ᐸᕝᐊᓐᓚᓐ ᓴᕕᕋᔭᒃᓵᓄᑦ ᐅᔭᕋᖕᓂᐊᕐᕕᖕᒋᑕ ᑯᐊᐳᕇᓴᖕᒐᑦ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖕᒋᑦ ᕿᓚᓗᒐᑦ ᑕᓯᐅᔭᕐᒥ ᐃᒃᐱᐊᕐᔫᑉ ᑕᕆᐅᖕᒐᓂᓗ

Baffinland Iron Mines Corporation, Inuit Qaujimajatuqangit and Narwhal in Eclipse Sound and Admiralty Inlet

ArctiConnexion

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ᐃᖅᑲᐅᒪᔾᕗᑦ

ᒥᓵᑭ ᐊᓗᕈᑦ, ᑐᓵᔨ, ᑎᓕᐅᕆᔨ, ᑐᓵᔨ ᐃᓱᒪᒋᔭᒥᓂᒃ
ᐅᖃᐅᓯᖃᖅᑎ ᓯᓚᑐᓂᕐᒥᒃ ᐊᖑᓇᓱᓕᒪᔪᒧᑦ ᐃᓄᒻᒥᑦ,
ᐃᓅᔪᓐᓂᓚᐅᖅᐳᖅ, ᔪᓚᐃ 13, 2023ᒥ, ᑖᓐᓇ ᐱᓕᕆᓂᖅ
ᐱᓕᕆᔭᐅᑎᓪᓗᒍ. ᒥᓵᑭ ᐃᓅᓚᐅᖅᑐᖅ ᐊᕐᕚᖅᑑᕐᒥ,
ᐃᒃᐱᐊᕐᔪᖕᒥᐅᑕᐅᓕᖅᖢᓂᓗ ᐅᓄᖅᑐᑦ ᐃᓚᒌᑦ ᓅᓕᖅᑎᓪᓗᒋᑦ
ᓄᓇᒋᔭᕐᒥᓂᑦ ᓄᓇᓕᖕᓄᑦ. ᖃᐃᑦᑎᓚᐅᖅᑐᖅ ᐅᕙᑦᑎᓐᓄᑦ,
ᐱᖃᓯᐅᕐᖢᒋᑦ ᖃᔫᑦ ᐅᕋᓐᑦ ᑎᐊᔅᑑᑉ ᐃᓱᓕᑦᑎᔪᖏᑦ
ᐃᓕᓐᓂᐊᖅᑎᖏᑦ, ᒥᓵᑭ ᐃᖅᑲᓇᐃᔭᓚᐅᖅᑐᖅ ᐸᕐᓇᒃᑎᐅᓪᓗᓂ
ᓄᓇᓄᓪᓗ ᐱᓕᕆᔨᐅᓪᓗᓂ, ᑮᓇᐅᔭᑎᒍᑦ ᐱᕙᓪᓕᐊᔪᓕᕆᔨᐅᓪᓗᓂ
ᐆᒪᔪᕐᓂᐊᖅᑎᐅᓪᓗᓂᓗ ᓄᓇᕘᒃᑯᑦ ᒐᕙᒪᖓᓄᑦ. ᕿᑭᖅᑕᓂ
ᐃᓄᐃᑦ ᑲᑐᔾᔨᖃᑎᒌᖏᓐᓄᑦ ᑐᓴᐅᒪᑎᑦᑎᔨᐅᓚᐅᖅᑐᖅ, ᐃᓄᐃᑦ
ᐸᖅᑭᔩᓐᖏᓪᓗᓂ ᓇᐅᑎᖅᓱᖅᑎᓐᖏᓪᓗᓂᓗ. ᑐᓂᓯᓚᐅᕚᑎᒍᑦ
ᖃᐅᔨᒪᔭᕐᒥᓂᒃ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᓐᓄᑦ, ᐃᓄᐃᑦ
ᐃᓅᓯᒃᑯᑦ ᖃᓄᐃᖃᑦᑕᓚᐅᖅᑐᓂᒃ ᐆᒪᔪᓂᓗ ᐃᓄᐃᑦ
ᑐᙵᕕᖏᓐᓇᐅᔭᖅᓯᒪᔭᖏᓐᓄᑦ, ᐱᕐᔪᐊᓄᓪᓗ ᐃᓅᓯᖃᖅᑎᒋᕙᒃᐳᖏᑦ.
ᖃᐅᔨᒪᔭᖏᑦ ᓯᑯᓄᑦ ᐊᒃᑐᐃᓂᕐᓄᓪᓗ ᓯᓚᐃᑦ ᐊᓯᔾᔨᕐᓂᖏᓐᓂᑦ
ᑖᒃᑯᓄᖓ ᐆᒪᔪᓄᑦ ᖃᐅᔨᒪᔫᓛᓗᓚᐅᖅᑐᖅ. ᖁᔭᓕᔪᒧᑦ
ᐃᑲᔪᕐᓂᖓᓄᑦ ᑖᔅᓱᒧᖓ ᐅᓂᒃᑳᒧᑦ ᐱᕕᖃᖅᑎᑦᑎᓚᐅᕐᓂᕐᒥᓄᓗ
ᐅᕙᑦᑏᓐᓂᖃᑕᐅᓪᓗᓂ.

In Memory

Mishak Allurut, interpreter, advisor, translator and contributor of insights and the wisdom of an experienced Inuk hunter, died, July 13, 2023, while this project was being undertaken. Mishak was born in Aqvaaqtuuq, and became a resident of Ikpiarjuk at a time when many families were moving from land-based camps into the settlement. He brought to us, years of experience working with researchers, including a number of Frank Tester's graduate students. Mishak worked as a planning and lands officer, economic development officer, and wildlife officer for the Government of Nunavut. He was also a Qikiqtani Inuit Association Community Liaison Officer, Inuit Stewards, Nautiquqtiit. He gifted us with his knowledge of Inuit Qaujimajatuqangit, Inuit social history and species on which Inuit have always depended, and with whom they have important relationships. His knowledge of ice and the effects of climate change on these species was impressive. We are grateful for his contributions to this report and for the time he was able to spend with us.

ᓇᐃᓈᖅᓯᒪᔪᑦ

ᓇᐃᓈᕐᓗᒋᑦ ᑖᔅᓱᒪᐅᑉ ᐅᓂᒃᑳᑉ ᐃᓗᐊᓃᑦᑐᑦ ᐊᒃᓱᕈᕐᓇᖅᐳᖅ. ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᑦ ᐳᐃᒍᔾᔭᐃᖅᑕᐅᔪᑦ ᑖᒃᑯᓇᓂ ᒪᒃᐱᒐᓂ ᓇᒃᓴᖅᐳᑦ ᑐᑭᓯᓂᕐᒥᒃ ᖁᔭᓕᓂᕐᓂᕐᒥᒡᓗ ᕿᓚᓗᒐᓄᑦ, ᐅᖓᑖᓄᐊᓗᐊᖅᑯᓂ ᖃᓪᓗᓈᑦ ᖃᐅᔨᓴᕐᓂᖏᑕ ᑐᓂᔪᓐᓇᖅᑕᖏᓐᓂᑦ. ᐱᖃᓯᐅᔾᔭᐅᕗᑦ ᐃᓱᒪᒋᔭᐅᔪᑦ ᐃᓄᐃᑦ ᕿᒪᒃᑕᑦᑎᓐᓂ ᐊᑐᖅᓯᒪᔭᖏᓐᓂᒃ ᐃᓅᖃᑎᖃᕐᓂᕐᓂᖏᓐᓂᒡᓗ ᕿᓚᓗᒐᓄᑦ, ᑕᐃᔭᐅᓯᒪᔪᓄᑦ ᖃᓄᐃᔾᔪᓯᖏᓐᓄᓪᓗ ᓇᓪᓕᒍᓱᖕᓂᕐᓄᓪᓗ ᐊᕐᕌᒍᓂᑦ ᐊᑐᖅᓯᒪᔭᓂᑦ ᐃᓕᓐᓴᖕᓴᔭᐅᔪᓐᓇᑐᐃᓐᓇᖅᑐᓂᒃ. ᐊᓯᔾᔨᓕᖅᑐᑦ, ᐱᓗᐊᖅᑐᒥᑦ ᑭᓯᓕᕆᔩᓂᑦ ᐱᓕᕆᔭᐅᔪᓂᑦ ᓯᓚᐃᓪᓗ ᐊᓯᔾᔨᕐᓂᖏᓐᓂᑦ ᐳᐃᒍᔾᔭᐃᖅᑕᐅᕝᑦ.

ᐱᓕᕆᔭᐅᔪᑦ ᑖᒃᑯᓄᙵᖅᑐᓄᑦ ᐅᓂᒃᑳᒧᑦ ᐱᓕᕆᓂᐅᓚᐅᖅᑐᑦ ᓄᓇᐃᖅᓯᔪᓂᑦ ᐊᖅᓵᖅᓯᓂᕐᓂᒃ. ᑕᐃᒨᔨᕐᓘᓐᓃᑦ "ᖃᐅᔨᓴᕐᓂᖅ", ᐊᑐᖅᑐᖅ ᐃᓗᓕᖕᒋᓐᓄᑦ, ᐊᑲᐅᙱᓕᐅᕈᑖᐅᖅ. ᐃᓱᒪᓇᕐᒪᑦ ᑭᓯᓕᖅᐅᓚᐅᖅᑐᓂᒃ ᖃᓄᕐᓗ ᐃᓱᒪᒋᔭᐅᔪᑦ, ᓯᓚᑐᓂᖅ ᖃᐅᔨᒪᔭᐅᔪᓪᓗ ᐱᓕᕆᔭᐅᓯᒪᓂᖏᓐᓂᒃ ᐃᓱᒪᖅᓱᓂ ᖃᓄᐃᓕᐅᕈᓯᓃᑦ, ᖃᓄᐃᑕᐅᓂᖏᑦ ᐅᖃᐅᓯᐅᔪᑦ, ᖃᓄᐃᑕᐅᓂᖏᑦ ᖃᐅᔨᔭᐅᔪᑦ, ᐊᒃᑐᐊᔪᑦ ᐱᓕᖅᑯᓯᕐᓄᑦ 'ᑐᑭᓯᓇᖅᓯᑎᓪᓗᒋᑦ" ᖃᓪᓗᓈᑎᑐᑦ. ᑕᐃᒃᑯᐊ ᑕᐃᒪᐃᖏᓐᓂᕋᓇᐊᓖᑦ. ᐅᖃᖃᑎᒌᖃᑦᑕᓚᐅᖅᑐᒍᑦ ᐊᐱᕆᕙᒃᓱᑕ, ᐅᓂᒃᑳᑦ ᐅᖃᐅᓯᐅᓪᓗᑎᒃ, ᑕᑯᔭᐅᓯᒪᔪᑦ ᐅᖃᐅᓯᐅᓪᓗᑎᒃ ᐳᐃᒍᔾᔭᐃᖅᓱᒋᓪᓗ. ᓅᕐᓗᑐᑦ ᐃᒪᓐᓇᑎᑐᑦ:

> ᑕᕝᕙᓃᑎᓪᓗᑕ, ᐃᓄᐃᑦ ᓄᓇᖃᖃᑦᑕᓚᐅᖅᑐᑦ ᓄᓇᓯᐊᑉ ᖃᓂᒌᔭᓂ. ᒪᕐᐴᓪᓗᐊᖅᓱᑎᒃ ᐊᖑᑏᑦ, ᐱᖓᓱᑦ ᐊᖑᑏᑦ. ᐅᓄᖅᑐᐊᓗᙱᒃ ᕿᓚᓗᒐᖃᑦᑕᓚᐅᖅᑐᑦ. ᑎᑭᒪᑕ, ᐅᕙᑐᑦᑕᐅᖅ ᕿᓚᓗᒐᓪᓚᒃᓱᑕ. ᓯᑯᐃᔭᓕᕋᒥ, ᐅᓄᓪᓚᖃᑦᑕᓚᐅᖅᑐᑦ ᕿᓚᓗᒐᑦ ᐱᖓᓱᓄᑦ ᐅᓪᓗᓄᑦ. ᑖᓐᓇ ᐳᐃᒍᕈᓐᓇᙱᑦᑕᕋ. ᐃᖅᑲᐅᒪᐃᓐᓇᐅᔭᖅᑕᕋ. ᐅᓄᖅᑐᐊᓘᔭᕌᖕᒐᑕ ᕿᓚᓗᒐᑦ, ᑕᐃᒪᐃᒐᔪᓚᐅᖅᑐᑦ ᐊᕐᕌᒍᑕᓖᑦ. ᐱᖓᓱᓄᑦ ᐅᓪᓗᓕᒫᓄᑦ ᕿᓚᓗᒐᑦ ᓴᕈᖃᑦᑕᓚᐅᖅᑐᑦ; ᐅᓐᓄᐊᒃᑯᑦ, ᐅᓪᓗᒃᑯᑦ, ᐅᓐᓄᐊᒃᑯᑦ. ᐱᓇᓱᒃᑕᑐᐊᕆᖃᑦᑕᓚᐅᖅᑕᕗᑦ ᓯᒡᔭᒧᑦ ᖃᓂᓈᖅᑐᑦ. ᐃᓱᒪᓕᓚᐅᕐᒥᑦᑕᕗᑦ ᓴᑦᑎᖕᓂᖅᓴᑦ; ᕿᓚᓗᒐᑦ ᓴᓂᖅᑯᑦᑐᑦ-ᑕᑉᐸᐅᙳᐅᔪᑦ. ᐅᐊᑲᓪᓚᖕᖔ! ᓇᑦᑏᓪᓗ! ᕿᓚᓗᒐᑦ ᑕᒪᐅᙳᕋᒥᒃ, ᓇᑦᑎᐊᓗᐃᑦ ᓴᓂᖅᑯᖃᑕᐅᖃᑦᑕᓚᐅᖅᑐᑦ. ᐅᐱᕐᖓᕐᒪᑦ, ᒫᓐᓇᓕ ᓇᓗᓇᓕᕐᒪᑦ ᕿᓚᓗᒐᓄᑦ. ᑕᐃᒪᐃᑦᑐᓐᓃᕐᒪᑦ ᒫᓐᓇᐅᔪᖅ. ᕿᓚᓗᒐᑭᑦᑐᐊᓘᓕᖅᑐᖅ. [0061 19 ᐊᑦ 02:35]

ᑖᓐᓇ ᐱᐅᐃᒍᔾᔭᐃᖅᓯᓂᐅᔪᖅ ᐃᓅᖃᑎᒌᒍᓯᕐᓂᒃ; ᖃᓄᐃᑕᐅᓂᖏᑦ ᕿᓚᓗᒐᑦ ᓂᕿᒃᓴᑐᐃᓐᓇᐅᓇᑎᒃ. ᑕᕝᕙᓂ ᐳᐃᒍᔾᔭᐃᖅᑕᐅᕗᑦ ᕿᒪᒃᑕᑦᑎᓐᓂ ᖃᓄᐃᓚᐅᖅᑐᑦ ᖃᓄᐃᓕᖕᒐᓂᕐᒥᒡᓗ ᐃᓅᖃᑎᒌᖕᓂᕐᒥᒃ ᐆᒪᔪᓄᑦ ᐃᒃᐱᒍᓱᓱᓲᓄᑦ, ᐱᙳᐊᓲᓄᑦ, ᐸᖅᑭᓲᓄᑦ ᐱᐊᕋᒥᓂᒃ, ᐊᓯᓄᐊᓲᑦ ᓂᕿᒃᓴᖅᓯᐅᖅᐳᑎᒃ, ᐊᓯᐊᓄᐊᓲᖕᒍᑎᓪᓗ ᑕᖅᑮᑦ ᒪᓕᒃᓱᒋᑦ. ᕿᓚᓗᒐᑦ ᓯᓚᖅᑲᑎᐅᔪᑦ, ᐳᔫᓇᐊᖅᑐᑦ ᕿᒪᒃᑕᑦᑎᓐᓂᓗ ᐃᓂᕆᓯᒪᔭᕐᒥᓂ ᐊᓐᓇᐅᒪᑎᕐᓱᒋᑦ ᑐᓄᓂᕐᒥᐅᑦ (ᐃᓄᐃᑦ ᐅᐊᖕᓇᖕᒐᓂ ᕿᑭᖅᑖᕈᑉ), ᐆᒪᔪᑦ ᐃᒃᐱᕆᔭᐅᔭᓇᐊᓖᑦ ᐸᖅᑭᓗᒋᓪᓗ. ᑖᓐᓇ ᑕᑯᓇᖕᓂᐅᔪᖅ ᑐᑭᓄᑦ ᐃᓕᖅᑯᓯᑐᖃᓄᓪᓗ.

ᑖᓐᓇ ᐃᓅᓯᖃᑎᒌᖕᓂᖅ ᐊᒃᓯᐊᓗᒃ ᐊᒃᓱᕈᖅᑎᑕᐅᓯᒪᕗᖅ ᐅᔭᕋᖕᓂᐊᖅᑐᓄᑦ, ᓯᖃᓕᓯᔪᓄᑦ ᐅᒥᐊᕐᔪᐊᒃᑯᓪᓗ ᐊᐅᓪᓚᖅᑎᑦᑎᔪᓄᑦ ᓴᕿᑦᔭᒃᓴᓂᒃ ᐸᕙᓐᓚᓐ ᐅᔭᕋᖕᓂᐊᖅᑎᓂᑦ ᐅᔭᕋᖕᓂᐊᖅᑕᖕᒪᓂᑦ ᓄᓘᔾᔨᖕᓂ. ᐃᓅᓯᖃᑎᒌᖕᓂᐅᔪᖅ ᐊᒃᓱᕈᖅᑎᑕᐅᒃᑲᓂᖅᑐᖅ ᓂᐅᕕᐊᒃᓴᖃᕐᓂᕐᓄᑦ ᕿᓚᓗᒐᑦ ᑐᓖᖕᒋᓐᓂᒃ, ᖃᓄᐃᓪᓚᑦᑖᖅᑐᓂᑦ ᓵᑕᐅᔪᑦ ᒪᒃᑯᖕᓂᖅᓴᓂᑦ ᐊᖑᓇᓯᖕᓂᕐᓂᑦ, ᐊᒃᑐᐃᓂᕐᓂᓪᓗ ᓯᓚᐃᑦ ᐊᓯᔾᔨᕐᓂᖏᓐᓂᑦ. ᑖᒃᑯᐊ ᐃᓱᒪᒋᔭᐅᔪᐃᓐᓇᑦ ᑕᕝᕙᓂ ᐅᓂᒃᑳᒥ, ᐊᑐᖅᓱᒋᑦ ᐃᓱᒪᒋᔭᖏᑦ ᑕᑯᓯᒪᔭᖏᑦ ᓯᓚᑐᓂᖏᓪᓗ -ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᑦ-ᐃᓐᓇᕐᓂᑦ ᐊᖑᓇᓱᒃᑎᓂᓪᓗ. ᖃᓪᓗᓈᑦ ᖃᐅᔨᓴᕈᓯᖏᑦ ᖁᔭᓈᖅᑕᐅᓪᓚᕆᖏᑦᑐᑦ. ᓈᒻᒪᒫᖕᒪᑦ ᐊᑑᑎᖃᕐᓗᓂᓗ, ᑎᑎᕋᑦ ᐃᓯᐊᒍᑦ ᐅᖃᐅᓯᓇᔭᐅᓯᒪᔪᑦ ᐊᕐᕌᒍᓄᑦ ᐊᖑᓇᓱᒃᑎᓄᑦ ᖃᓄᐃᑦᑐᓂᑦ ᐊᐅᓪᓚᐅᑎᓄᑦ. ᑖᓐᓇ ᐱᓕᕆᔭᐅᓂᖓ ᐃᓕᓐᓂᐊᖅᓯᒪᓂᐅᓕᖅᑐᖅ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᓐᓂᒃ. ᑖᓐᓇ ᐱᓕᕆᔪᖅ ᓄᓇᐃᖅᓯᓂᕐᒥᒃ ᐊᖅᓵᖅᓯᓂᕐᓂᒃ.

ᕿᓪᓚᓗᒐᑦ ᐊᒃᓱᕉᓯᒃᑐᑦ, ᐱᓗᐊᖅᑐᒥᒃ ᐃᒪᖕᒋᓐᓂ ᕿᙳᐊᑦ ᑕᓯᐅᔭᐅᓪᓗ. COSEWIC (ᑲᑎᒪᔩᑦ ᖃᓄᐃᓕᖓᓂᖏᓐᓄᑦ ᐅᓗᕆᐊᓇᖅᑐᒦᑦᑐᑦ ᐆᒪᔪᑦ ᑲᓇᑕᒥ) ᐅᖃᖅᑐᑦ ᕿᓚᓗᒐᑦ ᐅᓄᕐᓂᖏᑦ ᐊᓯᔾᔨᖕᒋᒃᑲᓗᐊᖅᑎᓪᓗᒋᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ, ᑲᑉᐱᐊᓇᖅᑐᖃᕐᒪᑕ ᐃᒻᒥᓄᑦ. ᐅᖃᐅᓯᓕᒃ ᒪᕐᕉᖕᓂᒃ ᐱᓗᐊᖅᑐᒥᒃ: ᐊᓯᔾᔨᖅᑐᑦ ᑕᓇᐅᑉ ᓯᑯᐊᓂ ᐅᒥᐊᓪᓗ ᓇᒧᙵᕋᖅᑐᑦ.1 ᑲᑉᐱᐊᓇᕐᓂᖅ ᓴᖅᑭᑦᑐᖅ ᐊᓯᔾᔨᖅᑐᓂᑦ ᑕᓇᐅᑉ ᓯᑯᖏᓐᓂᑦ ᑐᑭᒋᔪᓐᓇᖅᑕᖏᓪᓗ ᓂᕿᒃᓴᓄᑦ, ᐊᓯᓄᓪᓗ, ᑖᒃᑯᖓᙵᖅᑐᐃᓐᓇᐅᓪᓗᓂ ᐃᒃᐱᒋᔭᐅᔪᖅ ᐅᑭᐅᖅᑕᖅᑐᓕᒫᒥ. ᓯᓚᐃᑦ ᐊᓯᔾᔨᕐᓂᖏᑦ ᐊᒃᑐᐃᓂᖃᕋᓗᐊᖅᓱᑎᒃ ᕿᓚᓗᒐᓄᑦ ᖃᓄᐃᓐᓂᖏᓐᓄᑦ, ᑕᑯᔭᐅᓯᒪᔪᑦ ᐊᖑᓇᓱᒃᑎᓂᑦ ᐃᓐᓇᕐᓂᓪᓗ ᐃᒃᐱᐊᕐᔪᖕᒥᑦ – ᑕᐃᑲᓂ ᐊᒃᑐᐃᓂᓕᒫᑦ ᐊᔾᔨᒋᓪᓗᓂᒋᑦ ᐊᔾᔨᐸᓗᒋᓪᓗᓂᒋᓪᓘᓐᓃᑦ – ᐅᒃᐱᕐᓇᖅᐳᑦ ᓂᐲᑦ ᓅᒃᑕᕐᓃᓗ ᐊᒃᑐᐊᔪᓄᑦ ᐅᒥᐊᕐᔪᐊᒃᑯᑦ ᐅᓯᑲᖅᑕᕐᓂᕐᓄᑦ ᓴᕝᕙᔭᒃᓴᓂᒃ ᓄᓘᔾᔨᖕᓂᑦ ᐅᔭᕋᖕᓂᐊᕐᕕᙱᑦ ᐊᒃᑐᐃᕐᔪᐊᖅᐳᑦ ᕿᓚᓗᒐᓂᒃ ᑕᓯᐅᔭᒥ ᕿᙳᐊᓂᓗ.

SUMMARY

Summarizing the content of this report is a challenge. The Inuit Qaujimajatuqangit recorded on these pages brings to the understanding and appreciation of narwhal, something that goes well beyond what western science has to offer. Included are insights into Inuit history and relations with narwhal, observations on behaviours and sentiments that only years of intimate experience can recognize. Changes taking place, primarily as a result of industrial development and climate change are recorded.

The work that went into this report was an exercise in decolonization. Even the word 'research', applied to the content, is a problem. It invokes ideas of what was done and how insights, wisdom and knowledge have been treated that bring to mind behaviours, treatment of the subject, and handling of results, associated with ways of 'making sense' found in Qallunaat cultures. These deserve to be challenged. We held conversations where questions were asked, stories told, observations made and recorded. For example:

> *When we were here, people used to live in the Nunasia area. There were mainly two, three men. They would catch so many narwhal. When they arrived, we too caught plentiful narwhal. When the sea-ice was breaking up, there would be vast numbers of narwhal for three days. That I can't forget. I always remember it. When there were narwhal in vast numbers, they would usually arrive like that every year. It would be three full days that the narwhal would be passing by; night, day, night. We would only hunt the ones that passed close by the shore. We left the ones further offshore alone; narwhal — narwhal passing by — going up. So magnificent! Seals too! When the narwhal arrived, so many seals would join in passing by. When spring arrives, it's now no telling about the narwhal. It isn't like that now. There are hardly any narwhal.* [0061 19 at 02:35]

This is a record of relationships; the treatment of narwhal not merely as a source of food. What is recorded here is the history and status of a relationship with a species that feels, plays, cares for its young, travels in search of food, and relocates depending on the season. Narwhal are neighbours, visitors and given their historical role in the survival of Tununirmiut (Inuit of the north Qikiqtaaluk Region), a species to be treated with respect and care. This is an exploration of meaning and culture.

This relationship has been severely challenged by the mining, crushing and shipping of iron ore from the Baffinland Ore Mines Ltd. mine at Mary River. It is a relationship further challenged by a market for narwhal tusks, the realities facing younger hunters, and the effects of climate change. These are all considered in this report, using the insights, observations and wisdom — the IQ —of Elders and hunters. Western science is not entirely ignored. Where appropriate and useful, it has been footnoted throughout. IQ has too often been treated as observations that have a contribution to make to western science. We have turned this relationship on its head. There are times when western science has a contribution to make to IQ. This is an exercise in de-colonization.

Narwhal are in trouble, especially in the waters of Milne Inlet and Eclipse Sound. COSEWIC (Committee on the Status of Endangered Wildlife in Canada) notes that while narwhal populations are stable across the Arctic, they are not without threats. It lists two in particular: changes to sea ice and boat traffic.[1] The threat posed by changes in sea ice and its implications for food sources, etc., is a general one felt across the entire Arctic region. While climate change plays a role in what is happening to narwhal, observations made by hunters and Elders from Ikpiarjuk — where all other effects are the same or similar — leave little doubt that noise and movements associated with the shipment of ore from the Mary River mine are having a significant impact on narwhal in Eclipse Sound and Milne Inlet.

