

Engaging communities in the monitoring of zoonosis, country food safety and wildlife health.

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Update (2010):

To date, the two bacteria diagnostic tests have been developed and proven efficient to use in northern conditions in wildlife meat and on community freezer surfaces. Anisakidae nematodes in northern Canada were present in beluga, sculpin species, cod species, ringed seals, Arctic charr, Atlantic salmon and Atlantic white fish but not in walrus. Species collected in this family of parasites were: *Anisakis simplex*, *Contracaecum osculatum*, *Pseudoterranova decipiens*, and *Hysterothylacium aduncum*. *A. simplex* and *P. decipiens* are of concern for food safety. The work is continuing to define parasite location and abundance in each host, and compared with different regional food consumption habits.

New data on *Trichinella* shows that the infection in wildlife is widespread among black and grizzly bears, wolves, foxes, cougars, wolverines and walrus. Walrus was the only marine mammal infected. All beluga whales and seals were negative. Bird samples, primarily from geese, ptarmigans and a variety of raptors, were negative. Black bears and walruses are the most common source of human infection in the north and understanding its infection in cohabiting species is important in understanding the ecology of the parasite and associated food safety implications. Only freeze resistant species or genotypes of *Trichinella* (*T. nativa* and *Trichinella* T6) were identified and this is significant for food safety.

Two diagnostic tests were developed for *Toxoplasma gondii* that can be used in various species of animals – a molecular method (multiplex PCR) which detects the presence of *Toxoplasma* DNA in meat, and a multi-species enzyme immunoassay (ELISA) that detects its antibodies in blood or tissue fluid. The ELISA test results can be used as a monitoring tool to indicate exposure to the parasite, and the positive muscle samples can be sent to a reference laboratory (CFIA, Saskatoon) where the PCR test can be performed. An absorbent filter paper method to collect blood under Arctic conditions for the diagnosis of *Toxoplasma gondii* was assessed in collaboration with the caribou Network (CARMA) with good results. This will simplify blood collection under Arctic conditions and facilitate sample collection by hunters.

A qualitative research study was undertaken in Nain, Nunatsiavut to determine efficient result dissemination to the community. Results demonstrated that people considered food as a high priority and were concerned about the changing role that it occupies in their society. They would

like the results presented to them from the Nunatsiavut government and the researcher, in a hands-on fashion that emphasized visual methods and one-on-one interaction.
Photos of "County Foods"

Abstract IPY Oslo Science Conference June 8-12, 2101

Engaging northern communities in monitoring zoonoses of food safety concern.

Time: Friday 11 June 15:00 Location: Room E6

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Zoonoses in country food are a concern for Canadian northerners because hunting wildlife is part of their life, and store-bought food is expensive. Scientific data is sparse and in some regions, mostly inexistent. Regional differences in methods of food preparations are also a food safety concern. The involvement of northern communities in our research is essential to get on-the-ground information to understand wildlife and disease ecology. There is now a team of northerners trained and equipped with basic laboratory tools for sample collection and diagnostic. Two new laboratories are located in Nain, Labrador and Yellowknife, NWT. The Nunavik Research Center laboratory, in Kuujuaq, has been upgraded to provide preliminary diagnosis for two bacteria: *E.coli* O157:H7 and *Salmonella* sp. A molecular (PCR) assay was created to detect protozoan parasites in meat that distinguish *Toxoplasma gondii* from other coccidian that may be present in samples. A multi-species ELISA test for the detection of *Toxoplasma* antibodies in blood was also developed. Surveillance testing was conducted for the detection of *Trichinella* spp. in Arctic mammals and birds. Molecular characterization identified larva from *Trichinella nativa*, and *Trichinella* genotype T6 in many wildlife species. We completed an initial evaluation of an absorbent filter paper method to collect blood under Arctic conditions for the diagnosis of *Toxoplasma gondii* (in collaboration with the CARMA project).

Anisakidae nematodes were detected in marine mammals and fish regularly consumed by Inuit. We are working on data entry into the Canadian Cooperative Wildlife Health Center database, which will be accessible through their website.

Gauthier, M., M. Simard and B. Blais, 2010. Prevalence of *Escherichia coli* O157:H7 and *Salmonella* in traditional meats derived from game animals in Nunavik. Rural and Remote Health, in press.