NUNAVUT WILDLIFE RESEARCH PERMIT APPLICATION

APPLICANT: Dr. John Chételat

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SPONSOR(S): Environment Canada

FUNDING SOURCES: Northern Contaminants Program, Aboriginal Affairs and Northern Development Canada

ADDITIONAL LICENCES REQUIRED: Animal Care approval, Canadian Wildlife Service scientific permit, Fisheries and Oceans scientific permit, Nunavut Research Licence

PROJECT TITLE AND RATIONALE:
A East Hudson Bay Network research initiative on regional metal accumulation in the marine food web

Communities in East Hudson Bay are concerned about ecosystem changes observed in recent decades, particularly related to sea-ice conditions, and also about potential impacts of contaminants from long-range atmospheric transport and regional human activities. A community-driven research network—the East Hudson Bay Network (EHBN)—has been established to measure and better understand large-scale cumulative environmental impacts in East Hudson Bay. Building on EHBN collaborations and activities in five communities (Sanikiluaq, Kuujjuaraapik, Inukjuak, Umiujaq, Chisasibi), this project funded by the Northern Contaminants Program will collect new and critical information on contaminants (specifically metals) that provide a regionally-integrated perspective on metal exposure in the East Hudson Bay marine environment. The five communities will sample coastal bioindicator species (blue mussel, common eider). Offshore bioindicators (ringed seal, herring gull, plankton, fish)

will additionally be collected from Kuujjuaraapik and Sanikiluaq. These locally-important bioindicators of metal accumulation will be used to characterize geographic and habitat-specific variation (coastal and offshore zones) in East Hudson Bay. Community-driven execution of biological collections as well as parallel ecosystem measurements on sea ice and water will allow for more integrated research in the context of environmental change.

TIME PERIOD: June 1, 2015 to March 1, 2016

LOCATION:
Belcher Island Archipelago, Nunavut. Specific sampling sites will be determined by local hunters based on traditional knowledge of animal distributions in the study area.

SPECIES:
Common eider (*Somateria mollissima*)
Ringed seal (*Pusa hispida*)
Herring gull (*Larus smithsonianus*)

PROJECT LEADERS: Joel Heath (Arctic Eider Society), Lucassie Arragutainaq (Sanikiluaq HTO), John Chételat (Environment Canada), ZouZou Kouzyk (University of Manitoba)

PROJECT PERSONNEL: 2-4 Inuit hunters from Sanikiluaq

OBJECTIVES: (Key expected results & Management implications)
Community-based study of the Hudson Bay ecosystem is being conducted by the East Hudson Bay Network (EHBN), a collaborative group of community leaders, academics, government, and non-profit organizations (http:\\arcticeider.com/en/hudson-bay-network). Presently, network efforts are focusing primarily on sea ice and water to systematically monitor oceanographic and ecological conditions in East Hudson Bay. This Northern Contaminants Program (NCP) project will build on established EHBN collaborations and activities to collect new and critical information on contaminants (specifically metals) that provide a regional perspective on metal exposure in the East Hudson Bay marine environment. Community knowledge and participation as well as parallel ecosystem measurements on sea ice and water will allow for integrated research in the context of environmental change.

The overarching objectives of this NCP project (2015-2018) are to:

- Establish meaningful participation in regional contaminants monitoring by community members in East Hudson Bay through local training and employment;
- Collect much needed baseline information on metal levels in the East Hudson Bay marine food web to allow for future tracking of impacts from environmental change, long-range atmospheric transport, and regional human activities; and
- Integrate information from environmental monitoring of metals among five communities (Sanikiluaq, Kuujjuaraapik, Umiujaq, Inukjuak, Chisasibi) to support regional environmental stewardship initiatives.

To achieve these objectives, participating hunters from Sanikiluaq will collect the following biota under the coordination of the Sanikiluaq HTA:

- 8 common eider in 2015, 2016 and 2017;
- 10 herring gull eggs in 2015 and 2017
- 8 ringed seal in 2015 and 2017

Note that plankton, fish and blue mussels will also be collected by local hunters during this project. Tissues obtained from wildlife collections will be analysed for metal concentrations.

This research will have direct management implications. Information on metal concentrations in different types of wildlife will indicate levels of exposure of the marine food web to these contaminants, which originate in part from regional human activities and long-range atmospheric transport.

METHODS: (i.e. Details of capture, handling, and disposition – *be SPECIFIC*)

Experienced community hunters will collect common eider or ringed seal with a firearm (shotgun or rifle, respectively). Sampling kits will be provided to hunters who will collect tissues from the carcasses using clean protocols for metals research. Size measurements of the animals will be made by the hunters using a tape measure and field sheet provided in the kit. The remaining carcasses will be retained by hunters and may be used for consumption. Tissue samples will be frozen and shipped to the National Wildlife Research Centre (Environment Canada, Ottawa) for laboratory analysis.

Herring gull eggs will be collected from colonies near Sanikiluaq. Single eggs will be collected from 3 egg clutches of random nests within a colony. Local hunters will be provided cases with foam inserts for transport of eggs and shipping to the National Wildlife Research Centre.