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1. https://www.cosewic.ca/index.php/en/news-and-events/press-release-may-2024.html

TABLE OF CONTENT

1. Introduction

This report is based on interviews and discussions with Inuit hunters and Elders in the communities of Mittimatalik and Ikpiarjuk, Qikiqtaaluk Region of Nunavut Territory.

Research on narwhal is important because of changes in Arctic environments related to climate change and industrial development. Cultural, economic and environmental interests and the concerns of Inuit are challenged by the crushing, transport and shipping of iron ore from the Baffinland iron ore mine at Mary River. This has implications for narwhal and other species. It also has serious implications for Inuit culture including access to country food, values and lifestyles. The status of narwhal is currently under review by the COSEWIC, (Committee on the Status of Endangered Wildlife in Canada) to be potentially designated as a species of special concern (a status it once had in 2004).

While further study is required to understand similarities and differences in year-over-year effects of climate change and its implications for narwhal in Milne Inlet/Eclipse Sound and Admiralty Inlet, the results of this research make possible important comparisons between narwhal in these two locations. Admiralty inlet has never had ship traffic comparable to that currently found in Eclipse Sound and Milne Inlet. Both locations are subject to similar effects of climate change. Hunting practices and equipment used by hunters (aluminum boats, outboard motors, high powered rifles with modern scopes, etc.) in these locations are identical. The seasonal appearance of narwhal is the same. Cruise ships and wayward sailors visit both communities during the open water season. Narwhal rely on similar species for food.

There are two differences between these locations. During the open water season, six million tonnes of crushed iron ore are shipped through Milne Inlet and Eclipse Sound, past the community of Mittimatalik, by Baffinland Iron Mines Ltd. These vessels originate from a port located at the south end of Milne Inlet. The season has been extended in some years by several weeks of ice-breaking early and late in the shipping season. There is no comparable activity in Admiralty Inlet.

The other difference is geography. Admiralty Inlet is a large body of water. The entrance to the inlet is 32 kms wide. Pond Inlet is 30 kms across Eclipse Sound from Bylot Island. However, Admiralty Inlet is a much larger body

of water, 375 kms long. From 1978 until 2002, a lead/zinc mine operated on the shore of Strathcona Sound, just to the north of Ikpiarjuk. It shipped about 150,000 tonnes of concentrate per year from the mine. Strathcona Sound is not far south of the entrance to Admiralty Inlet.

Map of North Qikiqtaaluk (Baffin Island), Admiralty Inlet, Eclipse Sound, Milne Inlet and the Mary River Mine

Oceans North, 2021

Historical comparisons between this operation and those in Milne Inlet/Eclipse Sound are limited. The volume of concentrate shipped per year from the Nanisivik mine was a tiny fraction of what is currently shipped from Milne Inlet. The number of ships used was comparatively few.

The geography of Admiralty Inlet and location of the Nanisivik mine is such that the vast majority of its waters did not constitute a soundscape generated by shipping. In the case of Milne Inlet/Eclipse Sound, the soundscape generated by shipping affects nearly all of the waters of Milne Inlet and Eclipse Sound.

This study contributes significantly to understanding and appreciating the effects on narwhal of shipping in Milne Inlet/Eclipse Sound and, subsequently, on Mittimatalingmiut. It is written for both a Qallunaat (generally used to refer to a white or western European person) and an Inuit reader, useful to those who already know a great deal about narwhal and narwhal hunting, as well as those who wish to be introduced to the topic based on Inuit Qaujimajatuqangit.

1.1 Significance of the Research

The relationship between Mittimatalingmiut and narwhal defines, in many ways, who Mittimatalingmiut are. The same is true for Ikpiarjumiut. It is not only a relationship of historical significance.[3] It defines present-day activities,

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3. Narwhal is used in this text to designate both one, and more than one narwhal. While Inuktitut has a singular and plural form for narwhal, when Inuit translate to English, narwhal is used for both singular and plural forms. We have adopted this custom throughout this text.

values, and social and cultural relationships important to the well-being and functioning of Mittimitalik and Ikpiarjuk as communities, and to the health and general well-being of Inuit residents. While the historical use of narwhal is important, appreciating the social and cultural relationships associated with narwhal hunting —then and now — is equally important.

These relationships are often overlooked or devalued as a result of a focus on narwhal biology; numbers, and the condition of narwhal in relation to climate change and industrial activity. Consistent with the focus of western science, the biology of narwhal is the subject of study by marine biologists who often lack the background, interest or capacity to connect their observations to the cultural, social and personal implications of their work. Inuit Qaujimajatuqangit (IQ) — 'that which has long been known by Inuit' — as the quotes used in this text reveal, makes these essential connections.

Inuit now living in Ikpiarjuk and Mittimatalik occupied the same area; the northern reaches of Qikiqtaaluk (Baffin Island). They worked together during the whaling period (about 1840 —1910), and long before whalers arrived. Modern relations are also to be understood in light of relocations undertaken by the Hudson's Bay Company (HBC). The HBC, with permission from the Federal Government, decided to use the buildings of an abandoned RCMP post on Devon Island to establish a fox trapping and trading operation. In 1934, Inuit from camps near the present-day communities of Kimmirut and Mittimitalik were relocated by the HBC to Dundas Harbour, Devon Island. When this venture proved unsuccessful, Inuit were moved again, to Ikpiarjuk. The HBC was re-opening the post it had closed in 1927 as a result of the creation of the Arctic Islands Game Preserve.[4] Members of some families eventually returned to Mittimitalik. Others married into families from one or the other of the two communities.

> *My father's last name was Kanajuq. After getting married I became a Komangapik. I was born at Tununirusiq, Arctic Bay. I was a child there, but we moved here when my mother married. It was 1970 when we moved here to Pond Inlet.* [0062 04 at 00:49][5]
>
> *When spring arrived — as soon as spring arrived and the floe edge came closer — we began to eat maqtaaq when we first moved here* (Ikpiarjuk). *Well, there was much more game back then. Also, in Arctic Bay, in Tununirusiq, we would eat maqtaaq. But it was long ago during the '60s. Back then my father had a dog team along with my grandfather. We lived at a camp then. I remember during the 1960s they would hunt narwhal during the summer.* [0063 04 at 05:15]

The focus of research on species like narwhal, as practiced within western culture, has been directed at 'a species at risk'. What is also true of Euro-Canadian culture is that the importance of wage employment, in relation to projects like the Mary River iron ore mine, often eclipses the systemic implications for who Inuit are; their culture, social and personal well-being. The notion that waged employment might contribute to anything other than personal well-being is hard for most Qallunaat to appreciate.

This way of looking at things has a long and very colonial history. It is indicated in the way Qallunaat, historically,

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4. The histories of Ikpiarjuk (Arctic Bay) and Mittimitalik (Pond Inlet) have been published by the Qikiqtani Inuit Association and are available on line at https://www.qtcommission.ca/en/communities/arctic-bay-ikpiarjuk, and https://www.qtcommission.ca/en/communities/arctic-bay-mittimatalik.

5. References refer to the film clip from which this is taken, i.e., (0062), the number assigned to the speaker and recorded at the end of the document i.e., (04), and the time in the clip from which this quote is taken i.e., (00:49). Speakers from Ikpiarjuk are numbers 1 – 13. Those from Mittimatalik, 14 – 22. The names of those interviewed are found on the last page of this report.

celebrated how capable Inuit were in learning how to operate and repair newly-introduced technologies; mining equipment in the case of the North Rankin Nickel Mine (1957-1962), snowmobiles, etc. Comments to this effect are scattered through archival accounts of Qallunaat working in the north in the 1940s, '50s and '60s.

As Inuit moved from the land to communities and their lives changed in the late 1950s and 1960s, many public servants and others noted in their memoranda that Inuit were adapt at repairing machinery. They often assumed that they could also easily abandon their cultural traditions and replace them with Qallunaat-style education and a work week common to the industrial/ commercial activities that largely define Canadian culture. As Bob Williamson notes in his book *Eskimo Underground*, while Inuit readily adapted to working in the North Rankin Nickel Mine and using mine machinery and equipment in the late 1950s, early 1960s, they were most reluctant to accept a Qallunaat work week and to abandon traditional, land-based pursuits.[6]

1922, HBC Post, Pond Inlet, with the C.G.S. Arctic Anchored in Background

[Library and Archives of Canada ID 3487976]

Wage employment is now an important and necessary part of Inuit lives. However, when wage employment is associated with something that undermines that which gives meaning and social coherence to Inuit and Inuit communities, tensions between wage earning and who Inuit are become real. There is a difference between acting as an expeditor, tour-guide or artist, and working for a mining company affecting the Arctic landscape and its inhabitants — all of them.

For these, and other reasons, Inuit Qaujimajatuqangit has a different, absolutely important and essential role to play in 'making sense', not only of what is happening to narwhal in the presence of climate change and industrial development. It is also central to appreciating the implications for collective and personal well-being of Mittimatalingmiut and Ikpiarjumiut. In the hearings dealing with Baffinland's plans to expand mining operations, the attention given to western science was notable. The secondary importance given to IQ has serious implications for the future of narwhal, Inuit identity, Inuit futures and well-being.

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6. Robert G. Williamson, 1974, *Eskimo Underground: Socio-cultural Change in the Canadian Central Arctic*, Sweden, Uppsala University. Similar observations have been made by Pam Stern in: Learning to be Smart: An Exploration of the Culture of Intelligence in a Canadian Inuit Community, *American Anthropologist*, 101(3), 502-514, 1999.

The work presented in this report on Inuit and narwhal in Mittimitalik and Ikpiarjuk is premised on Inuit Qaujimajatuqangit. This is not to say that western science is irrelevant. Western science is referenced in this text when it contributes to further understanding and appreciating the observations and conclusions reached by Inuit hunters and Elders.

Too often the approach taken in acknowledging IQ works the other way around. Western science is the focus of most reports dealing with arctic sea mammals, species that Inuit hunt. IQ is used, 'after the fact'; as supplementary information where it is deemed to be of relevance. In the author's experience, sometimes IQ is used by physical scientists employed by industry to give the appearance that attention has been paid to Inuit experience and knowledge. It is, so to speak, 'dropped into the text'. However, where Inuit experience and knowledge contradicts scientific results, it is seldom noted.

What is inevitably missing from how scientists use IQ, including those working with Baffinland, is acknowledgment of the values and 'world view' inherent in Inuit knowledge. This is perhaps understandable, as few biological scientists have ever taken a course in Indigenous studies and are subsequently 'handicapped' when it comes to understanding and appreciating the values and world view within which IQ is contained. This way of looking at people, nature and our values is dealt with by Robin Kimmerer in her award-winning book[7], *Braiding Sweetgrass*.

Pond Inlet (Mittimatalik) from the Air, Looking South

[Source: On the Camilla Desgagnés during a trip to the north
September 14, 2006, Patricia]

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7. Robin Kimmerer. *Indigenous (2013) Braiding Sweetgrass: Wisdom and Scientific Knowledge and the Teachings of Plants (2013)*., Minneapolis, Minnesota, Milkweed Editions)

We have placed IQ at the center of what is reported here. We have made generous use of all the comments and observations made by Elders and hunters. There are two exceptions, Appendices 1 and 2.

We have included Appendix 1, dealing with the history of the development of the Baffinland Iron Ore Mine at Mary River. This is not based on IQ, for obvious reasons. But, it is an important history going forward, as it ties the behaviour of the mining company to financial realities that are otherwise not obvious to those responding to how the company develops its operations, and to what happens — when and why.

Appendix 2 contains maps and Inuktitut names of areas referred to by hunters and Elders.

In Appendix 3, observations related to the protection of narwhal and other species relevant to the recently signed *Nunavut Lands and Resources Devolution Agreement are noted*.

1.2 Approach to the Research

The text is based on interviews held with 13 Inuit Elders and hunters from Ikpiarjuk and 10 Inuit from Mittimitalik, Qikiqtaaluk Region of Nunavut, September of 2022. As noted, quotes used in the text are coded. The names of Inuit who were interviewed and the number used to identify them in quotes found in this text, are found on the last page of this report.

Those interviewed were identified by the hunter's and trapper's organizations (HTOs) in each of these communities. Interviews were supplemented, in the case of Ikpiarjuk, with additional interviews with others identified by the researcher and acknowledged by the HTO.

The approach taken to the research was a narrative one.[8] Instead of a positivistic approach involving a set of questions put to the interviewee, those interviewed were invited to tell stories, commencing with the story about the first time they hunted or encountered a narwhal. This was followed by a request to talk about current experiences, observations and concerns related to hunting narwhal in recent years, and since the commencement of the shipping of ore by Baffinland. Sometimes interviewees were asked if they could elaborate further on what they had said. No leading questions were asked. Questions took the form of requests. For example: "Could you tell us anything more about what you saw when you were working as an observer of narwhal behaviour in Milne Inlet?

Narratives were also filmed. Consent was sought from all participants. Oral consent was filmed. Film is one way of conveying research results and reporting back to communities. This approach has previously been used by Arcticonnexion in conveying the knowledge of Inuit Elders to others. It is also a way of ensuring that research results will be used to educate and inform others.[9]

Conclusions are not narrowly restricted to statements made by those with whom discussions were held. What is important is not only what Inuit shared with the researcher. What is missing is also of consequence.

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8. Louise Gwenneth Philips, 2018, *Research Through, With and as Storytelling,* Oxford UK, Taylor and Francis. See also, Brookmeir, J., 2012, Narrative scenarios: Toward a culturally thick notion of narrative, in J. Valsiner (Ed.), Oxford handbook of culture and psychology, Oxford UK, Oxford University Press, pp. 439-467.

9. Sonja Bickford, Michell Warren, 2020, *Informed Change: Exploring the Use of Persuasive Communication of Indigenous Culture Through Film Narratives, Informing Science: the International Journal of an Emerging Transdiscipline,* Vol. 23, 107-118, https://doi.ord/10 28945/4635.

Recommendations reflect this reality. The intent is to impower and inform Inuit so they can better manage their resources. Doing so requires knowledge of matters and information that has not been shared with Inuit (for example, the relationship between the international price of iron ore and the activities of Baffinland and, for example, information found in an investment prospective, etc.). Information other than the condition of narwhal is relevant to management decisions. The colonial privileging of information has been addressed in the text and in the recommendations.

Researchers explored, with those interviewed, different aspects of the historical relationship between Inuit and narwhal and contemporary observations and experiences. The focus was IQ with respect to narwhal behaviours, biology, numbers, location, contributions to culture and food security, challenges faced by hunters, and suggestions for changes that would help them. Interviews were filmed with permission from those being interviewed.

Researchers respected the knowledge of those being interviewed. Researchers responded to where the person being interviewed took the conversation. Interviewing involved listening to what was being said, following this with appropriate questions, and engaging the person being interviewed in a conversation where they were treated as the author of their experience.

Research in Ikpiarjuk was conducted by Frank Tester, Mishak Allurut and Rowan Harris in September of 2022.[10] Open-ended interviews were conducted by Frank Tester and filmed by Rowan Harris. Mishak Allurut provided simultaneous translation, reviewed and commented on the text. Mishak advised in relation to what was heard and how to treat what was said.

In Mittimatalik, interviews were conducted by Vincent L'Hérault and Jonathan Pitseolak with simultaneous translation by Morgan Arnakalak. Filming was done by Vincent L'Hérault. Recorded interviews from both communities were translated by Morgan Arnakalak. The English verbatim of the interviews were compiled and coded in general themes by Pierre Coupel. Quotes dealing with different topics were listed on spreadsheets organized by topic.

The assemblage of the report, 'handling of the research material,' and the writing of the text was done by Frank Tester. Translations are not literal. We have translated what was said into English and have paid attention to how what was being expressed would have been stated in English. We treated the information and the content carefully. In some cases, we have inserted an interjection that helps to contextualize what the speaker is referring to. In the text, quotes are indented and written in italics. Contextual information — where needed — appears within quotes in brackets and written in plain script, i.e. (Admiralty Inlet).

Draft versions of the report were reviewed by Vincent L'Hérault and the author. The pre-final version was presented to the Mittimatalik HTO and to QIA's Assistant director of the land department, the Inuit avatimut kamatiarnimut katimajiit (IAKK) committee, and BaffinLand Iron Mines.

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10. The author, Frank Tester, was advisor to the Mittimitalik HTO, Elders and other community members for the Nunavut Planning Commission hearings held in November of 2017 dealing with changes requested by Baffinland to accommodate a railway in the transportation corridor between the mine and the port at Milne Inlet. He was subsequently funded by Canadian Indigenous Relations and Northern Affairs to act as technical advisor to the Hamlet with regard to Baffinland's Phase 2 Proposal.

1.3 Organization of the Text

In **Section 1,** the reader has already encountered a discussion of the approach taken in conducting the research. We introduce the organization of the text in what follows, with a brief description of contents.

Section 2 focuses on the historical and current use and importance of narwhal. Interviews with Elders contribute to the text important experiences, attitudes and values that bring the role of narwhal in Inuit culture and lives to life. Attention is paid to traditional hunting techniques and the impact of technological change on narwhal hunting.

Section 3 presents Inuit experience with Baffinland's Phase 2 proposal and the hearing process. A chronology of the hearing process and events related to the process is presented as it is important to understanding events that were sometimes not clearly understood by Inuit concerned about and participating in the hearing process.

Section 4 presents a history of narwhal populations in Eclipse Sound/Milne Inlet and Admiralty Inlet. This section is based on observations of 'how things used to be'.

Section 5 explores the current status of narwhal populations in Eclipse Sound/Milne Inlet and Admiralty Inlet. Observations on the number and movements of narwhal are understood in relation to aerial surveys that have been conducted, noting changes in the size of populations in these locations.

Section 6 examines a major concern with regard to Baffinland's shipping activity. The text focuses on the effects of noise, as observed by hunters, in both locations.

Section 7 pays attention to the physical health of narwhal and any changes that have been noticed by hunters and Elders. Consideration is given to shipping and the impacts on food access and the condition of narwhal during the open water season.

Section 8 deals with the issue of iron ore dust. A highly visual indication of Baffinland's activities, dust raised considerable concern and got significant attention in the hearing process.

Section 9 contains information provided by those interviewed that speaks to the cultural and personal effects that Baffinland's activities and the loss of narwhal has had, particularly on Mittimatalingmiut.

Section 10 presents, in the context of observations made, recommendation and conclusions reached by those interviewed. These are presented using headings dealing with concerns that hunters and Elders wish to have addressed.

2. The Historical and Current Importance and Use of Narwhal

Qallunaat are only now starting to get in touch with the relationship between Indigenous peoples — including Inuit — and the environments in which they live and care for. These insights are relevant to current struggles in recognizing the impact that western-European culture has had on other species and the environments upon which they depend.

2.1 Relationships, Values and Beliefs about Narwhal

These relationships stand out in research conducted with Elders and hunters in Mittimatalik and Ikpiarjuk. One informant from Ikpiarjuk — Qapik Attagutsiaq — was 102 years old; articulate, engaged and informative. She talked about narwhal as friends; as another species with different, yet habits similar to those of Inuit. Here are her observations on narwhal birthing.

> *Narwhal, like terrestrial animals, don't have a specific month to breed. Some are recently pregnant; some are so pregnant their calf's tails are showing. Some are still small and immature. That is the nature of narwhal. They don't all give birth on a certain month. Caribou begin calving in May. That's not the case for narwhal. And seals, only during spring. In April they begin giving birth. That's not the case* (for narwhal). [0013 6 at 54:40]

Understanding the habits and behaviour of narwhal is important; not only to a successful hunt, but to having a relationship with narwhal that contributes to sustaining the population and ensuring that narwhal are protected as an important food source, and with attention to other considerations critical to Inuit well-being.

Knowledge of a species of vital importance to Inuit survival and well-being was considerable. For example, this included anticipating what the number of narwhal entering Admiralty Inlet would be in the coming year.

The men would say that there would be many narwhal the year before there were many narwhal. And it would be possible next time that there would be fewer narwhal. According to observations made on the plants, on the land, and in the ocean — and by following the seasonal weather — predictions could be made about narwhal in the coming year. Then there might be less narwhal the next year, as they followed their food sources. [0011 9 at 12:55]

Hunting also involved transferring this knowledge to Inuit youth, starting at a very young age.

We were told this because we live where the narwhal are. We were told that if we, as a kid growing up, take our siblings or somebody - little kids - on our back, using the women's amauti, we will be successful to hunt narwhal. So, every chance I got, I would try to carry somebody so that I could catch narwhal. [0004 7 at 02:52]

Including even the youngest children in narwhal hunting was a way of introducing to a child, the importance of hunting, how to hunt, and a respectful relationship between Inuit and narwhal. Being told that one would be successful was encouragement to do so. Respect was also demonstrated in other ways.

If they (narwhal) *have calves, then the men would be forbidden to hunt them.* [0013 6 at 58:44]

It was only people who were short on food who would hunt the mother and calf if game was scarce. Both would be killed. [0013 6 at 59:05]

That narwhal were seen and respected as sentient beings (with feelings) is obvious from information provided by a hunter in what follows. Narwhal, like Inuit, had a spirit. This was a spirit in touch with how Inuit were treating narwhal. Narwhal would respond, in turn, to how they were treated.

There is an old saying too not to fight over food, not to fight over animals, especially. Because they say the animals are always listening. If I start a fight with another hunter, "No, I shot that first", and he's saying, "No, I shot it first", we're trying to claim it and start a fight or a disagreement. The spirit of the narwhal will say: "Look, they're fighting over us; I'm not going to bother them again". [0004 7 at 14:24]

Narwhal care about and look out for their young. They protect them from danger. They travel to where food is found (in the case of narwhal found in these Sounds, inlets and fiords, primarily schools of arctic cod and arctic char). Their movements, habits and travels are in response to changing environmental conditions. Historically, narwhal were treated in a manner similar to how Inuit wished to be treated; with respect. Rituals in all cultures are an expression of meaning and respect. Western European cultures have largely abandoned ritual, even to the point of degrading such practices by referring to them as 'pagan'.

Our Elders told us not to talk about — not to talk about narwhal or any animal. They say they can hear us. They know for us not to complain about them, otherwise they would be gone. So, when they started to complain about narwhal a few years ago, there were hardly any narwhal, mostly females with calves, (almost) *no males that came in* (to the inlet). [0010 1 at 09:09]

Yes, and we always used to have good Elders. The first group of narwhal, when they come, the Elders tell us not to hunt them at all until a week later if they stick around. A week later! [0010 1 at 14:28]

2.2 Traditional Hunting Practices

A history of Inuit camp life, for those now living in Ikpiarjuk and Mittimatalik, is largely focused on locating in relationship to narwhal, with many camps located along the shores of Eclipse Sound, Milne Inlet, Admiralty Inlet, and nearby inlets and fiords.

Inuit names given to camps and locations of significance to hunting, fishing and travelling in the Admiralty Inlet and Eclipse Sound/Milne Inlet are found in Appendix 3.

2.2.1 Outpost Camps

While Ikpiarjumiut and Mittimatalingmiut also fished, hunted caribou, birds and picked berries — especially blueberries — the hunting of narwhal emerges from early accounts of camp life as central to historical experiences and survival. The same is true today. Inuit have cabins in locations related to the proximity of narwhal. These are used primarily for narwhal hunting.

Most Canadians are familiar with how Inuit used to live. In fact, many people — not only Canadians — still imagine Inuit living as they did historically in a land of ice, snow and iglus.

> *It was back then, as I said, as I was growing up, we only used dog teams and lived in igloos. There were no buildings at all to spend the night at. We would build igloos, as we had no choice.* [0058 19 at 05:49]
>
> *It was not like it is today. There were no airplanes, no vehicles. And of course, there were none of these things; there were no buildings like these. Inuit didn't have houses. There were some who lived in buildings in places with southerners, but they weren't big ones like these ones.* [0069 14 at 01:48]
>
> *I remember as a child that I became aware that we lived in a place without Southerners. Although once in a long while we would travel to a place with Southerners. We lived a life with wild game for food; all the time! Well, we would have things like tea and flour, but when they ran out, we didn't have them. But I don't remember missing them. That was how we lived.* [0077 15 at 00:40]

Rather than travel long distance by dog team, narwhal hunting was better accomplished by waiting until narwhal had a presence reasonably close to one's camp. In the case of Admiralty Inlet, camps like Suujaqtalik were historically located along the coast, toward the entrance of the inlet, close to the floe-edge and where leads occupied by narwhal occurred in the spring. The same was true of Eclipse Sound, with some camps located on Bylot Island near the entrance to the Sound.

> *It was only when the narwhal are close, near to Suujaqtalik, do they go by dog team to hunt: just a very few, maybe two or three at the most. There were very few of us here then. They would only go hunting narwhal when they got close. Today they go all the way down there* (the bottom end of Admiralty Inlet) *to hunt narwhal.* [0013 6 at 13:32]
>
> *In the Suujaqtalik area* (we didn't hunt at the floe-edge). *It was only when the narwhal arrive at Suijaqtalik that our father would permit the narwhal hunt. When they were too far away, he forbade the narwhal hunt, as they only travelled by dog team.* [0013 6 at 09:54].

Before the introduction of rifles, and even for some time thereafter, it was not easy — but still possible — to hunt narwhal in open water, sometimes with a qajaq launched off the floe-edge. Spearing a narwhal at the same time as managing a qajaq, followed by attaching a float and towing the whale to shallow water where it could be handled and butchered, required both considerable skill and a great deal of strength. It appears that for all these reasons, qajait were sometimes, but not often, used in hunting narwhal.

Travelling in Pangnirtung Fiord in the mid-1950s.

This picture gives some idea of ice conditions, at certain times of the year in the fiords and sounds along the coast of Qikiqtaluk. The skill and energy required to manage a dog team under these conditions was considerable.

[Photo Credit: Otto Schaefer. Collection of Frank Tester]

Access was also affected by ice conditions. Travel by dog team was restricted by ice surfaces and ice conditions. Travel, depending on the time of year and ice conditions, was not easy. Inuit hunting at the floe-edge would often camp on the ice. Patience, and waiting for narwhal to appear in the leads — something that could happen at any time — was an important aspect of traditional hunting.

> *They would let us sleep on the ice. Sometimes we got hardly any sleep. When there were narwhal our father woke us up. "We need to hunt narwhal now. We'll be hunting narwhal now. Stay awake." Even if we had hardly slept, that wasn't a problem for them. When the narwhal became available, only then when they caught all the narwhal they needed, we had more freedom.* [0012 5 at 08:58]

2.2.2 Hunting from the Shore

This section focuses on shore-based traditional hunting practices. What is obvious from reflecting on the information provided by Elders familiar with historical practices, is that in the absence of modern technology — snowmobiles, high powered rifles and fast-moving boats — hunting was dramatically different from practices that emerge in the 1960s.

