PROPOSAL REVIEW

Project Number: 206-16-01 **Applicant:** Solomon Amuno

Organization: Nunavut Impact Review Board

Title: Metal related oxidative stress and DNA damage in ringed seal population from the Strathcona Sound (Arctic Bay, Nunavut)

Funding Requested: $30,000[1]

Total Score 56.5/100
(0 points deducted)

Scoring Breakdown: NWMB Priority: 4.5 / 7.5
Regional Priority: 17.5 / 17.5
Quality: 16.5 / 35.0
Consultation: 12.0 / 15.0
Funding: 6.0 / 25.0

Project Summary: The marine environment of the Strathcona Sound represents an important seal hunting and fishing area for harvesters from Arctic Bay, and has been historically exposed to a mixture of contaminants due to historical lead-zinc mining, and operations of a marine shipping terminal north of the mine site. Prior to the closure of the Nanisivik mine in 2003, and following decommissioning of the mine in 2006, Inuit engaged in hunting and fishing activities around the Strathcona sound have expressed concerns about rapid ringed seal population declines, and health issues related to contaminants. This project will attempt to answer the following research questions:

1) Do ringed seals from the Strathcona Sound carry a higher burden of heavy metals compared to seals from control sites?
2) To what extent have metal-related stresses, including damage to lipids, DNA and proteins, occurred in ringed seals from the Strathcona Sound compared to seals from control sites?
3) Do ringed seals in Strathcona Sound have a decreased resistance to parasites and disease as a result of exposure to metals compared to seals from control sites?

Project Contributions:

Requested from NWMB	$ 30,000	100%
Other Contributions[2]	$0.00	0%
Total	**$30,000**	**100%**

Budget:

Item	Funds ($)
Total Metals analysis	$10,500

[1] The Board approved $100,000 for 2016-2017 Nunavut Wildlife Studies Fund applications.
[2] Although the project does not include financial contributions from other sources, proposal includes in-kind support from lead researcher, secondary researcher and Arctic Bay Hunters and Trappers Organization.

(210 samples x $50 per sample)	
Enzyme tests	$4,800
Histopathological (disease) Assessment	$2,382
Lab Technician Salary	$3000
Round trip to Arctic Bay (Cambridge Bay-Arctic Bay) for 1-2 days	$8000
Truck Rental to Nanisivik mine site/Strathcona Sound	$2000
TOTAL	**$30,682**[3]

NWMB Staff Evaluation:

NWMB Priority: #4 – Contributes to the provision of advice regarding the Nunavut Settlement Area's marine areas and proposed decisions which would affect those marine areas.

Regional Priority: #1 Qikiqtaaluk – Marine mammals: examine the increase in health issues/diseases (for example, causes).

Project design: This study will compare contaminant loads in ringed seals near the former mining area, with those farther away from the site, to determine if significant differences exist between the two groups. This project will be conducted in two areas: 1) the Strathcona Sound near the former Nanisivik mine, and 2) a relatively uncontaminated area (control site) within Admiralty Inlet 50-75 km from the mine area. The Ikajutit Hunters and Trappers Organization in Arctic Bay will harvest 30 ringed seals for the study. The weight, length and gender of each animal will be recorded and blood samples will be collected from each animal and stored in prepared vials. Each animal will be dissected for the removal of target organs, such as kidney, liver, testicles and fatty tissues. Samples will be stored and shipped to labs at the University of Saskatchewan and Guelph University for analysis.

Application of results: The results from this project may be used to provide information on the effects of accumulated heavy metals on ringed seals exposed to mining wastes in Nunavut, including stress and disease susceptibility. As well, the results will inform community choice of traditional country food harvested, especially in areas affected by historical mining activities.

Community involvement / consultation: The Arctic Bay Hunters and Trappers Organization has reviewed the project proposal and has provided its support (appendix 1). The application states that the lead researcher will pay the hunters for the ringed seals, but does not include details on payment amount. The results of the project will be shared with the community in the form of a community report.

Prepared By: Karla Letto, Wildlife Management Biologist, NWMB
Consultations: Danica Crystal, Wildlife Management Biologist, NWMB

[3] Application does not provide details on how the researcher will cover the remaining $682.00 in the budget.

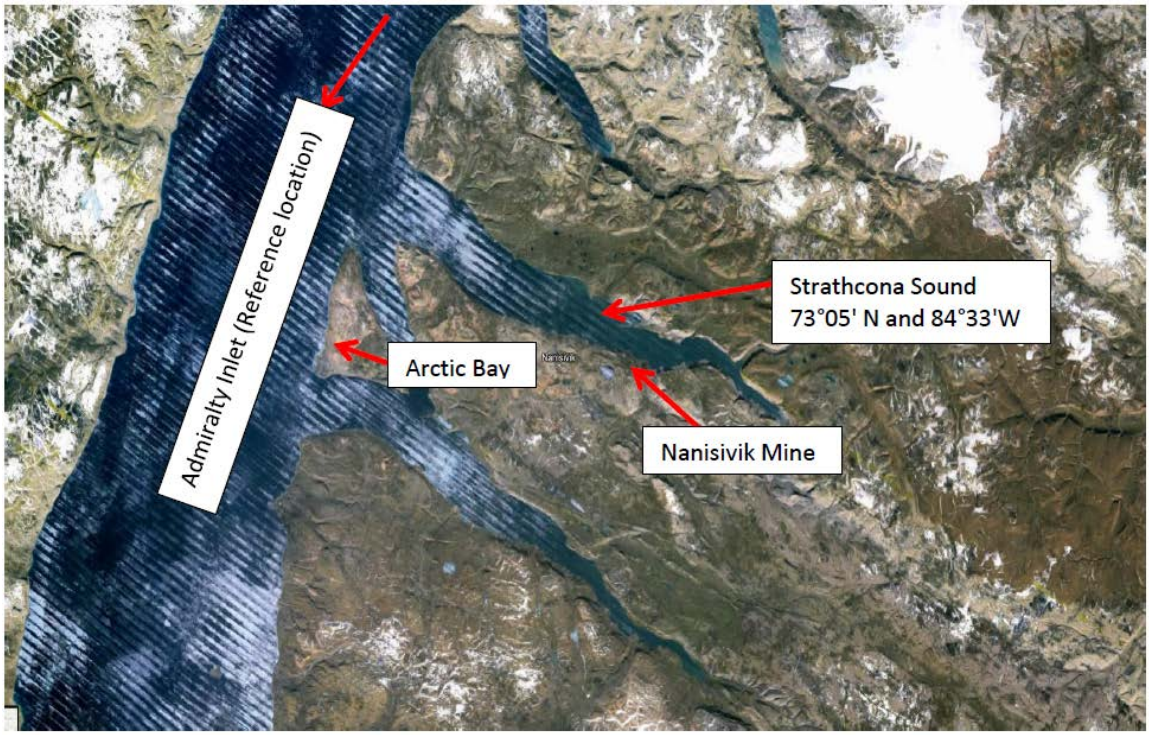

Figure 1. Study area.