CARMA will focus on highlighting the current synthesis and assessment activities. We also expect many CARMA related talks sprinkled throughout the program from all the grad students, researchers, biologists and community representatives that have attended CARMA meetings over the years. Watch the Workshop website for updates to the program www.nacw2010.ca



CARMA 7 is coming up soon!

CARMA 7 is scheduled for Nov. 30 - Dec. 2 in Vancouver at the Listel Hotel (www.thelistelhotel.com, 1300 Robson Street).



Our normal venue, the Pacific Palisades, has converted to private apartments so we have moved across the street. Watch for a formal announcement in the next week.



From the mind of Doug Urquhart.



Contact Us

Do YOU want to be the feature person, project or have the herd you work with profiled? Do you have any news or events you'd like to let CARMA members know about? Do you have any feedback that would improve this newsletter? Please contact us at askcarma@gmail.com.

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