Before good quality rifles became a common possession, hunting at the edge of leads developing in the ice at the floe-edge was extremely important to Inuit camped along the shores of Admiralty Inlet and Eclipse Sound. Reasons for this are perhaps obvious. Hunting at a floe-edge — the narwhal being located along a wide expanse of open water — would probably have resulted in few successful hunts. This is because any narwhal caught along the flow edge would have to have been shot close to the ice edge, and have been retrievable. Without a boat, this would not be easy to do. In the absence of a rifle, narwhal had to be within distance of a harpoon, and the means of attaching a float.

Information provided by Elders suggests that leads in the ice played an important role in traditional narwhal hunting. An ice lead is a crack that develops in the ice. Ice leads can be anything from a few metres to hundreds of metres wide, and run into what is otherwise, a solid sheet of ice.

> *Back then as I was growing up —what I had learned as a 7-year-old — back then I would go along on trips, but they didn't hunt at the floe-edge. They would wait. The narwhal would travel through leads. Around July 7, their return* (to Admiralty Inlet) *was expected. But they didn't use qajait. They would hunt at the lead. They didn't hunt at the floe-edge back then.* [0007/8 2 at 09:00]

The tradition was also not to hunt narwhal when they were first entering an inlet. Doing so was likely to have an impact on the pod attempting to enter the waters of Admiralty Inlet or Eclipse Sound, early in the season. If the first narwhal turned back, the rest were likely to do the same.

> *When they used to go hunting together, the first group would come, the Elders would stop us from hunting them until the second group started coming in, a couple of days later. First group? Don't think about them until the second group comes. The next day or another day, they know they're going to be around now. And then they will say: "Go. You can go and shoot them now".* [0010 1 at 16:40]
>
> *We were instructed not to hunt the first group. We're not observing that anymore. Although we are not ships, hunters who hunt at the floe-edge are like ships, making wildlife flee.* [0007/8 2 at 22:40]
>
> *Our fathers wouldn't go to the floe-edge right away so they would catch as many narwhal as they wanted. The first groups, my father would tell us not to bother with at all. "Don't scare off the first groups" they said.* [0013 6 at 15:16]

Hunting along leads in the ice, given the technology available at the time, made considerable sense. Narwhal are dependent on open water for breathing. When a narwhal surfaces to breathe in a lead, they have little room to flee and would have been vulnerable to an Inuk hunter, poised on the edge of the lead with a harpoon and float. Narwhal in this situation could be both successfully hunted and retrieved.

This photo makes it obvious why hunting from a lead made sense. By locating along the lead, it is possible to hunt from the ice, by hand, using a harpoon and float bladder to prevent the narwhal from sinking.

[Photo Credit: Glenn Williams, Smithsonian Institute]

> *They would hunt at the* (leads) *first. Back then they hunted more at leads as you could attach floats to them. You could easily have your pick at the leads. You were able to catch sufficient narwhal at them. We were taught by our father on how to* (hunt at the leads)*. When you're on the sea ice, the ice moves with the high and low tides. The narwhal would leave, but when the tide was going out, they would come in to feed.* [0012 5 at 08:58]
>
> *And back then, the ice used to be very thick. It would be around 6, 7, 8 feet thick. For that reason, the narwhal would pack the leads. And because the men were hunting for food, some of the men would choose narwhal to cache that were in better condition.* [0012 5 at 15:01]

Hunting at the edge of leads, without the use of a rifle, required considerable skill and strength. As noted below, using a rifle allows a hunter to be strategic about where they aim and when they fire. This improves the probability of successfully taking the narwhal. The use of a harpoon was more 'opportunistic', and required considerable strength and endurance.

> *Narwhal are big animals. I mean, they're in the ocean and we're on the surface. It is very difficult to think of a way to get at them. You can't go underwater. If they go down, you'll never see them again. But they found a way, even in the old days when they were using qajait. They didn't have any rifles, and they were able to catch them with a lance. They call them a lance. It's like a harpoon, but with rope attached to it.*

> *So, they put the float on first and then they start stabbing* (the narwhal) *to kill it. They didn't have any motors. That takes a lot of strength too. We were told that when you get them the first time, the Inuit way is not to smile; not to be proud, not to be happy about it. The other guys would start teasing you, trying to make you smile. With your first catch you would think: "I'm cool. I'm not going to smile". Those traditions we still practice today. When it comes to harvesting narwhal, it makes you feel different.* [0004 7 at 02:52]

Another theme emerging from interviews and discussions is the role of technology and technological change in relation to narwhal and hunting practices. Given the importance of accessing a marine environment, changes in the design and availability of boats — and especially outboard motors — play an important role in the evolution of Inuit narwhal hunting. These considerations are evident in the following observations.

> *I grew up at Nallua* (located in Navy Board Inlet)*. Nallua was super abundant with wildlife back then when I was a child. There were no outboard motors. They only caught narwhal, shot in the back of the skull from the shore. We had a small punt without a motor with which they would get their catch; and only the ones that passed close to shore. It's very easy to see the bottom. It's very obvious. They would only shoot at the ones going through that zone so that they would still be able to retrieve them, even if they sank.* [0058 19 at 02:59]
>
> *I remember some of them were still using qajait. Not many. They then had outboard motors which were 5 horsepower. The little outboards were used. And also, they would wait on grounded ice pans. They would shoot them from there. When they were catching many narwhal, I became aware.* [0069 14 at 08:40][11]

As noted in a review of historically important hunting practices, qajait were seldom used, and hunting was done from the ice or shore ice. Narwhal with tusks (primarily males), had to be taken in the leads before the waters opened up.

> *They travel closer to shore right up to today, when there are some once in a long while. Back then there were always some with young, the mother and baby would travel closer to shore while the males with tusks were further offshore. They would pass by the shore since forever, but we don't see them do that anymore.* [0068 18 at 12:04]

2.2.3 Technological Change and Hunting Offshore

Outboard motors have played a significant role in the relations of Inuit to place and to issues relevant to narwhal hunting. Motors require fuel. Historically, there was a limit (both financial and practical) to how much fuel one could store in a camp at any given time. Small motors were used occasionally and required little fuel. Re-supply meant travelling to Mittimatalik or Ikpiarjuk, and access to supplies found at the Hudson Bay Company post.

As outboard motors became more powerful — as was true of snow machines, introduced in the early 1960s — relations to place changed. A reliance on fuel for boats and snowmobiles became part of narwhal hunting. Technological change therefore had significant implications for Inuit culture.

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11. "Became aware" means more than simply, 'I learned how to do things and how things work'. Translated from Inuktitut, *qaujigiarniq* – to become aware –means to become conscious, appreciative, and knowledgeable about everything. This includes cultural traditions, meaning, significance and the importance of doing, as well as thinking a certain way.

There were multiple reasons for the relocation to settlements. However, being able to get quickly from Mittimatalik or Ikpiarjuk to locations that at one time would have taken considerable time, and an entirely different set of skills by dog team, played a role in the relocation of Inuit to where fuel and other supplies were located.

> *They would go to the head of the bay* (Milne Inlet) *up there. They search everywhere. And you hear someone saw narwhal over there. Men in other places hear this on vhf radio, and they go there to look for narwhal. They have fast outboard motors now. Nothing is out of reach for them. We travel very far too. When we leave here, we would arrive to Saattut in only two hours. We do that. In the past, when the outboard motors were slow — like 10 horsepower, 5 horsepower — you definitely needed to camp overnight. You had to camp overnight. Even your father would travel slowly from Nallua to here for supplies. Today, they go to these places very quickly. No place is too far for them now.* [0078 15 at 16:43]

Ak-ah-malah with his Quaq at Pond Inlet (Mittimatalik), August, 1923. Photographer Unknown

[Source: Library and Archives of Canada ID 4871035]

The use of snowmobiles, commencing in the early 1960s, appears to have had a mixed impact on narwhal hunting. While it made it possible to access leads that were farther away from land-based Inuit camps, they also introduced noise as something likely to affect the behaviour of, and access to narwhal.

> *Back then, when they would go narwhal hunting, and I was now fully aware, a few men had skidoos. And when we were in areas with narwhal, we were instructed not to drive our skidoos. We weren't even allowed to walk around or shoot anywhere.* [0012 5 at 15:01]

Even 10 hp. outboard motors placed some restrictions on the hunting of narwhal in open waters.

> *They wouldn't hunt* (narwhal) *just anywhere, as the boats were too slow. They were impossible to hunt*

without fast boats, so they wouldn't bother with the ones offshore; only the ones going close to shore. [0006 11 at 20:40]

However, as rifles became more powerful and accurate, there is little doubt that they became a considerable asset in the hunting of narwhal, depending on the skill of the hunter.

Back then when they hunted narwhal — well — they caught more narwhal at leads. When you're trying to catch a narwhal, you don't just aim willy-nilly; only when the narwhal surfaces and exhales. Then as it is starting to dive, it inhales. When it has fully inhaled, you shoot it in the head. Its lungs, when full, help it to float. [0012 5 at 22:51]

Utak's Mother and Zipporah Sanguya at Low Point (Nulla), Navy Board Inlet

[n.d. Source: Library and Archives of Canada, ID 3606746]

Changing technology affected the way in which narwhal were hunted. While technology affects the extent to which intimate knowledge of any species is critical to a successful hunt, not all traditions were replaced. Notable among them was the practice of conservation; catching only what was needed, with the well-being of the entire narwhal population in mind.

Our weapons — the gun, the harpoon — we're still using them, but the style has changed. Back then we had parents, our parents. Attagutsiaq was my guardian. He was in charge of all the narwhal hunters. Regardless of how many we wanted to catch, as soon as he said "enough", we stopped immediately. Only when he wanted us to hunt, we obeyed. That was our custom. And it would look like we could catch some, but he would stop us. That is how he would treat us. [0006 11 at 09:03]

This tradition has been challenged by other changes, as noted in another section of this text.

As the ice opens up, land-fast ice can still be found along the shores of Arctic inlets. Technology further changed narwhal hunting in other ways. A snowmobile pulling a qamutiq carrying an aluminum boat, makes it possible to hunt off the floe-edge in open water. It is still important to keep narwhal afloat, but the introduction of accurate scopes and boats with bigger motors meant that narwhal at a distance in open water could now be hunted.[12]

Aluminum boats, equipped with powerful outboard motors, combined with rifles with accurate scopes, make it possible not only to shoot and recover narwhal from some distance, but to travel considerable distances during open water season, to wherever narwhal are found. This means, for example, within the entire 370 km length of Admiralty Inlet. These changes account for the regulation of the narwhal hunt, commencing in the early 1970s, and issues associated with regulation.

2.3 Uses of Narwhal

As becomes obvious from what is presented in this section, the uses of narwhal, historically, were many and important to life with limited access to the resources that might be found at a distant Hudson Bay Company post.

2.3.1 Narwhal as Food, and Other Uses

Narwhal are particularly important as a source of food for Inuit living along the central and northern shores of Qikiqtaaluk (Baffin Island). While seal and caribou are also important, narwhal are a prime, and the most important source of country food in both Mittimatalik and Ikpiarjuk. However, food is also linked to culture, as maqtaaq is shared by hunters with others in a community. Attention is paid to the desire of elders for traditional foods. Maqtaaq plays an important role in Inuit culture, community and intergenerational relations.

> *Today they are hunting whatever there is, as that is all the narwhal that came. Here in this area, they usually don't catch beluga whales. Even this summer some men caught a few belugas, as we need maqtaaq to eat. That is how the situation stands. The meat when dried is also very delicious. Those of us on Baffin Island — well those of us from up here — prefer the meat to seal meat. It's only the people from Iqaluit and other communities down south that do eat the seal meat very much. The individual communities have their own idiosyncrasies. That is how that is.* [0078 15 at 07:07, 2nd part]

The relationships among narwhal, narwhal hunting and Inuit health are perhaps the most important that Tununirmiut (Inuit of the north Baffin region) have. In stating this, the concept of 'relationship' needs some

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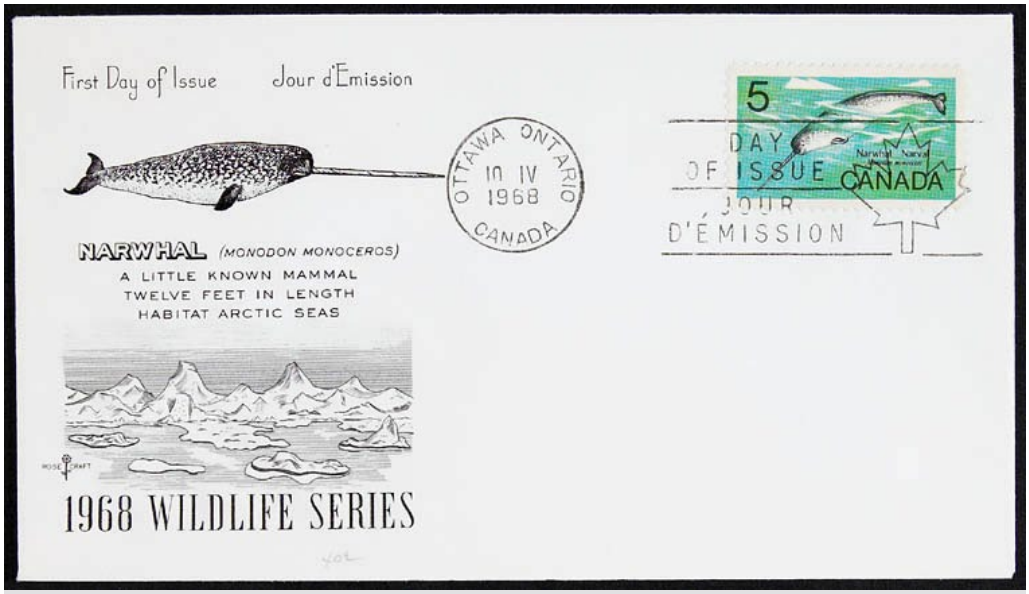
12. The literature dealing with traditional narwhal hunting and hunting practices is very 'thin'. In fact, details about contemporary hunting practices are also few; a paper by David Lee and George Wenzel, focused on floe-edge hunting at Pond Inlet (Mittimitalik), being one of the very few contemporary publications on Inuit hunting practices. No mention is made in this publication of the use of ice leads by Inuit hunters. The focus is solely on hunting at the floe-edge across the entire entrance to Eclipse Sound, early in the season. See: David S. Lee & George W. Wenzel. (2004). Narwhal hunting by Pond Inlet Inuit: An analysis of foraging mode in the floe-edge environment. *Inuit Études/Studies.* 28(2) 133-157.

explanation. Relationships include all of them: with children, grandchildren, other relatives, land, sea, food, culture, 'self' and mental health, one's history and the future — as well as narwhal and other species. While the quote above focuses on children and health, what Mittimatalingmiut and Ikpiarjumiut have to say about narwhal — as becomes increasingly evident from further reading — touches on every aspect of 'being Tununirmiut' (people of the shaded place) or, in the case of Ikpiarjuk, Tununirusirmiut.



In 1968, Narwhal made it onto a Canadian Stamp

[Source: Library and Archives of Canada, ID 3633011]

Narwhal maqtaaq (the skin and the blubber beneath the skin) has long played an essential role in Inuit food security.

> *Back then we didn't have the food we have today. We didn't have southern foods. The seals, air breathing mammals - well, we used wildlife for food. Back then, when they caught a narwhal, all parts were used; cached, and used for food. The intestines were used for dog food. They would not leave a morsel of meat on the ground. That was the rule, and it was intimidating to leave meat behind. That was observed very closely back then, when I became aware; when I was a child.* [0007 2 at 06:04]

Narwhal have always been an important element of the Inuit diet. Caribou were also an important source of nutrition, as were seals, arctic hares, fish, geese and berries. For Inuit living on the shores of Admiralty Inlet, Eclipse Sound, Milne Inlet and adjoining waters, narwhal and seals were, historically, of primary importance.

> *Parts from the narwhal - what they call the whistle, made of cartilage - we would often eat. We would remove the meat and eat the cartilage.* [0013 6 at 47:21]

The maqtaaq (skin) with attached fat (uqsuq) is the most desirable part of the narwhal. Every part of the narwhal was used. Before narwhal were caught, considerable effort went into preparing caches in which meat could be stored for the winter months when other sources of food were scarce.

… when they would be hunting narwhal they would prepare cache sites before they had caught narwhal. [9 at 04:16] *… before they caught any narwhal they prepared their cache sites before-hand for food during the winter; all the body parts of the narwhal. They first made cache sites.* [0011 9 at 04:33]

Our fathers began hunting narwhal so during the winter the dogs and people would have food. [0013 6 at 03:28] *There were very few of us. It was mostly the nuclear family. When we were pretty young — around 10, 11 years old — our father would make us* (caches) *so that the meat and maqtaaq they were bringing ashore would go to their prepared place of rocks that they would put them into.* [0013 6 at 05:29]

Maqtaaq was then, and still is the most appreciated part of the narwhal. It is particularly appreciated when it has been fermented.

Back then, what is still the same, is food. We still eat it fermented or aged. We still prefer to eat that. We cache it for the winter and then we dig it out and eat it. That still remains with the culture. [0004 7 at 06:33] *Fermented, it's like cheese. It's a greenish color - the fat and the maqtaaq - you can eat the meat with that too. So that has not changed.* [0004 7 at 06:59]

While caribou were present, their numbers on northern Baffin Island have never matched those of mainland herds.

I grew up in Tununirusiq and depended more on narwhal for food. The caribou were far away back then. The caribou were situated more near Mary River, right up near to Igloolik. I became aware with narwhal. Walrus I wasn't aware of, as I grew up on narwhal meat.

I long for qaasuk — cached meat — cached meat that is frozen along with narwhal meat. And the meat of the tail cut up into square pieces, with the meat being nice and black, cut into exact squares looking absolutely delicious with plenty of blubber. That is what I long for today; and especially today, as they don't cache meat anymore in Pond Inlet. When they do cache meat, they are spoiled by polar bears. And today they don't catch as many narwhal — those who hunt for us. [0063 17 at 02:29]

The caching of meat was essential to guaranteeing a supply of food during the harsh winter months when weather could interfere with hunting.

All the narwhal that were caught would be dragged ashore; even their bones. The dogs would be always eating the bones. They were left outside on the ground. The meat would be always cached for winter. During the winter if there were many blizzards — regardless of the blizzards — if you had enough meat cached you could feed on them, regardless that they had fermented. They taste good fermented. [0058 19 at 17:52]

When we caught a narwhal, I was taught how to cache them. We would have to prepare the bottom of the pit first. We cut up the meat and made some smaller. We bundled up the maqtaaq so we would have food for winter. [0068 18 at 01:40]

When they butchered the narwhal for caching, they would include thick blubber on it. We would prepare the cache site, and the meat would be … and put inside with the tail section. Where they (the caches) *will be placed, you learn the steps on how to cache meat. We probably do not know how to do it today, as we hardly cache meat now.* [0074 21 at 34:34]

The importance and significance of harvesting narwhal and other country foods is evident from accounts of what this looked like; historical accounts of the importance of narwhal to the Inuit diet and culture. There is pride and joy in working with traditional foods.

Caches acted as a refrigerator for narwhal meat. With climate change, it is perhaps difficult for young Inuit to appreciate how this worked. As late as the early 1970s, it was not uncommon for snow to start falling in Ikpiarjuk in the second or third week of August. In fact, snow was possible at any time of year. By mid-October, some travel on the ice was possible. Night-time temperatures were at and below freezing by the time narwhal exited their summer habitats in Milne Inlet/Eclipse Sound and Admiralty Inlet. Caches were of vital importance to storing and protecting narwhal meat for the winter.

> *They didn't want the meat to spoil. Just the sun shining on the meat would cause some decay. So my father would rush to cache them, as they meant to be the people's food. Also it was for the dogs. They didn't want the meat to be just lying around, so my father would push us to hurry.* [0013 6 at 61:56]
>
> *He* (my father) *forbade anyone to leave behind any meat as he would take all of the meat. He would take all the meat plus the tail and flippers and they would be cached too. That was the custom they lived.* [0013 6 at 17:29]

The storage and use of narwhal was important to survival if winter weather was particularly severe and supplies affected by what may have been a bad year for hunting. This kind of care and attention is evident from the following quote.

> *When the men were butchering the narwhal, the women would be cooking and preparing sinew for thread. Narwhal sinew is used for thread, and they would be drying them out. The meat would be set out to dry as the women were cooking. Not one part of the narwhal was to be wasted, down to the blubber. They took everything. What they would leave behind they cached. They didn't just remove the skin back then. And of course, the dogs needed food, so the meat was tended to properly.*
>
> *The men hurried too before the meat was spoiled by insects. Before the meat spoiled, they would completely cover it up. They would work non-stop, and since they caught many narwhal, they would work together to completely cache the meat. That is how they would do it. And when winter arrived, we began to eat maqtaaq along with fermented skin, and not as fermented skin. And if the men had not caught seals, during the winter, during the great darkness — if no one had caught a seal — they would get some meat from the cache and take it home. That was the custom.* [0063 17 at 00:07]

The following quotes give a clear indication of just how much of the narwhal was used for food, the attention paid to all parts of the narwhal, and how it was prepared.

> *We would eat the maqtaaq. I talked about caching meat. …They pile stones on it. They put the stones on it to make sure foxes and anything can't get at it. This will be the winter's food supply. As it is prepared for winter it ferments, and when winter arrives and when they retrieve it, will become our food.*
>
> *We would eat the maqtaaq, and the heart we would boil and eat. We would also boil the maqtaaq and eat it too. We would eat the maqtaaq cooked or raw. We also ate the heart. We would also chew on its cartilage. The part on its head is called the uvinngiarauti* (whistle)*. I am not sure exactly where it is located. That part we would chew on.*

We also ate the flippers. We ate all the cartilage, and picked at the parts attached to the bone. We would also eat the tail part. It wouldn't be as fatty. It would be firm and soft-ish with a little bit of blubber. We would eat that. And the meat wouldn't be fermented. They would place the meat on the ground attached to bone. The bones would have meat attached to them, and as they dried, we would eat dried meat. That was how it used to be. [0077 15 at 09:09]

The hair (skin) *would be used for food and it was very good food. It's like that. When not fermented it is good, and fermented it's very delicious. Its deliciousness changes too. And boiling it like this with a little bit of fat or making it into a stew is also very delicious. You can make it any which way. It is also a very good food.* [0078 15 at 02:05]

Sometimes we boiled them and would make stew from the heart and maqtaaq. Sometimes we ate the tongue by overcooking it and making it soft. We tried to use all parts; all the meat. [0068 18 at 01:40]

Well, the flukes … they take all the maqtaaq today. They don't eat the flukes as much today, and they also don't eat the flippers as much. When they catch a narwhal, those without dogs, they only remove the maqtaaq. All parts of the narwhal were used, along with the blubber. It was used for light, and useful for the household. We used it to keep warm. We also used it (the oil) *for Bannock. That is how it used to be.* [0077 15 at 17:10]

It (blubber) *is very delicious, and if kasuq* (medium fermented) *it is very good too. It is fermented but not so very much. And boiled it is very good and very good food too. As a stir fry it is very good. The flavor is different too. There are all these recipies. Inuit are very good at preparing food, using it in different ways, making more this way. It's not just narwhal that are used like that.* [0078 15 at 07:07]

Traditional recipes and practices were many.

Back in the 1960s we would only boil the skin or use it as a biscuit when drinking tea, or fry it on a rock over a campfire. These were the main ways that I experienced back then. We didn't really cook the meat so much when I became aware. [0063 17 at 12:35]

To back track a little, back when I was a child my mother and grandmother would make dried meat. This is how they would make dried meat. They would add salt water from the ocean to the meat after removing the blood. They would add fresh salt water several times to remove the blood. Then when all the blood is gone, they then hang them up to dry in long thin chunks. They become very dark with no blood. That is how they would make dried meat. They didn't just hang them up to dry, but they waited until it had no more blood in it by soaking it with water from the salty ocean that was changed several times. Then they would hang them up to dry. [0063 17 at 20:40]

Some skills and experiences in relation to the treatment of narwhal meat have been lost in some communities that historically depended very much on narwhal.

I haven't actually seen with my eyes that (making dried meat) *happening here in Pond Inlet anymore. But when I go to other communities, they do share dried meat with me from narwhal meat. If they were catching more on Pond Inlet's shores, for example, women are very able to make dried meat by working together. Anybody can make dried meat by taking it slowly. Anybody can do that if meat is available.* [0063 17 at 17:18]

When we were children, we wanted them very much; the edges of the flukes. We always wanted to eat them. Today when someone gets a narwhal with very fresh maqtaaq, maybe due to age, I have to cook it a little, I have to cook it. I also remove the hide and boil the skin now. And the meat is dried by people. And not long ago we learned something new. Brian had caught a narwhal and taken some of the intestines. I've never eaten that. There was the intestine. I tried hard to put the maqtaaq into the intestine. I couldn't do it even though it was very thin. So, I called Brian and told him to do it. He stuffed it and we boiled some with maqtaaq and some heart, I think. We also eat the heart. We boil some heart meat with maqtaaq. Boil it like that, with the intestines stuffed with skin. It turns out they're even more delicious like that. [0065 22 at 25:08]

Narwhal and Blubbered Skin on Floe Edge, July 1929.

[Source: Library and Archives of Canada, ID 5273941]

Hunting narwhal, with the technology created by Inuit before the advent of high-powered rifles with scopes, outboard motors, and fast aluminum boats, required remarkable skill, patience, and an intimate understanding of narwhal biology and behaviour. This was transmitted from generation to generation. The ability to hunt, and to treat the meat and other parts of the narwhal in ways that benefit others, contributed to the hunter's self-esteem and sense of purpose. Even when other foods were available, access to the resources supplied by wildlife — especially narwhal — was essential to survival, not only as food, but as source of fat used to fuel the qulliq, providing warmth at all times of year.

When I was old enough to understand, I realized that we subsisted entirely on wild game. But we would have very delicious treats when we had Bannock, and tea with sugar; Bannock with spread. This would be very delicious. But we would run out. We stayed warm entirely through animals, with the qulliq (soapstone stove) *when blubber was entirely depended on. And the dogs were always fed. I remember these things.* [0069 14 at 06:43]

Camp life involved a considerable division of labour, with men spending much of their time hunting and doing heavy labour. Some women were also good hunters, but treating skins and making clothing, preparing skins for tents, and anything else that required sewing involved women in work that required considerable skill.