Tissues will be analysed for their concentrations of mercury with a Direct Mercury Analyzer and 24 other elements (including lead, arsenic, cadmium and zinc) with a mass spectrometer (ICP-MS).

Will there be fuel cached for this project (Yes / No): NO

COMMUNITY CONSULTATION PLAN:

A letter of support for the project from the Sanikiluaq Hunters and Trappers Association is attached to this application. In Sanikiluaq, the project will be led by Lucassie Arragutainaq (Sanikiluaq HTA), who will coordinate biological collections. Lucassie will hire local hunters to participate in the project. Tissue collection kits will be provided along with instructions to ensure proper sampling methods are used for trace metal analysis. In addition, each hunter will be requested to hunt with a junior member of the community (who will also be paid a daily rate) to encourage youth participation in the project. Storage and shipping of samples to the analytical laboratory in Ottawa will be coordinated by the community's project leader.

Extensive and ongoing consultation has been a key part of environmental research programs in Sanikiluaq through annual meetings and an ongoing dialogue between team researchers and community representatives throughout all components of the research programs. Kuujjuaraapik, Chisasibi, Inukjuak and Umiujaq have also been

involved in consultation workshops that were conducted by NTK and more recently through meetings and radio call in programs hosted by the Arctic Eider Society in winter 2014.

During consultation meetings for the East Hudson Bay Network in February 2014, several community members explicitly mentioned that they would like to see more research on contaminants conducted, particularly mercury that may be coming from multiple sources, including rivers, the atmosphere, and hydroelectric reservoirs.

Consultation during the proposed NCP project will be facilitated by local community liaisons and local hunters involved in field programs. Each year, an open community consultation workshop will be conducted as a part of the East Hudson Bay Network. Ongoing input on sampling will also be facilitated through hunter engagement in sampling provided by a web-based platform called the Interactive Knowledge Mapping Platform (IK-MAP), which is currently being developed.

PROPOSED USE OF LOCAL KNOWLEDGE:

A strong background of Traditional Knowledge and consultation has guided the development of the EHBN, which was formalized initially in Voices from the Bay (McDonald et al. 1997) and further developed in meetings and workshops conducted by the Nunavut Hudson Bay Inter-agency Working Group (NTK). This innovative approach has combined traditional knowledge from each community to identify knowledge gaps and priorities for the region, which include contaminants monitoring as a part of assessing cumulative impacts of environmental change and hydroelectric developments.

Field programs for the proposed project will be run by local hunters and traditional knowledge will be used to identify field sampling sites and timing of sampling activities during the program to ensure a minimal environmental impact and to maximize the effectiveness of the research. Partnering youth with more experienced hunters as a part of the field programs will provide opportunities for traditional knowledge transfer related to wildlife distribution, hunting skills and other environmental knowledge and skills, training the next generation of community driven researchers and helping preserve this essential local knowledge base.

OPPORTUNITIES FOR LOCAL PARTICIPATION:

This project will be conducted in conjunction with ongoing community-driven programs for sea ice and oceanography coordinated by the Arctic Eider Society's East Hudson Bay Network and supported by the University of Manitoba. The NCP-funded work will build on activities of these programs providing added value to the development of local training and capacity for research in each community, leading to a more comprehensive program, and providing training in more diverse skill sets for hunters and youth. This NCP project will provide training on protocols for tissue collection and the use of trace metal sampling kits, collection of ancillary environmental information relevant to the collections (e.g. geographic locations, animal size measurements), and engage participants in local contaminant issues. Combining the proposed NCP project with ongoing development of local capacity for oceanographic and ecological research and training will allow for more cost effective delivery of both projects and will enable hunters/local research partners to be retained for longer periods of employment through the year, thus strengthening the degree of local engagement in research. The proposed NCP project will therefore contribute to the development of long term capacity for

research in East Hudson Bay as well as contributing important information for broader efforts to assess cumulative impacts of environmental change in the region.

TERMS & CONDITIONS:

This application is submitted and will be evaluated prior to issuance of a Research Permit or Collection Licence, as issued by the Department of Environment – Wildlife Management Division, Nunavut Territory. All submitted applications become the property of the Department of Environment– Wildlife Division and may not be returned to the applicant.

The application review process requires that copies be distributed to a number of reviewers. The contents of this application form may be subject to access under the Freedom of Information and Protection of Privacy Act.

Principal Researcher's signature — Date: March 20, 2015

Additional Investigator's signature — Date

Additional Investigator's signature — Date

RABIES ADVISORY:

Rabies is naturally occurring disease that is endemic to wildlife, particularly canids, in Nunavut. Rabies can infect human beings, and if left untreated can cause death. All persons who may be exposed to rabies are strongly encouraged to obtain and keep updated a pre-exposure vaccination.

All applications for Wildlife Research Permits should be submitted to:

Wildlife Research Section
Department of Environment
Box 209, Igloolik, NU, X0A 0L0

Tel: (867) 934-2178
Fax: (867) 934-2190
Email: wildlife_research@gov.nu.ca

File size must be under 5MB when sending application via e-mail. Please use multiple e-mails if necessary.