When they caught a narwhal and landed it, they would remove the skin, remove the meat and head. If it had a tusk, it would be removed and placed high above the high tide line. Men with dogs would drag the meat and maqtaaq. And you couldn't use all the sinew for thread from all narwhal, but only those that were mature males, or old narwhal. Those that were more pliable and flexible — the good ones — they would keep. That was how it was. [0077 15 at 06:50]

Inuit Women Sewing on the Deck of an Arctic Whaler, Navy Board Inlet, July 1889

[Source: Library and Archives of Canada, ID 3525531]

I didn't notice any (women making fermented walrus meat)*. Women had too many chores to do. They weren't able to just sit still. Even we children were made to help. I never saw women making fermented meat. They had other duties, and they were working on seal skins all the time and sewing. I never saw women caching meat.* [0077 15 at 12:44]

I know that the jaw (of the narwhal) *was used by women for scraping caribou for skins or qamiit. The part that you use to do this, we call them tasiuktirutiit. That they made them into scrapers … that is what I know.* [0077 15 at 14:19]

Narwhal contributed more than nutritional value to Tununirmiut. Narwhal blubber was fuel for the qulliq that was used for both cooking and for heat in tents and iglus.

This blubber, it is used for lamp oil. This oil we used to use for heat in our homes. We didn't live in houses like this. We used it for oil for the lamp. We would use it to keep warm. This has great uses. It can keep a household of a family, with the mother, warm.

And we used it to cook food with. That was how we lived. Our lamps were always lit. Only at night when we went to bed would they be dimmed. [0078 15 at 02:05]

With few exceptions, narwhal fat is no longer rendered as a fuel. Other parts, including sinews found along the back, are no longer used for sewing.

You go back to your ancestors and what they used to know. Like the fat was used for qulliit (lamps) *for heating, lighting and cooking. The fat was very important, and for dog food too. The whole narwhal was used for the winter. They would cache it, or bury it into the ground for the winter. They would take it out in the winter time, eat it, and feed it to the dogs. Narwhal were a vital part of being here; of living here.* [0004 7 at 02:52]

The back-strap muscles have a lot of sinew. We would remove them to use for thread. The blubber was used for lamps. Our mother still uses it. Recently, I rendered some oil and filled a big barrel to the top, along with a water container. It's filled to the top and readily accessible. You can have a look at it. It's so lovely.[13] [0013 6 at 47:21]

Prime Minister Justin Trudeau with Attagutsiak in her home during a visit to Arctic Bay (Ikpiarjuk) Nunavut in 2019

[Source: Photo by Sean Kilpatrick/CP, in Emma Tranter, 'Remembering 103-year-old Nunavut Elder, Qapik Attagutsiak'. CBC North, Dec. 20, 2023]

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7. The reference to 'our mother' is a reference to Qapik Attagutsiak. Her interview for this report, in September of 2023, was likely her last filmed interview. Attagutsiak died December 14, 2023. For those unfamiliar with her, she was renowned for her work during WWII, collecting skeletons and bones that were shipped to Montreal for use in making ammunition, glue and for fertilizer. She was the oldest holder of Inuit Qaujimajatuqangit in Nunavut.

Narwhal skin was also used for making rope.

> *I've never seen anyone making rope. I saw some* (strips of skin) *that were to be made into ropes. It had the hair and blubber removed. They said it was to be made into rope. I didn't see them making the rope. It was only before they began working on it that I saw it. That was how it happened. The hide isn't used at all for boots. It's not boot making material.* [0078 15 at 07:07]

2.3.2 Feeding Dogs

The use of narwhal to feed dogs has obviously changed, as has the number of dog teams in both Mittimitalik and Ikpiarjuk.

> *Not one part of the narwhal was discarded. What the people didn't eat was given to the dogs for food. None of it was wasted. Only the bones would be left behind.* [0077 15 at 11:32]

What comes across when dogs and narwhal as food for dogs is discussed, is a parallel reference to 'not wasting any part of the narwhal'. Older hunters connect the loss of dog teams with practices in the hunting and use of narwhal of which they are mildly disapproving; that is, a failure to use all of the meat. This sentiment and concern is reflected in the following three quotes.

> *Today, they usually don't take the flukes. They also usually don't take the flippers. And if they don't have dog teams, they usually leave the meat behind. But those with dog teams always take the meat and blubber to use as dog food.* [0077 15 at 17:10]
>
> *They took great care in preparing all parts of the narwhal. The insides would be brought ashore so the dogs would eat them. We wouldn't lose any part of the meat.* [0058 19 at 17:52]
>
> *Not one part of the narwhal was to be wasted, down to the blubber. They took everything. What they would leave behind they cached. They didn't just remove the skin back then. And of course, the dogs needed food, so the meat was tended to properly.* [0074 21 at 00:07]

A need for dog food also kept hunters occupied with more hours spent hunting, as food had to be found not only for family and relatives, but for a dog team.

> *We had dog teams too for a long time, and needed dog food. I began going to the different places more. I have travelled a lot in this area. I've gone to pretty much everywhere up to today.* [0069 14 at 11:55]
>
> *Well, as spring arrived at a place called Suujaqtalik, on Nanisivik's peninsula, to a place called Suujaqtalik, we would go to spend the spring there to wait for the sea-ice to break up. As the narwhal begin to arrive from the floe edge, they pass by Suujaqtalik. So, my father, grandfather and male relatives would get enough narwhal meat and skin to cache. Back during the 1960s we had full dog teams, and the dogs needed to be fed daily.* [0063 04 at 05:15]

There are still dog teams in both Ikpiarjuk and Mittimatalik. Feeding them with meat from narwhal is important, as

dog food imported by the Co-op or Northern Store is incredibly expensive.[14]

> *I have a dog team so I have made no changes yet on how the meat is used. But others just leave the meat. They just take the skin. Some of the meat is given to men with dogs though. If they caught a narwhal far from town, they won't take all the meat today. It is completely different now from those days. Those of us with dog teams are mainly the ones working hard for the meat now.* [0058 19 at 20:39]

The need to feed dogs, and the challenges of obtaining food during the long, dark winter months, meant that with few exceptions, all parts of the narwhal were commonly used.

> *They needed a lot of meat back then. They would share the food with the dogs, and for that reason they worked very hard as the dogs needed food too. That was the custom back then.* [0007 2 at 07:21]
>
> *Our dogs weren't tied up back then. They weren't hungry at all, and they wouldn't get into the meat. We were instructed to make sure the dogs weren't urinating on the meat.* [0013 6 at 07:10]
>
> *But the dogs had a place pretty far from camp during the spring, as they were well fed. Once in a long while they would come into camp. But they weren't coming to camp all the time. And the meat would be harvested very quickly, and cached quickly too.* [0013 6 at 08:20]

Narwhal are still used as dog food by those who have teams in the community.

> *Back then we almost all of us had dogs. If the men were able, they would try to have a dog team. For that reason they would take all parts of the narwhal and they would use it for food during the winter and for dog food. They would take all parts.* [0055/57 8 at 16:47]

2.3.3 Narwhal, the Move to Communities and the Killing of Sled Dogs

Elders related the experience of moving into communities to changes in the relationships among hunting, needing to feed dogs, the killing of dogs and the transition to snowmobiles.

> *Because they needed to be fed, the men would hunt a lot. But around 1968, 1970, we were being moved to Ikpiarjuk* (Arctic Bay)*; Tununirusiq's Ikpiarjuk. There our dogs were killed off. The men didn't own many snow machines. So, we would endure hardships. Inside Ikpiarjuk's Bay, there wasn't too much wildlife. But if you went elsewhere, you would have more choices for game. For example, if I went to Qaggiat to hunt narwhal, I could catch as many narwhal that I picked, as I wanted to. Ever since back then, inside Ikpiarjuk's bay, there has been no game.* [0063 17 at 05:15]

The killing of sled dogs was a tragic and controversial issue in the '60s. It coincided with, and in some cases contributed to the move of Inuit to settlements. Without dog teams, Inuit access to traditional hunting locations was affected. There were implications for access to traditional foods and for Inuit food security. These were only resolved when the use of snowmobiles, introduced in the early 1960s, became commonplace. But a snowmobile

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14. Dog food in Mittimatalik (2023) sold for $174.00 for a 20 kg bag, or $8.70 a kilo. In Vancouver, the same brand is a third of the price, selling for $2.72 a kilo. The same is true of food products, not subsidized by Nutrition North.

cost money that many Inuit did not have. The result was that food security for some families became a matter of access to social assistance and the purchase of an increasing amount of food purchased at the HBC.

In replacing dogs, snow machines also changed the relationship between hunters and narwhal. The cost of owning and operating a snow machine is entirely different from the experience with dogs. The 'fuel' that keeps a dog team running is a product of hunting activity. Working with dog teams is more 'limiting' than working with a snowmobile. For example, a snowmobile is more capable of hauling a substantial aluminum boat and motor on a qamutiq. This can be used to hunt off the floe edge, early in the season, before leads develop in the ice. It is not hunting skill and labour that are necessarily needed to fuel a snowmobile. It is gasoline, and the ability to pay for it and the machine. Subsequently, earning money becomes important, with implications for the role that trade in narwhal tusks plays in the hunting of narwhal.

The killing of sled dogs by the RCMP has been thoroughly investigated by the Qikiqtani Inuit Association (QIA).[15] But other relationships developed in the late 1960s and early 1970s as the move to settlements was completed. These are relevant to understanding important changes in the role narwhal play in Inuit lives.

2.3.4 The History of Trade in Narwhal Tusks

The market for narwhal tusks, romantically characterized as 'unicorns of the sea', is an old one. It has roots in Viking culture going back more than 1000 years.[16] The ground powder made from narwhal tusks was seen in Chinese and other cultures to have medicinal qualities, including protection from poisons.

The sale of narwhal tusks has a long history that has changed considerably over time. At one time, narwhal tusks were of little commercial value. Records from the mid-1800s record the use of narwhal tusks as tent poles. Historically, tusks were also used as walking sticks and to make hunting implements.[17] [18] Toys for children were also carved from narwhal tusks.

In the 1800s, they were traded with whalers for manufactured goods, including rifles and ammunition. Narwhal hides were taken by whalers to Peterhead, Scotland, and subsequently to France for use in the making of gloves.

Starting in the 1960s the development of markets for Inuit art, and the carving of narwhal tusks created a market for them, as did the notion that ground-up narwhal tusk could contribute to someone's fertility. The best review of the history, and more recent developments in the history of trade in narwhal tusks, is found in an article published in 1992 by Randal Reeves.[19]

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15. Qikiqtani Truth Commission. (2013). *Analysis of the RCMP Sled Dog Report.* Iqaluit. Inhabit Media.

16. This history is reviewed, along with issues affecting narwhal hunting and the sale of narwhal tusks at the time, by Randal R. Reeves. [(1992). Recent Developments in the Commerce in Narwhal Ivory from the Canadian Arctic. *Arctic and Alpine Research,* 24(2)], and in an article detailing the use of a nearby narwhal tusk as a defensive weapon in relation to an attack on London Bridge, England, by Miriam Berger. [(2019). 'The narwhal tusk has a wondrous and mystical history. A new chapter was added on London Bridge'. *The Washington Post,* November 30].

17. G. F. Lyon. (1824). *The Private Journal of Captain G.F. Lyon of H.M.S. Hecla during the Recent Voyage of Discovery under Captain Perry.* London, John Murray.

18. L. Kumlien. (1979). Contributions to the natural history of arctic America made in connection with the Howgate Polar Expedition, 1877-78. Bulletin of the United States National Museum. 15, pp. 1-179.

19. Randal R. Reeves. (1992). Recent Developments in the Commerce in Narwhal Ivory from the Canadian Arctic. Arctic and Alpine Research, 24(2), pp. 179-187.

However, if money is dependent on hunting narwhal with tusks that have a considerable market value, skill is still required to 'feed' a snowmobile.

Commodity relations associated with trade in fox and other furs played a significant role in Inuit life and culture, commencing in the early 1900s with the demise of whaling. But other commodity relations also changed Inuit lifestyles, culture and values.

> *They had the tradition back then of hunting more when prices went up for narwhal tusks and sealskins. Some of them would catch several narwhal with tusks, and there were several men able to do that. They would catch narwhal with tusks. They would catch young seals. The ones capable of hunting these animals were able to buy canoes or outboards. They were able to use these things to hunt.* [0069 14 at 29:46]

Narwhal tusks acquire an importance they did not previously have. The market for tusks becomes an important element and consideration in the hunting of narwhal.

The sale of narwhal tusks has, since the 1960s, helped to pay for equipment that helps make hunting possible for Ikpiarjumiut and Mittimatalingmiut. A need for cash and the absence of quotas had implications for the hunting of narwhal.

> *Back then they didn't have quotas. They would catch lots if they wanted to.* [0002 12 at 15:27]

This change is anything but insignificant. The gradually increasing importance of, and prices paid for narwhal tusks, is hugely significant. Tusks, perhaps more than the fur trade, play an important role in introducing Inuit hunters to the commodity relations that govern so much of Qallunaat culture. The value of narwhal tusks, the competitive activity associated with narwhal hunting, and concerns for conservation become reasons for the regulation of narwhal hunting. Regulation of narwhal hunting is an ongoing issue for hunters and Elders in Ikpiarjuk and Mittimatalik.

Prior to 1971, trade was both opportunistic, and handled through the HBC with international markets available for the sale of tusks.

> *Narwhal tusks used to be weighted, like every pound. I don't even remember how much a narwhal tusk cost. I traded that tusk for four cartons of American cigarettes and maybe $200 American — cash — from guys from a ship.* [0004 7 at 01:18]

In 1971, the Department of Fisheries and Oceans (DFO) regulated narwhal hunting for the first time. Hunters were limited to 5 narwhal a year, a quota that had no mechanism for enforcement associated with it.[20]

In 1974, a large kill of narwhal in Ikpiarjuk (reported to have resulted in about 400 tusks) was a reflection of the

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20. In 1972, the United States banned the import of narwhal ivory. This gave rise to a considerable amount of cross-border smuggling. In 1975, the *International Convention on International Trade in Endangered Species* came into effect. Countries could implement different rules regulating the import of a product like narwhal tusks, depending on how they chose to classify the product. In 1985, the European Economic Community banned the import of narwhal tusks from Canada. The largest market for narwhal tusks outside of Canada, following the European ban, appears to have been Switzerland and Japan.

rapidly rising price. This likely played a role in the revision of regulations in 1976. A national quota was established, with allocations given to communities in proportion to what they had harvested historically. Tags were introduced as a means of enforcing and monitoring the changes. Tags were given to the local HTOs to be distributed to hunters.

Regulation was affected by the signing of the *Nunavut Agreement*. In 1993, the Narwhal Protection Regulations of DFO were revoked and replaced by the *Marine Mammals Protection Act.* Subsequently, the Nunavut Wildlife Management Board, HTOs and Regional Wildlife Boards assumed joint responsibility for management of the narwhal hunt, working under the *Fisheries Act* (1985) and the *Nunavut Agreement,* with the Integrated Fisheries Management Plan of Fisheries and Oceans Canada. It containing provisions for the management of narwhal.

Inuit are permitted to sell tusks to Canadians.[21] While some are used by Inuit carvers and makers of jewelry, the largest current market for tusks appears to be Japan. Tusks that sold on average for about $1,350 in 1990, now (2023) sometimes sell for in excess of $14,000, with double tusks selling for considerably more.[22]

The value of narwhal tusks is increasingly important to Inuit hunters. Maqtaaq — rich in Vitamin C — is a traditional and important part of Inuit diets. It can also be exported to communities that do not have access, or enough maqtaaq to meet local demand. This can be another source of income.

> *Be that as it may, when we are able to catch narwhal, the meat is very good when fresh and fermented. You can also make money by selling the maqtaaq to the HTO if you catch more than one narwhal. If I caught one narwhal, I don't think I'd sell any. I'd give some away and use the rest for food. If I caught more than one, only then would I sell some. Some of them make good money from it; those who are better hunters or are more skilled.* [0074 07 at 33:23]

2.3.5 The Importance of Narwhal and Other Species to Social and Cultural Relations

The social and cultural importance of narwhal are often overlooked or undervalued by Qallunaat, who most often see narwhal only as food. Narwhal still play an essential and important part in community, cultural and social relations in Ikpiarjuk and Mittimatalik.

Some parts of narwhal are no longer treated and shared as they once were. Qapik has this to say about what sharing used to look like.

> *The part in the head is called kakaggaaq. It looks like thick hide in the head; probably protection from getting hit in the head. They didn't mind. Kakaggaaq. They called it kakaggaaq.* [0011 9 at 12:11]
>
> *The head of the narwhal had been prepared to be eaten by caching it. It was frozen, so they thawed it out during the night. In the morning, "Niaquaq, niaquaq". That meant an invitation to eat narwhal head.* [0011 9 at 06:55]
>
> *They would only say "Don't eat any parts that make you go oohoohak" - like to clear your throat.* [0011 9 at 10:52]

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21. Internationally, concern for the impact of a trade in ivory — including narwhal tusks — has resulted in various bans on the import of tusks. A ban by the European Union in 1983 affected prices and demand. A ban on imports by the United States has been in force since 1972. A number of cases dealing with the smuggling of narwhal tusks into the United States have since made headlines.

22. A detailed account of the international regulation and trade in narwhal tusks and other parts, as of 2015, can be found in a publication, *Breaking the Ice: International Trade in Narwhal, in the Context of a Changing Arctic.* (2015). Report, The World Wildlife Fund, Canada.

They say there is a part in the head that can make you have too much fat. That part is really oily and can cause nausea. They said that a small amount can make you have too much fat. Don't eat any parts that make you go oohoohak. [0011 9 at 11:07]

Those were the parts that were eaten; used to be eaten when I was a child that I knew of. [0011 9 at 12:55]

Inuit camp on the move at Pond Inlet, looking toward Bylot Island

[n.d. Source: Library and Archives of Canada, ID 3517396]

The importance of narwhal as a food of cultural significance can often be found in memories of childhood, with parents feeding their children while 'on the land', and intimately cradled on a mother's back in her amauti.

I can't say the term for the name of the narwhal skin. I remember I was in the amauti as a child and they had caught a narwhal and I was being fed maqtaaq. I think that's all that I remember. [0065 23 at 01:03]

I was raised like that. And usually when I catch a whale, tail part, seal skin with the blubber, I let it age for a month or so. And after that, you take it out and for my girl's birthday in middle September. That's when we usually have some people for that. [0074 21 at 11:15]

The role of narwhal hunting in "being made to be a human being"[23] has been, and remains important to the development of youth in Ikpiarjuk and Mittimitalik. When youth get into trouble, getting back in touch with their

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23. The concept has been described as follows: "When we say "made to be a human being" we are already alive as fully-formed humans, but when we use the term "made to be an able human being", it refers to how you are being formed and raised with true love so you will become an able person". [Joe Karetak, Frank Tester & Shirley Tagalik. (2017). *Inuit Qaujimajatuqangit: What Inuit Have Always Known to Be True.* Halifax and Winnipeg, Fernwood Publishing. p. 143].

land-based hunting culture is one way of addressing problems. This is the concept of land-based healing.[24] Having an opportunity to develop a relationship with land, ocean and resources — including narwhal and narwhal hunting — is better seen as preventing problems that young Inuit might otherwise get into. Being confined to the community is often experienced as 'like being in jail', and invitation to mischief and trouble-making.

> *We young people want to hunt all the time. Those of us who love to travel; we get tired of being in the community.* [0067 18 at 15:28]

Maqtaaq, Ikpiarjuk.
Available for pick up by anyone.

[Photo: Frank Tester, Personal Collection]

Cooperating with others is of obvious importance to community relations in a population with origins in extended family hunting camps, and only brought together in consolidated communities within the logic and experience of a colonial history. This cooperation is reflected in the way Inuit maintain their relations with others by coming together in Ikpiarjuk and Mittimatalik to share food, commonly spread out on the floor, with everyone sitting around, helping themselves. Maqtaaq is at the top of the list when it comes to sharing.

As is true of many cultures, food plays both a real and a symbolic role in establishing roles, responsibilities and relationships among family members – and with others. Narwhal hunting and processing is not only a matter of food security. It is often done collectively.

> *Well, for the first part, my father had a qajaq. He and the other men would go out on their qajaq and would catch a narwhal, and we, their children…. When our father was to return home, we the children would get small cuts of maqtaaq that he had prepared beforehand. They were all cut up for me to eat; my younger sister to eat, my brother to eat, my friend's to eat, already cut up. When he arrived he would run his qajaq around, and then we would be given our shares to eat by my father. That it was used that way was my first recollection.* [0011 9 at 01:55]

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24. J. M. Redvers. (2016). Land-based practice for Indigenous health and wellness in Yukon, Nunavut, and the Northwest Territories. [Master's Thesis. University of Calgary. PRISM Digital Repository]. Available at: https://doi.org/10.11575/PRISM/26717.

Maqtaaq is a shared resource and historically, processing narwhal involved activities that included all family members.

The sharing of the experience of hunting and fishing has a long and absolutely central role in Inuit cultural and social history. Those interviewed made it clear that this is as true and important today as it has been historically.

The issue of narwhal in relation to food security is also connected to other concerns related to the impacts of Baffinland's terrestrial activities on caribou. Inuit knowledge of the history and changes in the population of caribou on Qikiqtaaluk is extensive.[25] As far back as the early 1900s, it was well known that the population decreased and increased in a cycle well-known to Elders and hunters.

However, the introduction of industrial activity has implications for this cycle that are largely unknown. The cultural significance of species loss — in this case caribou — has been well documented.[26]

> *Yes. It's only in a long while someone catches a caribou today, and it's only when they work very hard to get some. They travel past Sanirajak; my husband and sons. They travel past Sanirajak annually to hunt caribou. And they visit Naujaat at the same time. They have to travel all that distance. During the summer they hunt caribou in the direction of Clyde River, and then they only catch a few caribou. For that reason, caribou meat is becoming very hard to come by. …During the summer they go halfway between Clyde River and Pond Inlet.* [0077 15 at 24:12]

The same concern applies to char. Interviewees reported considerable change in their experience fishing (netting) for char. The issue of food security and changes in the availability of species in not restricted to narwhal. It is being noted with respect to other species that are essential parts of the Mittimatalingmiut and Ikpiarjumiut diet and food security.

> *And char are a very important staple. We make dried fish, and we eat them also not dried. It is also a very important food staple. During the summer they catch fish, and people going to Qilalukkat* (Salmon Creek) *become continuous.[27] People are going up there, going down there. That becomes the norm. Regardless of night or day, people are going casting for char. People coming home with their catch; that is how it becomes. But that is starting to dwindle down too. Do you know this too; that the char are decreasing in numbers?*
>
> *This summer we were at Saattut. Saattut has an incredible amount of char. This was the norm in the near past. As the boat shoves off, dragging the net behind — as the net stretches out — they're catching fish. As the net is fully stretched out, the amount of fish caught become enough. So, they don't set the net, and return to pull the net out. So many fish! This summer they were gone too. They caught 5 fish. I dried them. And somebody caught a fish and we had a dog with puppies, so that became its food. Later on, they caught a few fish. We took two for food, and the two or three became food for the dog as it had puppies. The dog can't starve too.* [0077 15 at 07:07]

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25. Michael A. D. Fergusen, Robert G. Williamson & François Messier. (1998). Inuit Knowledge of Long-Term Change in a Population of Arctic Tundra Caribou. *Arctic*, 51:3, 201-219.

26. David Borish, Ashlee Cunsolo, Jamie Snook et al. (2021). "Caribou was the reason, and everything else happened after". Effects of caribou declines on Inuit in Labrador, Canada, Global Environmental Change. 68 (102268), https://doi.org/10.1016/j.gloenvcha.2021.102268 .

27. Salmon Creek is easily accessible to anyone from Mittimitalik. It is slightly to the west of Mittimitalik on the same shore.

Similar observations were made with respect to seals.

> *…there's more food insecurity now. And no one catches seals. We won't even see a seal going through the ocean. Twice seals were caught, not by us. They gave us some meat, and later on they gave us meat. This summer I ate from three seals. This one was given to us, this one given to us and this one my sons caught. It is like that. All summer long I haven't worked on seal skins at all.* [0077 15 at 07:07]

3. Inuit Experience with Hearings on Baffinland's Phase 2 Proposal

In the communities of Mittimitalik and Ikpiarjuk there were, understandably, different opinions about the presence of and the expansion — the 'Phase 2 Proposal' — of the Baffinland Iron Ore Mine. In the hearing process, the focus by the MHTO on narwhal and proposed changes in the shipping of ore are understandable. This is not to deny that in each community there were — and are — different opinions about the presence and expansion of the Mary River mine.

A decision reached by the Nunavut Impact Review Board (NIRB), released by the Board, May 13, 2022, and subsequently supported by the federal government, clearly stated that the mine had the potential for "significant adverse ecosystemic effects" on marine mammals, fish, caribou and other wildlife. The Board noted that these effects could harm Inuit culture, land use and food security.The federal government agreed with these conclusions. It rejected Baffinland's proposal to double the production of iron ore, and to increase shipping through Milne Inlet and Eclipse Sound.

Despite this conclusion, Inuit – including those represented by the MHTO – often had difficulty in both responding to claims made by Baffinland and its consultants, and in presenting Inuit Qaujimajatuqangit, including about narwhal, in the hearing process. The history of the mine and many changes in direction and plans for its development are often reflected in the responses and observations of hunters and Elders. They include the challenge of trying to deal with the conflict between an operation that promised jobs for Mittimatalingmiut and Ikpiarjumiut, and that also claimed there would be no unmanageable effects on the environment. Some observations made in this section of the text are best understood in relation to a history of the development of the Baffinland mine, found in Appendix 1.

The following concerns what those interviewed had to say about Baffinland and their experience with the mine as it developed.

I remember too, other men were taking part in the process when it was beginning. They had a mine before at Nanisivik, so I have spent time at mines. And at the one they call Marruiliqi. They used to mine there. I've heard of these places, and when they were mining at Rankin Inlet. I too pushed hard for the mine, as I thought they would do as they said. The ones who used to mine just used to mine. They did not have many ships. They didn't have ships everywhere. We thought that was how it would be. So, we were mostly all in favor of the mine; all the men and women too. [0069 14 at 26:35][28]

Changes to Baffinland's plans created problems, especially for Mittimatalingmiut who had embarked on initiatives to deal with the likely implications of mine development for their interests. Then everything changed – many times. As can be seen from the history found in Appendix 1, some things developed slowly. Others, in response to rapid changes in the price of ore, developed at an incredible pace, with a lot of pressure to 'get it done'.

This challenged the way decisions and plans were made, and the consideration of information at a community level. The challenge of appreciating reasons for changing circumstances, and issues within the time scale involved, are evident in the responses of those interviewed. The resources to enable analysis and to respond to a flood of information were a serious problem for all Inuit organizations, including Hunting and Trapping Organizations whose interests were most likely to be affected.

Back around 2005, when they were beginning to plan for it, they were planning it for a while. I worked for the Hamlet as the Wellness Co-ordinator when they first began planning for it (the Mary River mine)*. They were planning for social issues first. So, we knew that they would begin operations at Mary River; those of us who live in Pond Inlet. They began planning for it back then.*

They had not planned for Milne Inlet in the beginning. They were planning to ship through the other side at Steensby Inlet. They never discussed our inlet (Milne) *here at all. That was the situation when the communities began to plan with Elders and social workers. They planned things very well in that manner, as lives would be affected by the project; probably for the wildlife too. The HTO will probably plan for them for Steensby Inlet.*

As that is the situation, it was recently, not long ago — I think it was in 2017 — that Baffinland went on air saying they were planning for Steensby Inlet, and will be mining. But as it was too expensive, they were beginning their early revenue phase. Or it was that ore prices were too low? I remember very well when they were on the radio. They said they would temporarily ship through our inlet - through Milne Inlet. [0063 17 at 25:14]

Age and interests had a lot to do with who participated in planning meetings as the mine was being developed and put into operation. Younger people clearly had conflicting interests that diverted them from involvement in meetings and planning. But their presence and participation were of considerable importance, as they later found out.

When the project was first approved, I wasn't really aware of it. I usually don't like to attend meetings.

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28. Recognizing the attention paid to experience and 'lessons learned' (IQ), makes a great deal of sense. In the case of the Nanisivik Mine, the ores being mined were lead and zinc. Unlike the crushed ore from Mary River, the volume of lead and zinc shipped required far fewer vessels. The volume shipped for concentration in Europe was only 125,000 tonnes a year. This compares with 6 million tonnes a year of crushed ore from Milne Port, once the additional 1.8 million tonnes recently approved by the Nunavut Impact Review Board is added onto the 4.2 million approved for the original operation of the mine.

> *The committees had agreed to it, maybe when they were trying to make the Elders agree, and were shown all these great benefits — all the money. When they were being told these things, they swayed the vote to 'yes'. But apparently it was to be the other way around.*
>
> *Whether they held meetings or dealt with the matter, the younger people weren't paying attention. For that reason, people encourage others to attend meetings more often. So, I am an adult now, so I attend meetings. But that started recently. What I feel about hunting is very important to me. I am now able to speak up.* [0067 18 at 15:28]

It is not surprising that the prospect and reality of having a mine operating in an area with resources important to Inuit lifestyles, well-being and culture, and offering employment in a community that had an unemployment rate in 2016 of 24.8%, was a potentially positive development for some Mittimatalingmiut. But this possibility didn't come without fears and hesitation.

> *I noticed that some of the Elders suspected there might be change if the mining expanded. The wildlife would not immediately leave, but they would gradually leave the area. Some people were suspicious while we all pushed for the mine. I did notice some people who thought that.* [0069 14 at 28:41]

The contradiction of having a job and making enough money to afford hunting equipment on the one hand, and working at an activity (mining) that at the same time has serious implications for what it is that one wants to hunt, is captured by the following very thoughtful and insightful statement. Mine employment — compared to other activities — presents some unique, difficult, and recognized challenges in relation to Inuit culture and lifestyles.

> *When they were starting up Mary River, I was in the middle. They talked of jobs and contracts. They said many people would have jobs. That was good that we would begin to see benefits. That part was good. I was in the middle for many years as the operations began. The wildlife monitoring programs were in place. That the wildlife and environments would be properly taken care of was my immediate thought. I guess that is how I thought it would be. When the project was approved through Steensby Inlet, I was glad many people would have jobs with different departments. And the contractors who live here in the impacted communities would begin to be awarded contracts and begin to prosper and gain more assets. For those reasons I was glad for it.*
>
> *But as time passed, not many people seemed to be getting any jobs and no contracts seemed to be awarded for the community members. That was regretful. And as the wildlife were being impacted and the people weren't being given anything back, that isn't so fair at all. They need to be more considerate of the impacts on the community members here. They need more avenues of support. There needs to be a way to figure things out. That is obvious now. People from here work at Mary River. In some ways that is good. Some of them hunt too. When they go hunting, they don't catch anything at all, and come home empty-handed. When they're working there, it's okay. But the hunters are also the ones who work up there. They don't catch anything. They go through places with no wildlife. I can make that statement.* [0073 16 at 24:03]

The conflicts and contradictions associated with development and the employment that mining offers are also captured in the following statement. It is also evident that Inuit culture is not something that this hunter, with considerable respect for the stewardship and effort of his ancestors, was prepared to sacrifice.

Inuit aren't just against projects, mining, etc. But when the wildlife becomes more and more impacted, life becomes impacted too. When the environment is impacted, when the animals are being impacted, changing their habits, Inuit are affected because we have hunting and travelling in our blood. When this is beginning to change, it's not right.

I hope mining can continue without us losing our culture. If we're to lose our culture … our ancestors worked hard to survive on game by good stewardship, doing things in a smart manner, making clothes for cold weather, making hunting clothes from wild animal skins. After they fought to survive, this tale of what we're experiencing, because of a mine — losing our culture — is not just. [0073 03 at 28:27]

3.1 The Nunavut Impact Review Board Hearings and Inuit Responses

The following is a chronology of how the hearings unfolded. How the hearings unfolded and the capacity of Inuit, including the MHTO, concerned, among other things, how narwhal might be affected, was seriously affected the COVID-19 epidemic. Baffinland exerted pressure on the NIRB to get on with the hearing process despite the COVID epidemic.[29]

This pressure helps explain the signing by the Qikiqtani Inuit Association of an Inuit Certainty Agreement (ICA) with Baffinland before QIA had an opportunity to discuss it fully with affected communities.

Prior to the NIRB hearings on Baffinland's Phase 2 Proposal, Mittimatalingmiut had participated in two days of hearings, November 4th and 5th, 2017, held by the Nunavut Planning Commission. Baffinland was requesting a change to conditions granted for the 110 Km road between the Mary River mine and the port at Milne Inlet. They wanted permission to accommodate a railway that was part of their Phase 2 Proposal. The Planning Commission granted the changes requested by Baffinland. This cleared the way for Baffinland approaching the NIRB with the Phase 2 Proposal that included the development of a railway to Milne Port.

The public hearing process for Phase 2 commenced in Iqaluit, November 6, 2019. After two days of hearings, Nunavut Tunngavik Incorporated (NTI) introduced a motion asking that hearings be postponed for eight months so that outstanding concerns raised by parties to the hearings could be addressed. Support for the motion was unanimous from all parties, other than Baffinland. The hearings were adjourned.

This time was needed as Baffinland maintained that impacts could be mitigated using adaptive management approaches and methods. Inuit were skeptical.

The only thing I know, that they (Baffinland) *don't believe, is that we say we are affected and they say they are not affecting anything. That is the only thing I believe.* [0061 06 at 02:18]

Baffinland was quick to respond to this development, petitioning NIRB to resume hearings in April of 2020 with the idea that another two weeks of hearings would 'wrap things up' and that by June, NIRB would submit its

29. Thomas Rohner, 2020, Communities resist Baffinland and Ottawa's push for public hearings: Company alleges "extreme prejudice" if hearings further delayed, CBC North, August 6.

recommendation to the Northern Affairs Minister, Daniel Vandal. They cited $2 billion in future royalties to NTI and QIA as an incentive for moving quickly. They added a threat to lay off Inuit employees if things did not happen quickly.[30] NIRB refused the request to resume hearings in April.

Nunavut Impact Review Board Hearings were initially held in the Cadet Hall, Iqaluit

[Photo: Frank Tester]

Nationally, COVID was declared an epidemic on March 11, 2020. However, at the time there were no cases of COVID in Nunavut. It was not until much later that the Medical Officer of Health would declare a COVID emergency for Nunavut. However, Inuit in Mittimitalik and members of the Mittimitalik HTO soon had other concerns. The first case of COVID-19 in Nunavut was identified in Mittimitalik, the community most likely to be affected by the Phase 2 Proposal, on April 30th, 2020. This proved to be an isolated case.

Following postponement of the hearings, QIA set out to deal with issues concerning affected communities. In April of 2020, Baffinland pressured QIA to agree to a process for working out outstanding Inuit concerns contained in what it called a 'term sheet'. QIA countered by early June, putting together a draft 'Inuit Certainty Agreement' (ICA) intended to address outstanding issues. It approached Baffinland to continue negotiations on the content and requested that following the conclusion of negotiations, it would be allowed time to consult with impacted communities on the content before reaching a final agreement.

Baffinland refused, insisting on a final agreement on the ICA without the process of consultation sought by QIA. Baffinland also stated that it would prefer to go into the hearing process with no agreement on the ICA, rather than postpone the hearing process any longer.

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30. Derek Neary. (2019). "Baffinland proposes to resume regulatory hearings in April 2020, highlights $2 billion in future royalties to NTI, QIA". Northern News Services Ltd. (NNSL). Dec. 2.

Baffinland was driven to get on with the hearing process as quickly as possible, most likely driven by what was happening to the international price for iron ore and a need to satisfy investors that it would, as soon as possible, be in a position to take advantage of those prices (Appendix 1). Failing this, Baffinland pressured QIA by suggesting that it would not have sufficient funds to continue 2022 operations.

On approval of Phase 2, Baffinland could presumably start to move toward the shipment of 12 million tonnes of ore per year by trucking more ore to port while the proposed railway was being constructed.

On June 16th, 2020, faced with Baffinland's refusal to permit time for consultation, the QIA Board of Directors voted in favour of the ICA. This placed QIA in the awkward position of trying to get support for the ICA 'after the fact'. Baffinland, driven by a desire to get approval for Phase 2 as soon as possible, and convinced that it would succeed, failed to appreciate the strength of Inuit resistance to the Phase 2 Proposal.[31] This resistance was further encouraged by the fact that QIA had agreed to an ICA without being permitted the opportunity of providing a thorough consideration of the content by Hamlets and the HTOs of affected communities. QIA spent the rest of 2020 trying to consult, 'after the fact', with communities.

Inuit response to these developments was clear. A letter to NIRB of August 24, 2020, signed by the mayors and presidents of the HTOs of the 5 most affected communities — including Mittimitalik and Ikpiarjuk — focused on problems with consultation and the ICA, created primarily by Baffinland's pressure to move on as quickly as possible with the hearing process.

It stated that: "The proposed expansion of the Mary River iron ore mine on the northern tip of Baffin Island is about to put five Inuit communities, affected by the proposal, against their own regional Inuit association". It noted that the ICA had been signed "without consent of the affected communities", and that it was "headed for a rough ride". It also noted that communities were … "not satisfied with research conducted into potential impacts of the project, affected communities want the environmental assessment process to slow down. Both Baffinland and the QIA, supposedly representing Inuit interests, stand to benefit financially from the proposed development".[32]

The letter also noted that the potential impacts of the expansion included threats to narwhal and caribou populations.

Feelings about Baffinland's approach to research and its inadequacies were noted by the following comments from Ikpiarjuk.

> *Sometimes we don't hear anything at all. For example, during this summer there was a study on narwhal from Baffinland, with two local Inuit taking part. We still haven't heard anything, and we had told them to provide a written report to us. They use these tactics to keep us uninformed. If Inuit were involved, I think we would share in the knowledge. We share a relationship with them.*
>
> *I'm not against Baffinland. We ask annually for reports. There are always two Inuit from Arctic Bay for their studies. There has never been a shred of paper given to us. And so recently we had enacted*

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31. Evidence that Baffinland was reasonably certain that it would ultimately get approval for its Phase 2 Proposal can be found with the shipment to the port at Milne Inlet of massive railway-based equipment from Bremerhaven Germany in the summer of 2019. This gave Inuit the impression that approval of Baffinland's proposal may have already taken place 'behind their backs". (Jim Bell. (2019). "Baffinland's massive railway-based sealift raises concern in Pond Inlet". Nunatsiaq News. Oct 17.)

32. Emma Tranter. (2020). "Nunavut board rejects Baffinland's motion to restart final hearing on October 30". *Nunatsiaq News*. Aug. 25.

> *a policy that Baffinland no longer select the Inuit for their studies, but we the HTO select the study participants so we will be more aware of what is happening. If Inuit were involved, I think it would be beneficial.* [0005 10 at 64:53]

Inuit in affected communities, with the exception of the case of the Nanisivik mine in Ikpiarjuk, had no prior experience with any major resource development project or hearing process. There were details and aspects of both the proposed development and the hearing process itself, about which they understandably knew comparatively little. In other words, the hearing process in this case required, in the interests of a fair and just process, considerably more time than what might be expected in the case of affected communities in southern Canada. QIA's request for more time to work with communities was entirely justified.

Geography is part of the problem. Beyond Mittimitalik, residents of other communities had limited opportunities to participate in the hearing process as it unfolded. This is illustrated by questions put to the interviewer in Ikpiarjuk by hunters and Elders who wanted to know and understand more about what had been proposed, how companies like Baffinland and the hearing process itself, work. For many, the expectation of presenting IQ about narwhal in the hearing process was a new experience.

The result is a process that is unequal in relation to effective participation, and considerably unfair. Furthermore, the resources available to Inuit compared with those commanded by the company add a further unjust and inequitable dimension to the process. Participating by asking questions at large scale public hearings can be both intimidating and not conducive to accomplishing what needs to be done in the interest of having a community that is fully informed and taking an active and meaningful role in the decision-making process.

> *I think for the narwhal. Inuit are traditionally, oral. They pass on their knowledge orally and nothing is written down. For narwhal, it's a new experience. For a lot of Inuit, with the mining companies, shipping and all that, it's a new experience for us.* [0004 7 at 41:36]

The NIRB responded to the letter it received from the 5 affected communities by scheduling, and then holding, a teleconferenced technical meeting with parties to the hearings, September 14 – 18, 2020, and an in-person, pre-hearing conference and community roundtable meeting from September 28 to October 1, 2020.

The Mittimitalik HTO, concerned about the amount of time given to them to raise their concerns, especially with regard to narwhal, petitioned the NIRB on December 17, 2020, to have further public hearings adjourned. They wanted to wait until Inuit could be vaccinated and travel conditions would permit an open hearing that could be attended by 100 people at a community roundtable with an agenda that would include presentations from all intervenors, and not just Baffinland. This was supported by QIA.[33]

This request reflected their disappointment over the time allotted to them in the pre-hearing conference and community roundtable held in September. Inuit had a lot to say in response to Baffinland's claims about knowing the effects of what they were planning and being able to handle them using adaptive management. The desire and appropriateness of developing an IQ approach to monitoring and adaptive management is captured in the following observation.

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33. Qikiqtani Inuit Association, letter to Kaviq Kaluraq, Chairperson, NIRB, January 7, 2021.

Inuit, on their own, need to find out for themselves what are the impacts of these different things going on; climate change, shipping and all those. Are our hunters saying they're catching less or are they catching more because of the changes happening? Or are there long term impacts, not just for this year or last year, over time. We could tell if it varies from year to year. The population will change over time, from year to year. [0004 7 at 41:36]

Public hearings were resumed January 25 – February 6, 2021. NIRB granted an extension of these hearings, to be held in Iqaluit, April 12 – 21. Toward the end of these hearings and between February 5 and 11, in protest against the Baffinland Phase 2 expansion proposal, hunters blocked the airstrip at the Mary River mine.[34]

Behind the scenes, concerns over COVID-19 were developing rapidly. In November of 2020, an outbreak of COVID-19 affected the communities of Arviat, and to a lesser extent, Rankin Inlet and Sanikiluaq.[35] But Iqaluit and other communities were not affected. By January 28 of 2021, the Chief Medical Officer of Health indicated that he was making preparations for a possible outbreak that might affect other isolated communities. On March 5, 2021, QIA announced that it would not support the Mary River Phase 2 Proposal. It cited "impacts from dust, impacts to wildlife including caribou, seals and narwhal and the limited incorporation of Inuit Qaujimajatuqangit and the absence of an adaptive management plan", as its reasons for doing so.[36]

On March 18, 2021, Nunavut declared a public health emergency, limited travel to the territory to those willing to undergo quarantine, and restricted public gatherings. However, Michael Patterson, Chief Medical Officer of Health, granted an exemption to NIRB, allowing it to hold an extended in-person public hearing of not more than 150 people in Iqaluit, April 12-21.

On April 8th, Iqaluit reported its first case of COVID-19. April 14th was the last day of the extended public hearing with the exemption being rescinded and NIRB sending all delegates home.

3.2 Pressure on Communities to Change Course

In early May, NIRB announced that it would not resume hearings until restrictions affecting travel and large gatherings were lifted. Despite this declaration, Baffinland, on August 4, 2021, petitioned NIRB to resume hearings on the Phase 2 Proposal on October 30th. This request was rejected by NIRB.

Baffinland set out to change the position of those in affected communities who were opposed to the Phase 2 proposal. The position of the Ikajutit Hunters and Trappers Organization of Ikpiarjuk was a difficult one in a community that, unlike Mittimitalik, did not have a narwhal population that was obviously affected directly by the shipping and other activities of the Baffinland Iron Ore Mine. The Hamlet Council of Ikpiarjuk supported Baffinland. In a letter to the NIRB of June 6, 2021 that highlights the dilemma of meeting a real need for employment in the presence of a development with potentially serious environmental implications, the mayor of Ikpiarjuk stated that:

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34. Dustin Patar. (2021) Hunters block Mary River mine airstrip, road to protest Baffinland expansion. *Nunatsiaq News.* February 5.

35. CBC News North. November 18, 2020 'Nunavut reaches 70 cases as dreent outbreak continues to surge'.

36. https://www.qia.ca/qia-board-resolves-to-not-support-the-mary-river-phase-two-proposal/

The Hamlet of Arctic Bay has residents employed by Baffinland, 16 Inuit employees that work for contractors and 27 that work for Baffinland Iron Ore Mine. The salaries they receive goes toward supporting their families. As one of the smaller communities in Nunavut there are not many other opportunities for local employment.[37]

By the final hearings in November of 2021, the Hamlet of Arctic Bay was in favour of the Phase 2 expansion. Former mayor and councillor, Frank May observed that six to eight months before the final hearing, the CEO of Baffinland visited Ikpiarjuk, offering benefits — an office building and training for small motor repair — for community support of Phase 2.

Conflicts between the employment opportunities offered by Baffinland, and the likely effects of the Phase 2 expansion on narwhal and other species, generated considerable tension in both Ikpiarjuk and Mittimitalik.

In anticipation of the final hearings to take place in November 2021, on October 28, Baffinland hired Paul Quassa, former Nunavut Premier and President of the Tunngavik Federation of Nunavut that had negotiated the Nunavut land claim, as senior advisor to Baffinland's CEO, Brian Penny. Quassa set out to convince communities, including Mittimitalik and Ikpiarjuk, that they should support Baffinland's proposal.[38]

One of the most important issues facing Mittimatalingmiut hunters was the likely effect of noise from Baffinland's ore carriers, on narwhal. In addressing the issue, Baffinland sought other explanations for the decline in the number of narwhal in Milne Inlet/Eclipse Sound (discussed in detail, later in the text). Not everyone was impressed by Paul Quassa's adoption of Baffinland's alternative explanations for the decline.

I got to say what I've wanted to say during the public meeting. We see Paul Quassa on TV. He would say it's because they're making a dock that there are no more narwhal.[39] *He was saying all kinds of things, and he's not from here. He doesn't see what is going on. But last year before the dock was completed, he said the dock was to blame for the loss of narwhal. But during dock construction, a few pods of narwhal would keep coming here — and the year before. Last year we had a major narwhal hunt before the completion* (of the dock)*.*

I don't want people to believe Paul Quassa very much, I'm a hunter. I see what's going on. The dock was completed October 6. We began catching narwhal in November last year while they were still working on the dock. And they're not working on the dock anymore, but we haven't seen any in our community. There's none left. [0067 05 at 39:55]

The conclusion of hearings took place in Iqaluit, November 1-6, 2021. They were restricted to 100 participants.

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37. Submission to Kaviq Kaluraq, Chairperson of the Nunavut Impact Review Board, by Mayor Moses Oylukuluk, on behalf of the Hamlet of Arctic Bay, June 6, 2021.

38. Paul Quassa, 2021, Op-ed: Clean, co-operative resource development will secure future in North: Former premier and signatory to the Nunavut Agreement explains why Nunavummiut should embrace expansion of Baffinland's Mary River mine. Nunatsiaq News, December 8.

39. For two years, while narwhal populations were in decline, a small boat harbour was under construction at Mittimitalik that included some pile driving. As noted later in the text, Baffinland attempted to attribute this activity to the decline in the number of narwhal seen in Eclipse Sound and Milne Inlet.

An audio-visual feed to Mittimitalik was provided so that residents could present their questions to the parties in attendance, on-line. The hearings in Iqaluit were not open to the general public.[40]

At these hearings, most community participants expressed serious concerns about Baffinland's expansion proposal. Enookie Inuarak, representing the Mittimitalik HTO, ended his presentation to the NIRB by stating that "Inuit culture is not for sale". Moses Koonoo, Vice-chairperson of Arctic Bay's Ikajutit Hunters and Trappers Organization, said that the company should not rush into the expansion, and he had reservations about possible decreases in the narwhal population. He added that "Baffinland [is] not really prepared to take on Phase 2".[41]

The Mittimitalik HTO was firmly against the Phase 2 expansion and had made that very clear in all of its presentations to the NIRB. In early November, following the hearings, the Pond Inlet Hamlet Council, passed a resolution supporting the position taken by the MHTO. It was signed by all council members, as well as the mayor.

Subsequently, on January 10, 2022, the mayor submitted to NIRB a document entitled 'Final Written Submission to the Nunavut Impact Review Board (NIRB) regarding the review of the Baffinland Iron Mine (BIM) Phase 2 application for approval'. It listed the economic benefits to Mittimatalingmiut and noted a "quick response submitted to us by the President of Baffinland Iron Mines on November 22, 2021, making reference to his desire to "accomplish positive improvements to the quality of life of all our citizens."[42]

The letter generated considerable controversy. Subsequently, Boazie Ootoova, in a letter written to Daniel Vandal, claimed that the mayor had endorsed Baffinland's Phase 2 Proposal without council's approval, noting that it contradicted other hamlet resolutions that opposed the Baffinland expansion. He observed that the mayor's letter to NIRB "closely resembles" a presentation made by Baffinland a few months earlier to Pond Inlet council.[43]

On May 13, 2022, NIRB delivered its recommendation to the federal government that Baffinland not be given permission for the Phase 2 Proposal.

The NIRB then responding to a subsequent proposal to export an additional 1.8 million tonnes of ore, recommending this to the federal government. A permit was granted, December 31, 2024, extending what had previously been approved for a limited time, despite recognizing the effect shipping was already having on narwhal. This brought the total to be shipped to 6 million tonnes per year.

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40. Jane George. (2021). "Baffinland phase 2 hearings resume under the shadow of COVID-19". *CBC News North.* Nov. 1.

41. David Venn. (2021). "Community reps oppose mine expansion at final day of Baffinland hearing". *Nunatsiaq News.* Nov. 6.

42. January 10. (2022). Letter from Mayor Joshua Arreak to the Nunavut Impact Review Board

43. Paul Tukker. (2022). "Nunavut mayor 'improperly' endorsed Baffinland mine expansion, says Pond Inlet councillor". *CBC North*. May 16.

4. A History of Narwhal Populations in Milne Inlet/Eclipse Sound and Admiralty Inlet

Historical numbers are important to better understanding what is currently happening to narwhal in both locations. A consideration and comparison of historical populations and trends is also important to better understanding recent changes taking place in populations in Eclipse Sound/Milne Inlet, as a result of the shipping of ore from Baffinland's Mary River mine.

4.1 Historical Numbers in Milne Inlet/Eclipse Sound and Surrounding Waters

Inuit Elders provided verbal pictures of the abundance of wildlife they experienced as children and as young hunters. These contrast with their present-day experience and observations. As one Elder explained, the abundance of wildlife was a natural or taken-for-granted reality, as common as the phenomenon of going to sleep and waking up.

> *So that is how it used to be; like we sleep and wake up. That's how it is. It is what people do. So, when night arrives, we will sleep and so we go to sleep. That is the ritual. We are now awake, and it's not unusual. That's the ritual. When I was a child, I thought it was natural that there were all these multitudes of diverse wildlife. I thought that was how it was, and it wasn't unusual.* [0077 02 at 28:36]

As was true for hunters in Ikpiarjuk, the memory of Mittimatalingmiut hunters is one of wildlife being present in large numbers.

> *Game was abundant. Akua… here too had lots of fish when I moved here. You could catch so many fish. The fish were very easy to catch. You could catch lots of fish just in front here. The game was so assorted, and there were so many seals too when I moved here. I haven't forgotten at all during the fall when it was like these huge herds of animals, seals, there would be seagulls, the seagulls would be together in a place, then there would be many seals there. That was how it was as I remember them.* [0069 14 at 13:51]

Hunters, remembering their childhood experiences, remarked how in the 1980s game was plentiful in the region. The positive (joyful) emotional response to being in an environment that supported hunting, where game was plentiful, is an important recollection.

> *There wasn't much wildlife in the waters of Tununirusiq. But when we moved here in 1980, my mother's husband and sons would go hunting every week; every weekend they would always catch game. And back then, caribou were plentiful and game was abundant. They would catch seals. They would bring into the house meat; caribou meat and char and other foods. Back then life was joyful, and it would be the first time I would see a whole caribou carcass with the skin on, that was brought home. So, I was seeing and learning new things back during the 1980s.* [0062 04 at 02:32]

It was commonly noted that the area where the Mary River Mine is now located (Nuluujaat), was a well-used hunting area.

> *I absolutely remember it before the mine. People would go up there to hunt caribou. Milne Inlet would become crowded. Before Baffinland, people had already traditionally been going inland from Agliruujaak. When people talk of our ancestors, it was a major hunting area for them, and for people going caribou hunting.* [0069 14 at 24:11]
>
> *Yes, I would go along there* (to Nuluujaat) *with others. That area up there is where caribou go; used to go to. Places like the one they call Akuliqqutaq, and others we know of along with Qikiqtatannuaq. We used to know what these places had. Now we just know them for what they used to have.* [0069 14 at 21:34]

Narwhal are no exception to the observations made about how plentiful game used to be. The observations of Mittimatalik hunters parallel those of hunters and Elders from Ikpiarjuk.

> *When I arrived at the Nallua area, and this area, diverse game was especially abundant. Narwhal would be so many, following the shore along here. It wasn't every day, but they would pass by once in a while. Those areas around Nallua and Qaurnak had especially abundant numbers of narwhal when I moved here.* [0069 14 at 12:17]
>
> *Back then, when narwhal were very numerous, the Nallua area we knew that it had narwhal during the spring. As summer approached the narwhal would migrate into the fiords. They would spend more time up there at Kangiqjuarjuit, and around here in the Iluvilik area. We would spend more time at those places.* [0069 14 at 11:43]

We camp at Nallua right after the sea ice has broken up. Sometimes during July, when the land-fast ice has broken up and we can get through the ice pans, regardless if there are still ice pans around, we go to Nallua. The Nallua area, right after breakup, usually has huge numbers of narwhal. They would catch many narwhal with tusks. They would catch many narwhal, and cache a lot of meat. That was how it was. Many men would go there. [0078 15 at 16:43]

Their meat caches would be enough for winter now. And, of course, they would travel to here and would offer meat and skin to the people. Although they had too much for themselves, others too — in Pond Inlet — needed some food. And so, they would bring meat for them to feed on. They would catch bearded seal too, which they would cache or use for food. Seals too would be cached for food. All game seemed to be readily available. That was how it was. [0077 15 at 29:34]

Ipilee Merkosak watches his wife, Leah Sigluk Merkosak light a qulliq in a tent at Pond Inlet, August 1946

[Source: Library and Archives of Canada, ID 3603134]

Narwhal were historically plentiful, as indicated by the following observation related to what was seen by this hunter who was a child at the time.

(Narwhal) *were really plentiful when I was just a child. … I think I was about seven or eight when I first saw whales coming in. I remember with the rough seas coming in, because it is always windy over there. But I was asked to get inside the tent because it was going to get windy. But half an hour later, the wind never came. I went out. The rough water was getting closer. Then we realized that those* (waves) *were narwhal passing by, and they passed for three or four days, nonstop.* [0074 21 at 05:00]

The following is an observation on the presence of narwhal in the many fiords and sounds that branch off from the waters of Milne Inlet and Eclipse Sound.

When the sea ice was breaking up, the narwhal would come up from down there in huge numbers, through here. We would hunt them through seal breathing holes going to Qulluqtuq Bay; going up into that area (see Appendix 3)*. For three days — sometimes for three days — they would be almost touching each other; the narwhal passing through. Sometimes they would thin out, but you'd still see some now and then. For three days there were narwhal almost constantly; almost touching each other the whole time. They would head to the fiord. But today they're gone. They don't go to the fiords anymore. They used to come through here. We used to hunt narwhal very much here when they were heading into the fiords. There aren't much now.* [0061 19 at 00:38]

I remember as a child when the narwhal arrived at Qaurnak. It was the whole actual day there would be narwhal. When they began to speak, it sounded like they were going to say buaha! You'd get so used to hearing it, like it was all day long and during the evening. That is how it used to be. [0077 15 at 27:30]

The following is an important observation on the relationships among species, indicating how an entire, interdependent ecosystem can be affected by anthropogenic change that among other considerations, includes shipping through habitat important to these species.

Back when before the mine began what we were used to seeing, like it was an ordinary day. It wasn't unusual when you saw much wildlife on your way somewhere, seals, harp seals, bearded seals anywhere; and so many birds along with so many narwhal in vast numbers. You were able to see that, and it wasn't unusual. It seemed to be the custom. It was the custom. Today, when you don't see so much wildlife, it is obvious that there is some huge change in our environment. What we would see often isn't the case anymore today. [0073 16 at 08:22]

Imiliit (Ragged Island) Aulattivik Bay (White Bay) can be found on the map of Milne Inlet and surrounding bodies of water (Appendix 3). Aulattivik is the name of the island that is found at the entrance to what is also known as White Bay. As this hunter notes, there used to be many narwhal feeding in Aulattivik Bay.

When they're in this area during the summer they come here, and it's a major feeding area. Sometimes they usually enter into Aulattivik Bay (White Bay)*, and that place usually has many narwhal. When they leave the Bay, they go through here and go here. Those are the places. This place is the most occupied place that I know of.* [0071 14 at 07:30]

I also remember that more than once there were many narwhal all feeding here, (Aulattivik Bay)*. They would go through here, pass by here, looking like they were going up there, but weren't going there at all. They keep coming back here. They probably mate there too. They would usually feed there.* [0071 14 at 08:20]

As fall is in full swing, they move into the mouth of the bay. This area usually has narwhal. They sometimes enter the bay, but when they return, they spend more time here. [0071 14 at 09:08]

Narwhal entering Aulattivik Bay would do so from Milne Inlet and a narrowing of the waters encountered in traveling through the western end of Eclipse Sound. They would therefore be in closer proximity to any ships traveling the length of Milne Inlet.

4.2 Historical Numbers in Admiralty Inlet and Surrounding Waters

The abundance of narwhal in Admiralty Inlet is obviously important to a successful hunt. Historically, in relation to food security, this included an ability to anticipate the number of narwhal entering the inlet in the coming year and to plan accordingly.

> *The men would say that there would be many narwhal the year before there were many narwhal. And it would be possible next time that there would be fewer narwhal. According to observations made on the plants, on the land, and in the ocean — and by following the seasonal weather — predictions could be made about narwhal in the coming year. Then there might be less narwhal the next year, as they followed their food sources.* [0011 9 at 12:55]

Many observations of current and historical narwhal populations have been made by hunters at the floe-edge. Narwhal arriving at the floe edge at the mouth of Admiralty Inlet in the spring enter using leads in the ice.

Those interviewed who travelled to the floe-edge as young hunters with their parents and Elders shared that narwhal would, historically, pass by them as the leads opened. For three to four days there would be a massive, continuous pod of whales arriving. One 40-year-old hunter describes pods so large that the air vibrated from their presence.

> *From my point of experience back then, when I was a little kid, we would be out narwhal hunting down at the floe edge or by boat. When I was a kid, I knew there were lots of narwhal that migrated here. There would be narwhal throughout the morning, through the night, at least for three to four days. That we were going to be watching narwhal migrating north to go eat. That is what I knew when I was a kid. You can hear them far away —from their blow holes — that they're coming. The water or land will be vibrating.* [0002 12 at 11:58]

Hunters observed that since then, over their lifetimes, the number of narwhal travelling in large pods into Admiralty Inlet has declined. From the floe-edge, narwhal no longer pass for three to four days as they used to do. Now, it takes a couple of hours to a few days for a pod to pass.

> *For a couple years now, it's has been way different. They say there are lots of narwhal, but it is not like it used to be. They migrate at least a day or two then they'll be gone. So, I see that to be a big difference compared to from the past to now. There are not as many narwhal.* [0002 12 at 11:58]
>
> *In the past, when I was a child, it would take three days for the narwhal to pass by the shore. Today, only a few passes by. It looks like there would be plenty but suddenly they stop appearing. They're gone.* [0012 5 at 36:39]

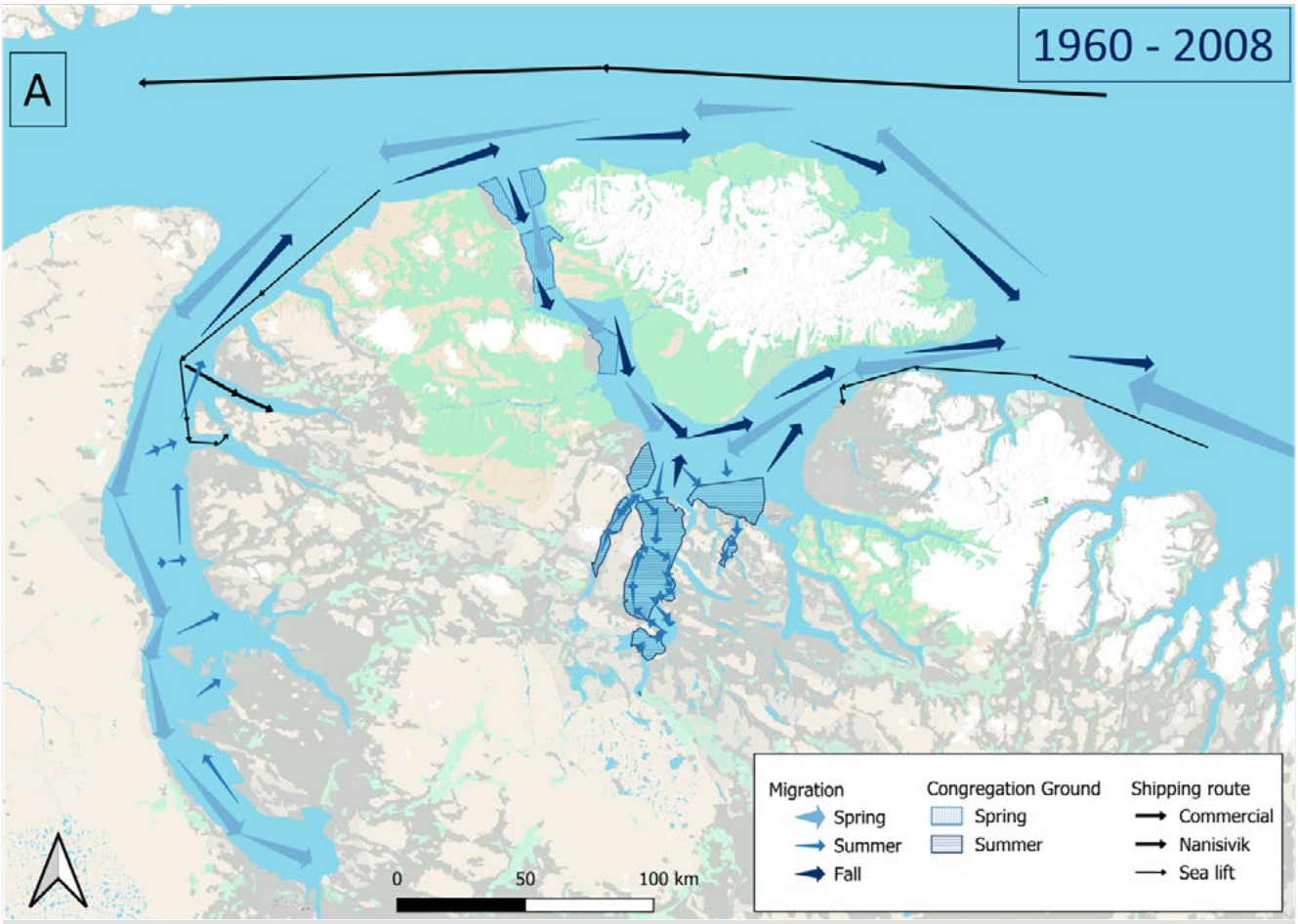
An intimate knowledge of narwhal distribution within Admiralty Inlet was important for a successful hunt, and for survival. The location and distribution of narwhal is dependent on the location of food (arctic cod and char), and ice conditions. When asked during the interviews, hunters would point to the areas on a map where narwhal, historically, were commonly found in considerable numbers.

They said all this area was a haven for narwhal, the waters of Tununirusiq. They say there were tremendous numbers of narwhal back then. [0007/8 2 at 13:14]

The general trend in numbers of narwhal in Admiralty Inlet reported above by hunters, commencing in the early 1980s, precedes anything that might be attributed to the activities of Baffinland. Given the age of hunters making these observations (in their 50s and 60s) it is likely that changes were noticed, commencing in the 1980s.

It seems we get separate pods now. Well, we find narwhal in groups like that now. [0012 5 at 36:39]

Changing ice conditions, based on observations by Inuit hunters noted elsewhere in the text, may also mean that narwhal are now spending the open water season in locations where they were not traditionally found. The general decline in numbers observed by hunters in recent years may also be partially attributed to the observation of narwhal travelling in many smaller pods, rather than together in one large pod. This raises the question of 'why smaller pods'.



Historical distribution, migration and movement of the narwhal in the Northern Baffin region before the start of BaffinLand's shipping activities around 2008. Observations were reported by Elders and land users from Mittimatalik and Ikpiarjuk.

4.3 The Role of Technology in Hunters' Experiences with Populations of Narwhal

Inuit hunters, primarily those from Ikpiarjuk, noted important limits to their accounts of what narwhal populations looked like historically. These observations also have relevance to the historical and more recent experience of hunters from Mittimatalik, although the shipment of ore, commencing in 2015, plays an important role in the recent experience and observations made by Mittimatalingmiut hunters. The hunting of narwhal, and as a result, the numbers that were seen, were a product of hunting that mostly took place in the spring when hunting could be done from the ice and when the narwhal moved into the leads developing in the sheet of ice covering the mouth of the inlet.

As previously discussed, hunters and Elders from Ikpiarjuk note that the technology available to them until the 1970s played a significant role in what they saw of narwhal. In the 1940s and early '50s, the outboard motors available to those who could afford them were only 3.5 – 5 horsepower. Therefore it makes sense that a more exacting size of the narwhal population was relatively unknown[44]. Without boats and high-powered motors, hunting was a much slower and a methodical practice. Travel was by dog teams and in open water, by qajait although, as noted in what follows, not much hunting of narwhal was done from a qajaq.

> *That doesn't seem to be the case* (that there are fewer narwhal than there used to be)*. They wouldn't hunt them just anywhere, as the boats were too slow. They were impossible to hunt without fast boats. So* (hunters) *wouldn't bother with the ones offshore; only the ones going close to shore.* [0006 11 at 20:40]
>
> *Back then, they didn't have much transportation, so the narwhal seemed few. That wasn't really the case, but I think narwhal habituate quickly. Back then there were no ships at Arvaaqtuuq. When the narwhal would be fleeing inshore, apparently there had been a ship going down that way.* [0006 11 at 16:33]
>
> *We didn't have a boat. We didn't have a fast boat, but you had to go to the narwhal. They* (hunters) *didn't travel very far. In 1946 we lived at Qakkiaq during the spring and summer. Someone had a qajaq; one man. When the open water arrived, he harpooned two narwhal. That was the only time I saw someone hunting from a qajaq.* [0007/8 2 at 10:40]

What was true for estimating the number of narwhal was also true when it came to the historical number of orcas in the region.

> *We didn't travel so much by boat back then. There didn't appear to be so many* (narwhal)*. But narwhal would be fleeing inshore even though it didn't look like there were any orcas around. Maybe since we didn't travel as much, we didn't see as many orcas. Today we see more in some years — these days.* [0055 8 at 48:52]

Even between the mid-1960s and into the 1970s, the 9.9 hp. motors that most Inuit could afford, limited travel. It could take hours to travel from Ikpiarjuk to the far side of Admiralty Inlet where narwhal might be located. Travel was also possible by Peterhead boats. These had a long history with Inuit in the region. However, these 'one-

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44 This observation should not be confused with the observation that historically, Inuit hunters experienced large pods of narwhal entering the leads as the ice started to break. The numbers they recall were considerable. However, the ultimate size of the population (numbers) summering in the waters of Eclipse Sound and Admiralty Inlet, was unknown.

lungers'[45] were also not fast moving.

> *Well, not that there is a huge issue, but it isn't the same as it used to be. Back then, not a lot of men who hunted narwhal had boats. During spring we hunted narwhal more. That was a very strong tradition. During the summer, those old Peterheads; those were the only boats around. A few men owned them — only a few. A lot of men didn't have boats.*
>
> *For a lack of boats during the summer, not too many narwhal were caught. They used Peterhead boats to hunt narwhal across from here, but narwhal for caching. It would be for caching meat. The tusks were worth very little. It was only to cache meat that they would hunt narwhal over there* (the west side of Admiralty Inlet)*. They would only hunt a few — some of them.* [0006 11 at 11:58]

Launching one of the last remaining Peterhead boats in Ikpiarjuk, 1974

[Photo Credit: Frank Tester, Personal collection]

Some hunters, although recognizing the limits that technology placed on what they saw historically, still noted a decline in numbers of narwhal in places where they were usually found. With the introduction of high-powered outboard motors for their boats, hunters were capable of traveling the entire length of Admiralty Inlet during the open-water season. Two hunters from Ikpiarjuk made the following observations.

> *This year, especially, the hunters are saying there's hardly any narwhal where the hunting usually is. They don't see as much as they used to.* [0004 7 at 20:11]
>
> *There is very much of a difference. There are a very few narwhal now. They used to say there were many narwhal, but it isn't the same anymore.* [0002 13 at 14:03]

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45. This is a reference to a motor that had one large cylinder and a counterweight to 'throw' the piston through a complete cycle. The noise made by these classic engines, that were once common in small coastal fishing vessels, was quite distinct.

5. Current Narwhal Populations in Milne Inlet/Eclipse Sound and Admiralty Inlet

A comparison of the experience of hunters in Admiralty Inlet with hunters from Mittimatalik highlights the effects of shipping on narwhal populations in Milne Inlet and Eclipse Sound. In the case of Milne Inlet/Eclipse Sound, Baffinland, appearing before the NIRB (2019-2022), put considerable effort into finding alternative explanations for a decline in the population of narwhal. This decline corresponds with shipping and increases in shipping of ore from Milne Inlet port.[46] Anthropogenic effects, which they used in seeking alternative explanations for the decline, can be addressed by looking at what is happening in Admiralty Inlet

Trends in the population of narwhal spending summers in Admiralty Inlet are of considerable interest to both Inuit and western scientists. Narwhal found in the open water period along the Arctic coasts and in the Sounds, bays and inlets of Arctic Canada, have populations that are known to fluctuate for reasons other than anthropogenic disturbance.

> *Some of us, the Elders, have the knowledge of Inuit. In some years the numbers decline, and in other years they increase. Well, migrating wildlife are said to have that characteristic.* [0005 10 at 31:14]

In Admiralty Inlet and Milne Inlet/Eclipse Sound, anthropogenic effects — other than the shipment of ore — are revealed by hunters and Elders to be the same or similar. These include climate change, changes in the technologies and practices of hunters, the construction of a small craft harbour, visits by cruise ships and the effects of human

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46. See Appendix 1 for a history that includes increases in shipping and the activity of vessels in these waters. These activities include approval to ship an additional 1.8 million tonnes of ore, commencing in 2018, and the subsequent introduction of ice-breaking, both early and late in the shipping season, in order to extend the length of time that ore carriers could operate in Milne Inlet and Eclipse Sound. Baffinland commenced the shipping of ore in 2015. As detailed later in this section, narwhal in Eclipse Sound/Mine inlet declined from 12,039 in 2016, to 9,931 in 2019, 5,018 in 2020 and 2,595 in 2021, recovering slightly to 4592 in 2022. Inuit Qaujimajatuqangit and western science, in this case, given the observations of elders and hunters, can work well together.

activities, including fishing, in the waters of Baffin Bay and Davis Strait; the winter habitat of narwhal.

5.1 Numbers and Changes in the Location of Narwhal in Milne Inlet/Eclipse Sound

Observations made on narwhal and their current status in Eclipse Sound, Milne Inlet and surrounding waters, understandably focus on activities at the Mary River mine, and on the shipping of ore from Milne Port.

It is difficult to separate behaviour — for example, fleeing — from discussions about location. The observations of hunters from Mittimatalik add substance to observations about numbers and the history of the shipping of iron ore from Milne Port. Narwhal numbers and behaviour can be affected by difficulties in feeding and accessing areas where arctic char, arctic and polar cod and other species on which they depend — but that are less important to their well-being — are found.

Informants often pointed to the maps used in the interview process, pointing out where narwhal were historical seen in significant numbers and relating this to their present-day experiences.

> *There is a lot* (of narwhal) *over there, a lot up there, and you just lose sight of them. That is how it usually is. Now there are a few scattered ones now and then. I don't know what is causing it. Well, there is something now that is having an impact, and is a reason for the wildlife numbers decreasing. When June arrives, I usually go along on trips during spring, August and September. I usually go along in boats. I too know with others that the wildlife are almost non-existent now.* [0078 15 at 16:43]

The following quotes focus on changes that have taken place. Much of what was said was comparative: 'this is how it used to be, and this is how it is now'. The following quotes note changes in the numbers and behaviour of narwhal in Milne Inlet and Qulluqtuq (Koluktoo) Bay. These locations can be found on maps in Appendix 2.

> *It's been several years since mining began that the wildlife seems to be decreasing in numbers, especially the marine wildlife. They have been decreasing steadily. The hunters, campers and tourists keep talking about the current changes in wildlife. Last year and this year especially, it is very noticeable, with no narwhal at all during the summer. There would be some now and then, but very few. In the years past it would take hours for the narwhal to pass by; huge numbers of narwhal. Today it's only a few, and only in a long while some are seen and a few caught.* [0073 16 at 10:19]
>
> *This area,* (Qulluqtuq Bay) *this place for narwhal, is a major trans-way area. They pass through here, go up there. Some of them will be giving birth, some of them feeding. They stay there the whole time. They go here. They pass by here. This place — this area — is a major feeding area that I've known for a long time. And they have calves here. They give birth in this area. During the summer they congregate here in vast numbers. This place is a major congregation area. They would all arrive there. Today you don't see any at all.* [0071 14 at 05:45]
>
> *Right now* (2022) *we're looking at the waters here and seriously, we are in the narwhal season. But where are they? We're not seeing them, and usually on my daughter's birthday, September 15th, you usually see them or go after whales. But I haven't seen them in the last five years or so.* [0074 21 at

41:42]

This summer (2022) *we hardly saw any narwhal. There were none.* [0071 14 at 04:29]

As part of the environmental assessment conducted by Baffinland to address effects its operations might be having on narwhal, Baffinland operated an observatory at Iluvili (Bruce Head) on a high rocky prominence on the west side of Milne Inlet (Appendix 3).

From late July until September, commencing in 2014, Baffinland hired Inuit observers who would, from this location, both count the number of narwhal and make observations of their behaviour, distribution and movements. But well before then, DFO was already monitoring the population at Iluvili with the involvement of local hunters. In 2018, Baffinland also started a ship-based observer program to further its monitoring of narwhal in Milne Inlet and Eclipse Sound.

When Baffinland first began coming here, the wildlife —at least the narwhal — didn't change their behavior. But I think three years later, from what I notice, they didn't change their behavior, but began to slowly decrease in numbers. And so, I think it was in 2005, for three years as soon as the sea ice became dangerous, I would join the group on top of Bruce Head.[47] *I was an observer for three years. In the last year there were barely any narwhal there. We would only see a few narwhal, and it became obvious that they were the same narwhal. After that, we were no longer on top of Iluvili* (Bruce Head)*.*

They turned to ship board observers. The ship would be stationary. When I questioned the onboard narwhal observers, they said the summer was completely different from the year before. They had only seen a few narwhal. Ever since then they seemed to be decreasing in numbers. Some do go up there, but not like before. They don't play. They seem to be on edge the whole time. They don't relax. That is noticeable when I watch them these days. Some do go up there, but few in numbers, and they can't settle down and relax. [0058 19 at 29:03]

Numbers at Iluvili (Bruce Head) were affected when Baffinland commenced shipping in 2015.

Since the Baffinland mines opened, the ships have been passing through Pond Inlet, non-stop, throughout the whole summer. And usually, animals like the seals and narwhal like a very quiet place. But with all these ships and all that noise pollution passing by they just keep reducing in numbers, and probably getting away from all the noise. Now you hardly ever see them even in that known area — Bruce Head — where we used to catch and see them every hour or so. Last week and a couple of weeks ago, I went to Bruce head. We only saw maybe a couple during the night, and last week we never saw anything during the day. [0074 21 at 14:20]

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47. This observer was apparently part of an early observation team working for Baffinland when it was owned by two investors who were later bought out, with the ownership of Baffinland changing hands in 2011. The original owners appear to have done some observation at Bruce Head in the early phases of development of the mine. The year may have been later than what is indicated. The informant is clearly not sure of exactly when he was making these observations. It may have been later in 2007, as the tote road and port were being built. At the time, Milne Inlet would have been used only to get supplies to the site for exploration and development of the mine. Observation at Bruce Head was likely discontinued as development of the mine suffered from a lack of capital investment, and was re-started in 2014 by the new owners of Baffinland. The shipping of ore commenced in 2015. See Appendix 1.

The following interesting observation and conclusion was offered by the same person who worked counting narwhal from the Bruce Head Observatory. The counting of narwhal, he suggests, was made possible, ironically, by the reduction in their numbers after Baffinland started shipping through Milne Inlet.

The Observatory at Bruce Head from which Milne Inlet Narwhal Were Counted.

[Source: https://www.facebook.com/photo/?fbid=1053923331677887&set=a.328943617509199]

> *There would be so many* (narwhal to be observed from Bruce Head) *they'd be too many to count. I wouldn't bother to count them as they were too many back then. But only when Baffinland arrived did the numbers dwindle. Yes, before the ships arrived, they were numerous. After the ships arrived, the numbers kept dwindling. I could count them.* [0061 19 at 09:17]

The following observations concern the presence of narwhal in Navy Board Inlet.

> *And when fall arrives they begin to arrive in many numbers from here. Sometimes they pass by here* (Navy Board Inlet)*. They will go through here, or pass by. But this summer, and last year, we've been looking. Last year there had been some, but this summer to now — well — yesterday we were at Nunasia and we saw some bearded seals. We went to this place, around here. This had rough seas. We kept looking, but didn't see any narwhal.* [0071 14 at 03:30]
>
> *And when the shipping stopped, like last year, it was only when shipping stopped would the narwhal come in from Arctic Bay. All these diverse wildlife only show up now, from Navy Board Inlet, when the shipping has stopped. Many bearded seals, seals, harp seals, it's only when shipping has stopped that they show up in the fall in more numbers. Today, men hunting seals don't see many seals and mostly older ones at that. And when they dive, they're not seen again. We are struggling now even with seals.* [0068 18 at 45:44]

And these observations concern changes in the number of narwhal seen at Nallua, a location on the west side of Navy Board Inlet, half way up the coast of Bylot Island that lies to the east.

> *Well, during the spring, when they're arriving, all is okay before the ships arrive. They are entering through there, and entering here. They all come to this area in vast numbers. That hasn't really changed, but during the summer with the ships now, here, this area will have narwhal for a while but the numbers will keep decreasing as summer continues. They move into this area. That knowledge I have. Today we don't see any. This spring at the end of July, during July, we went to Nallua. Although we were at Nallua we didn't see any narwhal, even though we were there for a long time.* [0071 14 at 01:48]
>
> *When we go there* (Nallua) *now, not a one! There are none at all. There will be a few once in a long while. There will be a pod of few narwhal — maybe 6 in total — then they're gone. You expect to see more narwhal following, but none show up. I don't know where they have all gone to. When you're at Nallua, or Nunasia, you see all these whales going north.*
>
> *Nallua has a small point. I think the sea in front of the small point is very deep. Whales would pass it by very closely. You would see all these whales heading north, and behind them are more coming. You count them and they are many. Sometimes you would count up to 20, and there are all these whales around, and all these other ones are coming. That is how it used to be.*
>
> *Today there are none at all. This summer I didn't even see a whale. Even the killer whales didn't come here this summer in numbers. People would see a few once in a while. No wonder. They don't have narwhal to feed on, so even they have left the area. Killer whales are the actual reason for us having narwhal.* [0078 15 at 16:43]
>
> *A few have stayed here* (Navy Board Inlet) *consistently; narwhal spending their time there. People have been seeing them here, up to this area, but few in numbers.* [0071 14 at 04:40]

Navy Board Inlet is one area that is likely not affected by the noise of ore carriers moving through Eclipse Sound and Milne Inlet. Therefore, one might expect narwhal in this location. It is also an area likely to see some narwhal from Admiralty Inlet, passing through the Inlet and through Eclipse Sound, late in the season, to wintering areas in Baffin Bay and Davis Inlet.

5.2 Numbers and Changes in the Location of Narwhal in Admiralty Inlet

The numbers of narwhal in Admiralty Inlet were reported by some hunters as decreasing, while other hunters noted that narwhal, with regard to the waters of Admiralty Inlet have changed location, both with respect to the inlet relative to other places, and within the inlet itself.

> *There seem to be less than when I was 16 or 17 years old. For four days straight they would go into Admiralty Inlet, but now it's two or four hours maximum now that they pass by me when I'm on the land. So, there is so much less than before. The pods are smaller now than before for sure.* [0003 3 at 8:45]

Increased marine traffic in Lancaster Sound and increased noise in the marine landscape of Admiralty Inlet was identified by some hunters as affecting the movement of narwhal in the region.

> *With so many ships, I think the narwhal that used to enter the area are being deflected elsewhere. Places like Kugaaruk are seeing more narwhal now than before, from what we've heard and from the pictures they show us. I have also noticed that there is too much noise from many ships in my opinion.* [0012 5 at 36:39]

Hunters also expressed some concern that the number of local boats and the behaviour of younger hunters may be affecting the number of narwhal found in Admiralty Inlet.

> *The boat numbers increased, and youth today will shoot at the first thing they see. And so, it is now 2022 and the first groups of narwhal are now hunted and sent back every summer. So we now have very few narwhal.* [2 at 25:36]

Respect for narwhal was a big component of traditional hunting practices. Some Elders noted that younger hunters were not demonstrating enough respect for narwhal. This has an effect on the number of narwhal seen in Admiralty Inlet.

> *What worries me today is that there are a lot of these hunters that even ram each other trying to get the first one. They try to claim it. There are some issues that come up during the hunt. "No, I shot it first, I shot it first". But I think we need to …they actually organized a hunter's meeting to have a safer hunt and to stop all this quarrelling, fighting.*
>
> *It worked. When we fight over the animal — this year, for example — there was a lot of pushing around and the narwhal kind of disappeared from the area. They went somewhere else, and the hunters were struggling to find them. But then, after the meeting, they seem to be coming back. So, even though there is nothing in the book that is saying that it will happen, it happened. Scientists aren't going to tell us that they're not coming back. They don't know. But the Inuit way of predicting the animal's behavior is "they are listening". Respect them.* [0004 7 at 14:24]

5.3 Narwhal seen in Admiralty Inlet, as a Distinct Population

The reference to "big, black narwhal" and their absence was common among those Elders and hunters we spoke with. What does this indicate? It may be that these are older narwhal and that their mortality rate has increased; hence their absence from the population being observed by hunters. Could this be an indicator of the environmental stress being experienced by narwhal?

> *When I started hunting, the Elders told me there are three species of narwhal here; one of them, big, black narwhal. They are rare to us. Once in a while hunters get them, but not very often. And then there is the mostly white, black spotted with tusks. They are adults, and the young ones; the smaller ones too.* [0004 7 at 18:32]

These observations may relate to the debate about there being distinct subpopulations of narwhal, one of which was commonly found in Admiralty Inlet. The idea that there are (were) distinct subpopulations, with distinguishing characteristics, as suggested, is supported by data suggesting that narwhal consisted of distinct populations that regardless of a common wintering habitat, returned to the same geographical area each summer.

> *From three years ago, the narwhal were inside the bay. We would catch them here, and we find them, and they're different. From my point of view, I said maybe they're Kugluktuk's narwhal migrating here. Not our past narwhal here. They were so big, with a very long tusk and black. We said: "They're not ours. They are another community's narwhal".* [0002 12 at 23:44]
>
> (With respect to numbers) *This year not so bad, but I think there's lots of food in the middle of the bay. To me, nothing really changed, but it seems like these are different narwhal than we used to have.* [0010 1 at 06:35]

This is an interesting observation. It is difficult to determine what it means or what it might refer to. At one time, the Department of Fisheries and Oceans (DFO) believed that narwhal, like other species, returned to the same summer location year after year. However, DFO has recently questioned this assumption. "The Baffin Bay population is managed as four summer stocks, based on seasonal distribution, genetic and contaminant evidence. …New data suggests site fidelity may not be as strong as once thought."[48] The word 'may' is important as the exact nature of the relationship between narwhal in Eclipse Sound and those in Admiralty Inlet is unknown.

There is also some evidence of narwhal moving from Eclipse Sound to Admiralty Inlet during the summer months. In 2021, aerial surveys revealed a more than doubling of the population of narwhal in Admiralty Inlet. This corresponded with a dramatic decrease in the numbers in Eclipse Sound and Milne Inlet (further discussed in what follows). The considerable decline in the population of Eclipse Sound may be accounted for by the relocation of these narwhal to Admiralty Inlet and other summer locations.

There is data in the same report footnoted below, supporting the movement of narwhal from Eclipse Sound to other locations. Thirty narwhal were tagged between 2012 and 2018 in Eclipse Sound. Ten of these narwhal were subsequently located in Admiralty Inlet, Somerset and East Baffin management areas. While the identification of 'big black narwhal' by some hunters may be related to genetic difference, and what once were believed to be a distinct subpopulation, the study cited suggests that summer populations, for other reasons, may not be as distinct as once thought. There may be some 'visiting' of narwhal between Eclipse Sound and Admiralty Inlet, the extent of which is relatively unknown.

A hunter also reported sighting a narwhal with a float attached that had been unsuccessfully hunted in Eclipse Sound, and that had found its way to Admiralty Inlet. Displacement can reasonably be assumed to be the result of anthropogenic disturbance created by shipping and the Baffinland Iron Ore Mine.

It is important to make a distinction between anthropogenic effects that may have an impact on the location of existing narwhal within a body of water like Milne Inlet/Eclipse Sound, or Admiralty Inlet.

What is of considerable concern is the recorded decline in the number of narwhal in these waters. That ship noise is likely responsible for this decline and the movement of narwhal to other locations was hotly contested during NIRB hearings on Baffinland's Phase Two expansion. The decision of the NIRB panel includes, by way of rationale for its decision to advise against the Phase 2 expansion proposal, the statement that the proposal "has

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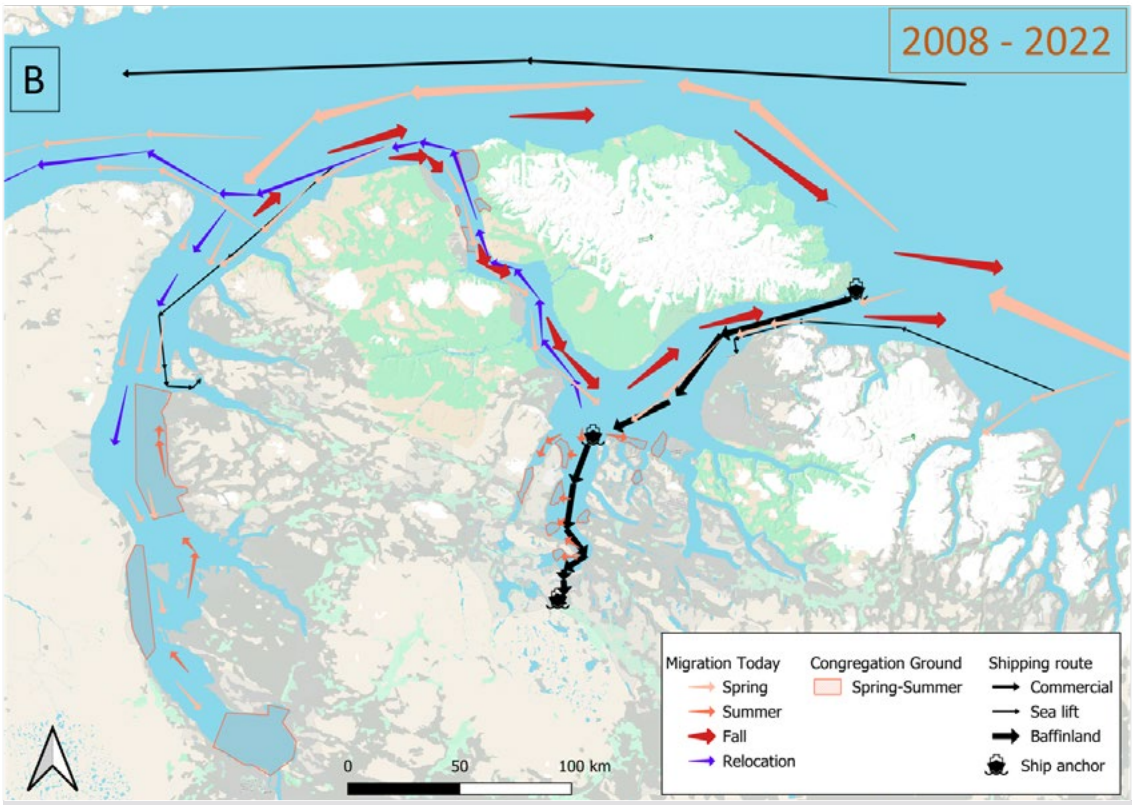
48. Marcoux, M. and Watt, C. A. (2021). Eclipse sound narwhal (Monodon monoeros) movement and hunt composition and its relevance to stock delineation. *DFO Can. Scie. Advis. Sec*. Res. Doc. 2020/067. iv + 25p.

the potential to result in significant ecosystemic effects on marine mammals …".[49] One of these effects is the likely displacement of narwhal out of the waters of Milne Inlet/Eclipse, to Admiralty Inlet and elsewhere. The IQ presented by Inuit in the hearing process and the observations made by Inuit and presented in this report support this conclusion. Displacement may account for the observation by some hunters, that they were seeing different narwhal in Admiralty Inlet than they were used to seeing. But why would these narwhal look different? The presence of skinnier narwhal in Admiralty Inlet late in the season (noted elsewhere in the text) is supported by some of the IQ observations of hunters from Ikpiarjuk.

Finally, some hunters in their observations, raised questions about changes in narwhal populations in relation to an increase in boats and ships in the environments they occupy.

> *But today with the most ships in the high Arctic area, when narwhal routes are entered by ships we now see different kinds of narwhal. Some are short and some longer. There are different types of narwhal which I have also noticed.* [0012 5 at 36:39]
>
> *Those long ones are hard to find now. They've gotten wiser, I think. There are lots of ships now, and lots of boats. Lots of boats!* [0010 1 at 08:38]



Current distribution, migration and movement of the narwhal in the Northern Baffin region, since BaffinLand has launched its shipping activities (2008). Observations were reported by Elders and land users from Mittimatalik and Ikpiarjuk.

48. Nunavut Impact Review Board, May 13, 2022, Letter to the Honourable Dan Vandal, P.C., M.P., Minister of Northern Affairs, Government of Canada, House of Commons, Ottawa Ontario.

5.4 Climate and other Changes Related to Narwhal Food Supplies

Narwhal distribution within locations like Admiralty Inlet is dependent on food availability and the presence of ice. Within the inlet, hunters noted changes in the movement and location of narwhal that they attributed to food supplies and ice conditions. Ice conditions are changing rapidly as a result of climate change, both within Admiralty Inlet as well as the waters of the Northwest Passage. Earlier ice break-up means that narwhal are able to travel further west and further south during their spring migration.

> *Some years the number of narwhal is different, some years not so bad. And sometimes they just pass by from the point, Devon Island. They just pass by going towards Taloyoak or somewhere* (and don't enter Admiralty Inlet). [0010 1 at 26:10]
>
> *So they're* (narwhal) *migrating to the west and Kugluqtuk. They* (Ikpiarjuk hunters) *hardly get any narwhal now.* [0002 12 at 31:57]

Narwhal may be searching for more favorable conditions outside of Admiralty Inlet.[50] Changing ice conditions within Admiralty Inlet and in arctic coastal waters in general, have future implications for the availability of food sources for narwhal.

All species of marine life are connected, and changes to one of them or to the environment will affect the entire food chain.[51] Given that the food chain that narwhal ultimately depend on is ice-related, changes in ice conditions and the location of narwhal are understandable.

> *What I think is that with the climate changing the wildlife are changing too. Wildlife follow the weather. I suspect that is the reason.* [0002 13 at 17:02]

During the open water season, Inuit hunters have reported that narwhal feed, depending on location, primarily on Arctic cod, polar cod, and squid, with Arctic cod being the most important species.[52] Arctic char have also been found in the stomach contents of narwhal in Admiralty Inlet. Narwhal also feed on shrimp as they migrate through

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50. As the Arctic Ocean warms, the presence of, and quality of arctic sea ice is changing rapidly. Spring and fall sea ice transition periods in the Canadian archipelago have been found to be increasing by 13.7 days per decade, based on measurements between 1979 and 2013. This means that in 2013, the open water season in locations like Admiralty Inlet could have been about 40 days longer than was the case in 1979. See: Laidre, K.L., Stern, H., Kovacs, K.M., Lowry, L., Moore, S.E., Regehr, E.V., Ferguson, S.H., Wiig, Ø., Boveng, P., Angliss, R.P., Born, E.W., Litovka, D., Quakenbush, L., Lydersen, C., Vongraven, D. and Ugarte, F. (2015). Arctic marine mammal population status, sea ice habitat loss, and conservation recommendations for the 21st century. *Conservation Biology*. 29: 724-737.https://doi.org/10.1111/cobi.12474

51. Johannessen, O.M., Miles, M.W. (2011). Critical vulnerabilities of marine and sea ice–based ecosystems in the high Arctic. *Reg Environ Change.*11(Suppl 1), 239–248 https://doi.org/10.1007/s10113-010-0186-5

52. R.A. Remnant & M.L. Thomas. (1992). Inuit traditional knowledge of the distribution and biology of high Arctic narwhal and beluga. Unpublished report by North/South Consultants. Winnipeg, Manitoba; D.B. Stewart, A. Akeeagok, R. Amarualik, S. Panipakutsuk and A. Taqtu. (1995). Local knowledge of beluga and narwhal from four communities in Arctic Canada. Canadian Technical Report of Fisheries and Aquatic Sciences. 2065.

the breaking ice of Eclipse Sound and Admiralty Inlet in late June and July.[53] As a critical player of the Arctic marine food web, changes to Arctic cod abundance can have widespread impacts on the ecosystem.

In 2022, hunters noticed a change in the location of the cod on which narwhal feed, from the west side of Admiralty Inlet, to the east side. This may be related to changing ice conditions.

> *We have interviewed three Elders on why that is like that* (the distribution of narwhal described above) *and they've said, and we're not done talking to them. They said it is for their food that they're in the area. The cod are swarming here* (east side of the inlet)*, and not on the other side.* [0005 10 at 45:33]

The observations of Inuit hunters in Admiralty Inlet can be related to scientific research looking at ice conditions and food sources on which narwhal depend. [54, 55, 56] These changes have, in turn, implications for Inuit food security.

5.5 Observations on Other and Related Species

While Qallunaat cultures have struggled to make sense of what they might refer to as 'whole or entire ecosystems', Inuit have always appreciated the relationship between and among species. What is observed happening to narwhal can also be indicated by the presence or absence, and the behavior of other species. Hunting is an experience that not only focuses on the species being hunted, but in relation to conditions, what is also going on with the entire ecosystem.

Hunters and Elders also made general comments about the number of narwhal and wildlife they had encountered (or not encountered) hunting during 2020, 2021 and 2022. The following quotes are representative of their observations and feelings. These observations also draw attention to the inter-dependence of species. A loss of narwhal has implications for other species.

> *Every summer I go camping with them, although I am not a hunter. I enjoy camping very much. I like to travel, but not during winter. I too absolutely know with others that wildlife are actually very scarce. I don't know as much as the men know, but I too know of these things, that wildlife are getting scarcer.* [0077 15 at 28:13]
>
> *I regret that the game is so scarce now - very much*. [0077 15 at 22:25]
>
> *But these days the ships have been passing by back and forth very close to town. One is already coming, then another one. When this has been happening on and on, so the wildlife has dwindled in*

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53. COSEWIC. 2004. Assessment and Update Status Report on the Narwhal. Ottawa, *Canadian Wildlife Service, Environment Canada.*

54. Lin Gengming, Wang Yanguo, Chen Yanghang, et al. (2018). Regional disparities of phytoplankton in relation to environmental factors in the western Arctic Ocean during summer of 2010. *Acta Oceanologica Sinica*. 37(4): 109–121, doi: 10.1007/s13131-017-1129-5.

55. Arrigo, K.R., van Dijken, G.L., Cameron, M.A.et al.(2020). Synergistic interactions among growing stressors increase risk to an Arctic ecosystem.*Nat Commun.*11, 6255 https://doi.org/10.1038/s41467-020-19899-z.

56. Steiner N.S., Cheung W.W.L., Cisneros-Montemayor A.M., et al. (2019). Impacts of the Changing Ocean-Sea Ice System on the Key Forage Fish Arctic Cod (Boreogadus Saida) and Subsistence Fisheries in the Western Canadian Arctic—Evaluating Linked Climate, Ecosystem and Economic (CEE) Models. *Front. Mar. Sci.* 6:179. doi: 10.3389/fmars.2019.00179

numbers. [0077 15 at 37:43]

And these days I really notice that the year changes and there are less wildlife. [0077 15 at 27:16]

The narwhal and other animals we began to see less often, and we began travelling more and more to other places. Maybe they're here, maybe over there. We began to travel more and more, and up to last year the numbers of what animals there were, decreased drastically. [0069 14 at 34:58]

The area near Pond Inlet has had very scarce game all summer. Inside you feel like you're getting mad. You feel some kind of urgency. There is something urgent going on now that needs to be dealt with. It makes you look for support from somewhere. [0073 16 at 04:51]

The following quote makes the connection between shipping, narwhal and birds, affected in turn by changes in marine mammal populations. For hunters, the behaviour of gulls and other seabirds says much about the presence or absence of narwhal. What are often left behind on the ice are the remains of narwhal that have been hunted. The same is true for seal that have been hunted and butchered on the ice by hunters. These are food for gulls, seabirds, and polar bears. This relationship and meaningful experience of hunters and Elders disappears with the absence of narwhal.

We had imagined there would be ships; ships like ice breakers and many cargo ships transporting things we began to see going up there. We saw a great many ships, some in flotillas. As this kept happening, as we saw more and more, our thoughts began to turn to thoughts of what may have huge impacts on our wildlife, as the many ships just kept increasing in numbers. And so afterwards, when the narwhal numbers had been significant, it became noticeable — not just for narwhal — even seals and the vast number of birds began to lessen in numbers. [0069 14 at 32:11]

Even the snow bunting, even the birds, even the seagulls; when you're out camping during the spring hunting young seals and there are bits of fat and meat on the ice, you wake up in the morning and there are all these seagulls, all screaming. Today they're nowhere to be seen. Even the birds aren't visible in numbers. And this spring there were hardly any geese. When we're passing along Bylot Island, it's usually white-on-white, all honking; flying away.

5.6 Inuit Qaujimajatuqangit and Aerial Surveys

Regardless of debates and discussion about the accuracy of aerial surveys, Inuit Qaujimajatuqangit — observations that the number of narwhal, while fluctuating, has been in considerable decline in Eclipse Sound since the start of industrial activity at Mary River — are consistent with the results of western science.

Table 1 summarizes the results of surveys conducted between 2013 and 2020 for populations in Eclipse Sound and Admiralty Inlet. The bottom three statistics are the aggregate numbers for both Eclipse Sound and Admiralty Inlet. The aggregate total suggests that while the total number of narwhal has declined, the decline is not as dramatic as that seen for Eclipse Sound, where between 2013 and 2020, the number of narwhal declined by more than half.

A survey conducted in Eclipse Sound/Milne Inlet much earlier, in 2004, estimated the population of narwhal at

20,225.[57] Surveys need to be understood and interpreted with attention to confidence intervals, the methodology employed and the time of year that a survey is conducted. It is possible that slight declines, as observed by hunters, are too small to show up in aerial surveys. Declines in marine mammals are known to be difficult to detect, with declines of up to 90% for beaked whales going undetected.[58]

Stock	Year	Abundance	CV	95% CI	Source
Eclipse Sound	2013	10,489	0.24	6,342–17,347	Doniol-Valcroze et al. 2015
Eclipse Sound	2016	12,039	0.23	7,768–18,660	Marcoux et al. 2019
Eclipse Sound	2019	9,931	0.05	9,009–10,946	Golder 2020
Eclipse Sound	2020	5,018	0.03	4,736 – 5,317	Golder 2021a
Admiralty Inlet	2013	35,043	0.42	14,188-86,553	Doniol-Valcroze et al. 2015
Admiralty Inlet	2019	28,746	0.15	21,545-38,354	Golder 2020
Admiralty Inlet	2020	31,026	0.14	23,406-41,126	Golder 2021a
Eclipse & Admiralty	2013	45,532	0.33	22,440–92,384	Doniol-Valcroze et al. 2015
Eclipse & Admiralty	2019	38,771	0.12	30,667–49,016	Golder 2020
Eclipse & Admiralty	2020	36,044	0.12	28,267–45,961	Golder 2021a

Table 1. Historical Abundance Estimates for Eclipse Sound and Admiralty Inlet Narwhal Summer Stocks [59]

In addition to the data presented in Table 1, numbers are available for the narwhal populations in Milne Inlet/Eclipse Sound for the years 2021 and 2022. In 2021 the population in Minle Inlet/Eclipse Sound declined dramatically to 2,595. In 2022 it recovered slightly to 4,595 narwhal.[60] However, aerial surveys conducted in 2023 put the number of narwhal in Eclipse sound at 10,492.[61]

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57. An evaluation of the data collected in 2004, 2013 and 2015, revealed an insufficient number of data points to assign much accuracy to the results. Other problems with data, including information collected in 2015, have to do with the time of year the surveys were conducted, and the likelihood that the numbers reflect the presence of narwhal migrating through Eclipse Sound from elsewhere in returning to wintering areas in Baffin Bay. Nevertheless, it was concluded that "…estimates may serve as indices of relative abundance throughout the open-water period and between survey years". (Cory J.D. Matthews, Claire A. Hornby, Steven H. Ferguson, & Marianne Marcoux. (2019). *Evaluation of LGL visual aerial survey data for estimating narwhal abundance in Eclipse Sound during the open water season*. Freshwater Institute, Department of Fisheries and Oceans Canada, for the Canadian Science Advisory Secretariat. Research Report 2019/029).

58. Taylor, B. L., Martinez, M., Gerrodette, T., Barlow, J., & Hrovat, Y. N. (2007). Lessons from monitoring trends in abundance of marine mammals. Marine Mammal Science. 23(1), 157-175. doi:10.1111/j.1748-7692.2006.00092.x

59. Golder & Associates Ltd. Preliminary Survey of 2020 Narwhal Monitoring. Ref. # 1663724-285-TM-Rev1-48000. Prepared for Baffinland Iron Mines Corporation, Oakville Ontario. p. 6.

60. This data and what is reported in the following paragraph are taken from WSP Canada Inc. (2023). *Mary River Project 2022, Marine Mammal Aerial Survey Program for Baffinland Iron Mines Corporation.* April 27. p.iii. WSP Canada Inc. purchased Golder and Associates, marine consultants for Baffinland.

61. Aug. 30, 2024, to Lou Kamermans, Baffinland, from Phil Roget, WSP, Follow-up on Oceans North Response to WSP, Technical Memorandum, CA0026317.6821-030-TM-Rev0.

With the exception of 2022 and 2023, the number of narwhal in Milne Inlet/Eclipse Sound has, since Baffinland commenced shipping in 2015, declined considerably and consistently, being only 21.6% of what the population was estimated to be in 2016, a year after Baffinland commenced the shipment of ore from Milne Port. The increase in 2022 to 4,595 narwhal was still only 38.2% of the number recorded in 2016. However, the increase to 10,492 in 2023 deserves further comment.

The numbers for Admiralty Inlet look quite different. A survey conducted in Admiralty Inlet in 2010 put the number of narwhal at 18,000.[62] In 2020, 30,026 narwhal were observed in Admiralty Inlet (Table1). In 2021, a survey conducted by Golder and Associates for Baffinland Iron Ore Mines indicated the presence of 72,582 narwhal in the Inlet.[63] The WSP Canada Inc. survey of 2022, cited above, indicated the presence of 43,042 narwhal in Admiralty Inlet.

In reporting these figures, Baffinland suggests that the total population is not in danger; that narwhal freely moved between Eclipse Sound/Milne Inlet, and suggested that this was related to conditions associated with climate change and some change in location had occurred.

> Given that the combined stock estimate for Admiralty Inlet and Eclipse Sound indicated that the regional narwhal population remained stable relative to pre-shipping conditions, and in consideration of the available IQ regarding the degree of exchange between narwhal groups on their summering grounds, the observed changes in narwhal abundance in Eclipse Sound in recent years likely reflects a natural exchange between the two putative stock areas that began prior to Baffinland shipping operations, with animals shifting between Eclipse Sound and Admiralty Inlet based on where habitat conditions may be more favorable that season (e.g., ice coverage, prey availability, predation pressure). With the recent influence of rapidly warming ocean temperatures and longer open-water seasons due to climate change, more pronounced changes in habitat conditions are to be expected throughout the Arctic along with commensurate changes in animal distributions and migratory movements.[64]

This rationalization is indicative of claims that IQ needs to address. Observations on ice conditions and their relationship to food sources are important in addressing the speculative logic contained in this quote.

What IQ suggests is the serious impact of shipping on the number of narwhal in Milne Inlet/Eclipse Sound. This is supported by the decline in numbers in this location. There is little reason to believe that, in relation to climate change, ice conditions in Milne Inlet/Eclipse Sound are significantly different that those found in Admiralty Inlet, a location 238 kms west of Milne Inlet/Eclipse Sound at the same latitude, and commonly subjected to the same or similar weather conditions. Baffinland's claims are entirely speculative.

The increased number of narwhal in Admiralty Inlet in 2021 raises questions about strain on available food supplies for narwhal. The 72,582 narwhal counted in Admiralty Inlet in 2021 is the highest number every recorded. This suggests possible changes in the body condition of narwhal after a summer spent in this location. IQ related to this is reported in Section 7 of this report.

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62. Lisa Gregoire. (2016). "Wonky number, narwhal quota cuts anger Nunavut community". *Nunatsiaq News.* Dec. 9.

63. Derek Neary, 2022, NNSL Media, "Citing declining narwhal Pond Inlet hunters demand Baffinland Changes," https://www.nnsl.com/news/citing-declining-narwhal-pond-inlet-hunters-demand-baffinland-changes/, May 9.

64. WSP Canada Inc. (2023). *Mary River Project 2022, Marine Mammal Aerial Survey Program for Baffinland Iron Mines Corporation.* April 27. p.iii.

The question of whether the populations of narwhal from Eclipse Sound and Admiralty Inlet are separate, or one and the same population, is of interest when considering trends in narwhal abundance. Without clear boundaries between populations, and an understanding of the factors driving population migration and decline, the Eclipse Sound and Admiralty Inlet narwhal populations must be treated carefully. Evidence increasingly suggests that there is no distinct population of narwhal, and that treating them as such is (was) useful only for purposes of management. This does not detract from the IQ observation that narwhal are leaving Milne Inlet/Eclipse Sound for other locations, including Admiralty Inlet, in response to disturbances created by the shipping of ore from Milne Port during open water season.

The dramatic increase in narwhal in Eclipse Sound recorded for 2023 requires further examination. If, as WSP has claimed, climate change explains the decline in narwhal in Eclipse Sound, then how does one explain the increase in numbers recorded for the summer of 2023? Climate change has not gone away. This increase in numbers undermines the argument that Baffinland and its consultant, WSP, has constantly tried to make, mainly that climate change (and other things) have everything to do with the decline in numbers in Eclipse Sound, and not the noise generated by Baffinland's ore carriers, accompanying vessels and ice breakers.

In 2022, Baffinland, in reference to research that had nothing to do with ice conditions in Eclipse Sound, and was focused on changes off the coast of Greenland and in Baffin Bay, stated that: "For the above reasons, the potential for climate-driven shifts in species distributions cannot be ignored as a potential drier of the recently observed changes in summer narwhal distribution in Eclipse Sound.[65]

Even if climate change is playing a role in the relocation of narwhal, it does not exclude the role of shipping in contributing to the same. Cumulative effects are worth taking seriously, Baffinland's objective, for obvious reasons, being to advance the idea that ship noise is not a significant one of them.

All of this begs the question. How is one to explain the increase in the Eclipse Sound population in the summer of 2023? A plausible explanation is as follows, and is consistent with the IQ observations of Inuit hunters and Elders reported throughout this text. The issue of whether or not narwhal spending time in Admiralty Inlet or Eclipse Sound are from the same stock is irrelevant to the question of where narwhal spend the season. They may be of the same stock (it seems likely) but that says nothing about where different narwhal chose to spend the open-water season. It may be a matter of custom and habit; some always return to Eclipse Sound while others are in the habit of going to Admiralty Inlet. There may be some who decide for various reasons to change location from one year to the next, but the numbers are unknown.[66] This research suggests that the numbers changing location may be few and the time spend elsewhere, limited. The situation may be like a teenager leaving home and parents for a while, to return later.

Setting aside the matter of whether or not narwhal in these locations are the same stock, it is clear that narwhal are on the move and that relocation from Eclipse Sound to Admiralty Inlet, and back again, may be taking place. After the considerable increase in narwhal in Admiralty Inlet in 2021, it may be that narwhal, having had a less than pleasant experience in Admiralty Inlet, 'decided' to, once again, try spending the summer season in Eclipse Sound; a few making this choice in 2022 and many more in 2023. It may have been that not knowing where food was located in Admiralty Inlet, competition for a limited food supply, involving too many narwhal, or a

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65. WSP Report, 27 April, 2023, Mary River Project, *Marine Mammal Aerial Survey Program*, p.iv.

66. Marianne Marcoux & Courney A. Watt, Dec., 2021, *Eclipse Sound narwhal (Monodon monoceros) movement and hunt composition and its relevance to stock delineation,* Canadian Science Advisory Secretariat, Research Document 2020/067, Central and Arctic Region.

unique experience with orcas, may account for this change. Future aerial surveys will be interesting, taking these possibilities into consideration.

Baffinland also suggested that construction of the small craft harbour at Mittimatalik explains the decline in the number of narwhal in Milne Inlet/Eclipse Sound, a number that was declining before construction of the harbour was undertaken. Work on the harbour was started in the open-water season, 2018, and completed in October of 2021.

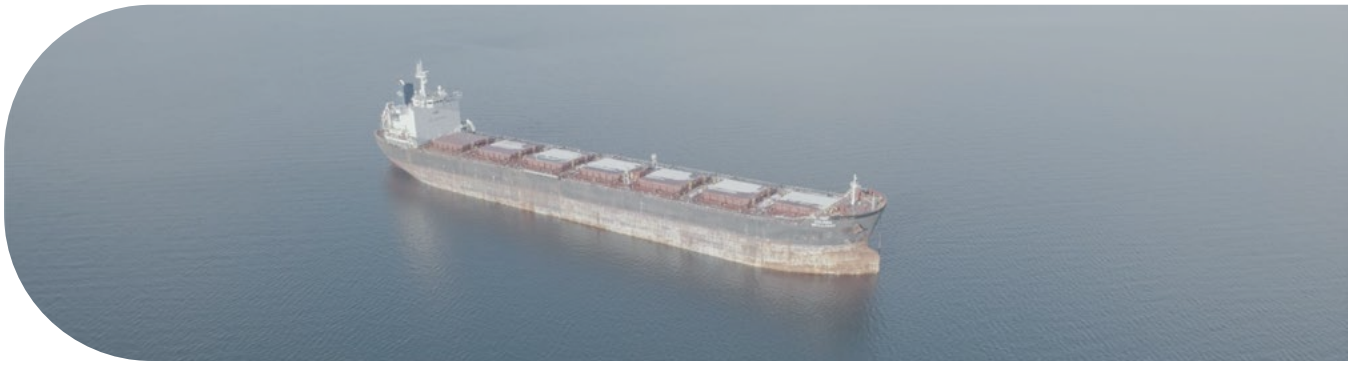
The small craft harbour, Mittimitalik

[Nunatsiaq News, Oct. 7, 2020, Photo: Tower Arctic]

One hunter had this to say about blaming the decline in numbers in Eclipse Sound on small harbour construction, cruise ships and sailboats.

> *Last year, well, I think it took them three years to make the small craft harbour. This summer they weren't working on the dock, but the wildlife has been scared the most this summer. Cruise ships come here. Yes, there are too many cruise ships now. There are too many converging here now. I know this. But we've had cruise ships from long before today. Before the ships began tracking back and forth* (a reference to ore carriers)*, we had wildlife. That the small craft harbour construction wasn't the fault is very obvious.*
>
> *And the sailboats would always arrive before COVID. The marine wildlife was always there. I really believe that the fault lies with the ships that are always tracking back and forth. But that is what the people are saying. Some people say wildlife have not been impacted. Even some men say that, but those are men that don't go hunting. It's only from what they've heard that they know these things. Some men will go hunting once in a while, but don't go often.* [0078 15 at 16:43]

6. Ship Noise and Narwhal Behaviour



In this section we report Inuit observations and IQ related to the behaviour of narwhal in both Admiralty Inlet and Eclipse Sound/Milne Inlet, as well as surrounding bays, inlets and fiords.

In Eclipse Sound/Milne Inlet, changes are related to what has been observed in relation to the activities of Baffinland. In the case of Admiralty Inlet, changes in behavior in relation to ship noise are not at all comparable to what is currently being experienced by hunters from Mittimatalik. In addressing changes in the behavior of narwhal as a response to ship noise, we acknowledge that Inuit hunters and Elders are both offering and looking for explanations for what they are observing. Sometimes, these explanations lie beyond what they are experiencing in the waters and territory they know well.

6.1 Observations from Milne Inlet/Eclipse Sound

In talking about ship noise and narwhal behavior in Eclipse Sound and Milne Inlet, the activities of Baffinland and shipping were of prime concern.

6.1.1. Changes in Location

Qulluqtuq Bay (Koluktoo Bay) (Appendix 3) is an important summer location for narwhal spending the open-water season in Eclipse Sound and Milne Inlet. The bay is shallow, compared to the waters of Milne Inlet. It provides protection from orca whales. It is, consequently, a safe place for birthing. It also has fresh water streams flowing into it, and is important habitat for arctic char, on which narwhal feed in that location.

We hunt in all this area, including Pond Inlet. In the waters of Button Point many ships wait now, and

we can see them now online, and we can see how many ships are in an area. And the cruise ships arrive at the same time. There were many this year. The Tuqsukattaq channel (between Bylot and Baffin Island) *in Button Point's waters, are usually where they enter.*

Sometimes when narwhal from Qaanaaq (Greenland) *arrive, that had been hunted before in qajait, we found very easy to hunt. And the narwhal from here, when we use firearms and they use qajait, they find easy to hunt, as they're not shooting at them. And there usually are ships directly across from Saviit. Ships anchor there now. The narwhal come into the inlet* (Milne) *less often, and only because they're fleeing. When there are no ships at Imiliit* (Ragged Island), *a few enter. Another few enter when there are no ships. They gather in some numbers at Qulluqtuq, but not like it used to be.* [0063 17 at 18:10][67]

The observation was made that late in the season, with few or no ore carriers operating in Milne Inlet and Eclipse Sound, more narwhal appear. This late in the season what is observed may involve migrating narwhal coming through Navy Board Inlet and passing through Eclipse Sound on the way to winter habitat in Baffin Bay. It is an observation that also explains Inuit resistance to the idea of ice-breaking, both early and late in the shipping season.

After the big cargo ships have stopped the narwhal will come back in some numbers. During the fall on their way back to their wintering areas we will probably get more narwhal with less ship traffic. That was the situation last year. [0063 17 at 53:22]

The suggestion was made that narwhal are now hesitating with regard to Eclipse Sound/Milne Inlet as a summer destination, and locating themselves in the very many inlets and fiords along the coast of Qikiqtaaluk, between Kanngiqtugaapik (Clyde River) and Mittimatalik (Pond Inlet).

We don't have narwhal coming in anymore, either through Tuqsukattak from Button Point or Clyde River. But they were saying that there was narwhal in an area between Pond Inlet and Clyde River this summer. Those are the ones who usually enter, but don't anymore, due to the ships, and that is now noticeable. [0067 18 at 24:09]

The observation was made that narwhal appear to have also relocated to Admiralty Inlet and are available to Inuit hunters at Ikpiarjuk.

Another thing to add. I'll try to be short. I want this to be known too. I will talk of something from recent times regarding narwhal. I said at the beginning that I grew up at Tununirusiq in Arctic Bay. I was mature when we moved here. Today, last year, 2021, the Tununirusiq youth caught many narwhal inside its bay. The youngest youth catch as many narwhal as they want to.

We have no more narwhal and don't have enough to share with others. They have moved there. There aren't as many ships there. The narwhal that would have come here pass by and all go there. There are many pods there. Some (hunters) *get many tusks. I saw where one person had more than five tusks. I'm very closely-related to the Tununirusiq people. That is the case. I'm trying to explain that further. Since 2020 our narwhal have all moved there. As the wildlife tend to flee, they have gone there to feed where there are no ships; also to give birth.* [0063 17 at 50:36]

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64. Prior to introduction of the new orthography, this bay was spelled 'Koluktoo', and is shown as such in the map found in Appendix 2.

Another issue of concern to Inuit hunters occurred in relation to a site chosen by Baffinland for ore carriers to drop anchor and wait until they could get into Milne Port to be loaded with ore. Ragged Island (Imiliit) was chosen as a location for mooring these ships. Ships are idling in these locations. While their props are not turning, they run generators to maintain batteries and to generate electricity. These create a considerable amount of underwater noise.[68]

> *Back then, narwhal would flee from killer whales at Saviit, even when the dark season was beginning. And when it got dark, the narwhal would leave the inlet right close to the shore. As they were leaving, we could hear them, and they sounded very close by. And this summer we even had three ships at a time at Imiliit* (Ragged Island)*. And when it got dark, we have not had any killer whales this summer. Someone said that it was only when it got dark did the narwhal leave the inlet, and the person who was there wrote about it. That the ship noise is disturbing them is obvious now.* [0068 18 at 27:50]
>
> *I don't think they died off. When you're hunting on the sea ice at breathing holes there are many breathing holes in the area. The breathing holes had been occupied many times; they catch some seals quickly. Before the majority of the seals have been caught, as they hear footsteps of people walking — doing things — then they begin to leave the area. The narwhal are just doing the same thing. There is a term for that; "Ivullittuq"* (disturbed). *That is a traditional term. All wildlife, for example, if talking of caribou being hunted by people and the caribou leave the area, then they would say that the caribou were iluvvittut. The narwhal too are disturbed by the area they have left. They've not died. They've all moved away.* [0071 14 at 12:58]

Some responses to questions about numbers were 'suggestive'. This indicates that among Mittimatalingmiut, particularly Elders exercising an IQ way of addressing matters that involve difference and potential conflict, what was said demonstrates an effort to deal with difference. One needs to appreciate IQ in order to better appreciate what is being said — and of considerable importance — why.

In the following example, the speaker is not prepared to assign responsibility ("I don't know what the reasons are since forever, wildlife change their ways"; and "I don't know what the reason is"). Comments related to Baffinland are respectfully cautious and conditional.

> *But these days, we haven't seen narwhal near the community at all. What the reason for that is, I'm not too sure of. People say Baffinland is one of the problems. I don't know what the reasons are since forever, wildlife change their ways. One year they are very abundant; everything — all wildlife. The next year there is hardly any wildlife at all.*
>
> *This place that was abundant in wildlife, we always go to. There is absolutely nothing now. During the summer we camp up there. Our family camps out at Tuniit* (in Paquet Bay) *up there. There was no wildlife; no caribou at all now. I don't know what the reason is. Regretful, the memories are very strong of what we used to experience. The caribou would be visible in the vicinity. And it's pretty far away from Baffinland. Even though it is too far away, I had not thought it would change so much. The narwhal don't come to this area too much anymore. There would be multitudes back then. These are the few things we know of. That's how I feel.* [0065 20 at 03:08]

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68. Gordon McIntyre. 2022. Anchored commercial vessels still have significant impact on marine soundscape: U Vic study. *Vancouver Sun*. August 02.

At least one Elder interviewed raised similar concerns about the intersection between technology and its impact on narwhal. This was in reference to the use of many boats in the narwhal hunt, and the subsequent behaviour of narwhal.

> *No wonder. Many men have boats now. In the past only a few men had boats, I don't think the narwhal would flee as much. Today as soon as there are narwhal — even just one — many boats rush after it! That has been the case. That is all that I see. What the reasons are* (for the narwhal situation) *I have no idea at all.* [0065 22 at 46:48]

6.1.2 Changes in Behaviour

The observations of Mittimatalingmiut on narwhal behaviour largely concern observations related to ore carriers in the waters of Eclipse Sound and Milne Inlet. The effects of vessel noise on the ability of narwhal to communicate was a highly contentious — likely the most contentious — consideration in the NIRB hearing process. It raised further concerns in relation to Baffinland's proposal to extend their shipping at both ends of the open water season for several weeks each year by using ice-breakers. Sound that would be generated by the smashing and breaking of ice added to concerns raised by Mittimatalik hunters. For these reasons, both the science dealing with ship noise and Inuit Qaujimajatuqangit are noted in what follows.

The best summary of different positions and conclusions on the effects of noise generated by icebreaking and ship movement can be found in a document produced by Fisheries and Oceans (DFO) Canada for the second technical review of Baffinland's environmental impact statement for the Phase Two Proposal.[69] However, no IQ knowledge, observations or conclusions are to be found in this and other documents dealing with vessel traffic, noise, and narwhal behaviour.

With regard to icebreaking, DFO stated the following. Masking effects are what happens when vessel noise is at frequencies similar to those of biologically important sounds made by whales. "DFO Science is concerned that BIM shows that narwhal will get close enough to vessels to experience masking effects. This is supported by BIMS modelling results that showed narwhal demonstrated avoidance of icebreakers at distances ranging from 2.2 and 12 km from the source and 0.5 km at the floe edge. This is much closer than the 14 to 71 km range where masking is predicted to occur".[70]

In the case of Milne Inlet/Eclipse it was concluded that masking from icebreaking would be likely to impact the ability of narwhal to communicate for up to 12 hours a day.

Baffinland argued that sounds important to narwhal are at much higher frequencies than icebreaker noise. However, the studies leading them to this conclusion were based on beluga whales. DFO disputed the validity of this observation. Baffinland also suggested that narwhal would adjust the sounds they make to compensate for any noise made and masked by icebreakers. It also argued, with regard to shipping, that: "Narwhal are likely to tolerate/habituate to the short-term increased levels of underwater noise (made by ore carriers) and stay in the area." Baffinland subsequently tried to justify this statement with reference to further research.

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69. Fisheries and Oceans Canada. (2019). Science Review of Additional Documents Submitted May 13-June 17, 2019, for the Second Technical Review of the Final Environmental Impact Statement Addendum for the Baffinland Mary River Project Phase 2. *Prepared for the Canadian Science Advisory Secretariat*. Document 2019/031.

70. Ibid, p.13

Narwhal at Play

[Source: World Wildlife Fund @ https://www.worldwildlife.org/species/narwhal]

The issue of habituation has been previously discussed but is re-introduced here in relation to the claim made by Baffinland and what may be understood as a limiting factor with regard to Inuit Qaujimajatuqangit. IQ and western science can be complimentary.

For example, the observation was also made that whales (and seals) appear, to some degree, to habituate to the sound of ships. However, it does not follow that habituation means that there is no effect on the health and well-being of the species. Furthermore, whales — as is true of caribou — do not all respond in the same way. Some members of a species may become habituated and many do not. The apparent exit of narwhal from Eclipse Sound and Milne Inlet, suggested by the results of the 2021 survey that identified 75,177 narwhal in Admiralty Inlet, likely indicates the limited nature of habituated behaviour.

> *Today, probably from always hearing noise, narwhal don't seem to be scared of ships anymore. That behavior seems to have changed there. Yes, I had noticed that even before there was a ship, the narwhal would flee to the shore and the seals would pass by very closely. This was probably from the constant noise; not just from ships. They have so many boats now. The hunters have many boats now. As they habituate to the noise, they seem to flee to the shore less.* [0065 08 at 16:18] *Yes, they've become habituated to the noise.* [0065 20 at 17:02]

Of considerable importance is a very recent study, conducted in 2018 and 2019, using hydrophone data from Milne Inlet. With respect to the effect of ship noise on narwhal communication and the matter of habituation, it reports that: "Narwhal call counts were generally lower once bulk carriers were within line-of-sight, including when ship noise levels were just above ambient noise levels. Call counts varied both "before" and "after" individual bulk carriers passed by the recorders. … There was no evidence of habituation or sensitization to the bulk carrier

noise within or between years.[71] What cannot be seen or heard underwater, as recorded by western scientists, expands on what hunters and Elders have witnessed.

The following is an observation of changes in narwhal behaviour as a result of shipping in Milne Inlet.

> *Back then, when we used to be in Saviit, the narwhal would circle back and forth when they entered the inlet. They would go to Qulluqtuq Bay then exit back into the inlet. They would travel on the other side and down the middle of the inlet. Then they would circle back to Saviit, along the shore, all at the same time. That was always their custom. They don't do that anymore.* [0068 18 at 21:15] [72]

The issues of stress and changes in behaviour (among other things), is an important one most often overlooked by western science. Stress, in all species, is associated with a long list of maladies. While these maladies — some of which, including anxiety, sadness, irritability — are difficult to measure in species other than our own, it is reasonable to assume they have important implications for the health and viability of all species.

This is why observations like the one recorded above, are of particular importance. This is where the intimate and IQ knowledge of Inuit (and Indigenous peoples elsewhere) has much to offer an understanding of the effects of industrial development, pollutants, noise and climate change on species other than our own. There is no other way, other than observation based on years of experience and observation, of identifying these effects.

Considerable credit for work done on narwhal in relation to stresses associated with shipping and ship noise goes to James Simonee. James was part of a team looking at cortisol levels in narwhal both pre, and during Baffinland project-related vessel traffic. Increases in cortisol levels in the presence of project related traffic were significant (increasing over 100%) while both pre and post levels were noted to be significantly lower than from animals sampled during an entrapment event.[73]

> *It's noise. Probably it's noise. I think the noise disturbs them. I don't think it's the physical ship itself. It is his loud noise. And when loaded, it becomes louder they say. I think that's why they flee. When the ship*

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71. Crystal L Radtke, John M. Terhum, Héloise Frouin-Mouy and Phillip A. Rouget, 2023, Vocal count responses of narwhal to bulk carrier noise in Milne Inlet, Nunavut Canada, *Marine Mammal Science*, 39: 1057-1075, DOI: I0.1111/MMS.13028, p. 1057.

72. Evidenced submitted by Baffinland in relation to the effects of ship noise on narwhal, and subsequent defence of their claims that ship noise is not having a significant effect on narwhal, and that other considerations can explain changes in narwhal behavior, is challenged by the IQ presented by Inuit hunters and Elders in this report.

Baffinland, for obvious reasons, has put considerable effort into trying to prove that shipping is having minimal effect on the behaviour and well-being of narwhal in Milne Inlet/Eclipse Sound. A study conducted by a graduate student a Dahousie University, funded in part by Baffinland, noted that narwhal often reduced their call counts once underwater noise from bulk carriers became detectable, but counts were variable once bulk carriers passed by. [Crystal L. Radtke, et al., Vocal count response of narwhals to bulk carrier noise in Milne Inlet, Nunavut, Canada, *Marine Mammal Science*, April 2023, DOI: 10.111/mms.13028]. The report, funded in part by Baffinland, illustrates the fascination of scientists with intensities, frequencies and other numbers. What is understandably missing from a focus on call counts, frequency, nature of calls, etc., is what these calls mean. What is being communicated both during and after ship passage? What Inuit maintain is that narwhal are sentient, rational beings. Is what is communicated pain, anxiety, worry, frustration, disappointment, a warning to others, etc.? What is important, is what we don't know, but that Inuit have good reason to believe is some, or all of the above; another reason for taking the Uncertainty Principle seriously.

73. Cortney A Watt, James Simonee, Vincent L'Herault et al (2021) Cortisol levels in narwhal (Monodon Monoceros) blubber from 2000 to 2019, *Arctic Science, NRC Research Press,* 7: 690-698, dx.doi.org/10.1139/as-2020-0034.

had gone, they would return to where they were before. When a ship was on its way, they would always leave. ***They are very capable of feeling;*** *I think it's the noise.* (Emphasis added) [0058 19 at 02:26]

Researchers also noted two typical responses of narwhal to shipping noise; a "freeze" response and a "flee" response. The "freeze" responses may be reported as cases of habituation. However, habituation implies that narwhal are 'used to' the presence of ships and therefore they are unaffected by the noise. The research noted above and the results of studies examining cortisol levels, noted previously, do not indicate that ship noise has no effect on narwhal, including those exhibiting a freeze response.

The IQ reported on with regard to narwhal behaviour in the presence of ships is important, accurate and supported by the research cited here. It should stand on its own as a valid and accurate account of the effects of shipping on narwhal behaviour.

Narwhal fleeing ships operating in Milne Inlet and Eclipse Sound was commonly noted by Mittimatalingmiut Elders and hunters.

For example, before the ships arrived, they would be playing, calving and mating. They stopped doing that. They were continuously fleeing. That is the behavior they have now. They no longer stay in one particular spot anymore. Narwhal are very worried, even seals are very worried and notice ship traffic. [0058 19 at 32:30]

It is obvious the narwhal are scared of ships because they flee. They leave the area they were at. It's because they're scared. That's obvious. [0058 19 02:03]

We would watch from on top of Bruce Head. We would see narwhal mating in the area. Some of the ocean wasn't visible. In the areas we could see they would mate, they would give birth, they would do things in that area. When a ship arrived they would completely disappear. When the ship left, they would return and exhibit the same behaviors. [0061 19 at 06:23]

This hunter also identified places where narwhal would flee to in the presence of ore carriers.

There were two main places they would flee to; in here and this one. When the ships were coming from here, they would flee here. When you could hear a ship coming from this direction, the narwhal would flee here. They would do that when I was there. [0061 19 at 07:28]

6.1.3 Changes in Disposition

This section presents observations made by Inuit hunters and Elders about the behaviour of narwhal in relation to the presence of ships. Ivullittuq (disturbed) has a behavioral and also a psychological aspect to it, not commonly implied when western science uses the word 'disturbed' in relationship to species. In western science, disturbed often refers to a species being interrupted or having something interfering with whatever biophysical or mechanical action they were undertaking.

The following observation illustrates what happens when one sees and treats narwhal as sentient beings (with feelings) and behaviours that have parallels in human beings. IQ has something important to offer in this regard. The following reference to "playing" — having fun – is illustrative.

I was a narwhal observer (at Bruce Head) *for three years. Narwhal mating? We've seen them calving more than once in the ocean, of course, and narwhal mating and playing with their tusks pointed in assorted directions. They play in all kinds of ways. There was a pod of 9 narwhal we were watching with the same type tusks, all very long. There were 9 of them. The narwhal surfaced. When they surfaced at exactly the same time, they would slap the water with their tusks then move them into this position. They would do that at the same time. I've seen them play all these games before.* [0058 19 at 14:25]

6.2 Observations from Admiralty Inlet

The attention given to the response to ship noise by Elders and hunters from Ikpiarjuk was, for obvious reasons, not as extensive as the concern raised by hunters from Mittimatalik. In Mittimatalik, the presence of iron ore carriers is an obvious concern. Concerns expressed by those interviewed in Ikpiarjuk are based on historical observations of relevance to explaining what is current. Hunters in Admiralty Inlet are concerned about an increase in boat traffic in Lancaster Sound, through which narwhal must travel to reach Admiralty Inlet, as well as a modest increase of commercial and related shipping activity in the inlet.

Ikpiarjumiut do have experience with shipping from the now closed (2002) Nanisivik mine. For reasons previously explained, that shipping is not comparable with what is currently being experienced in Milne Inlet/Eclipse Sound.

6.2.1 Historical Experience

Some Elders recalled their historical experiences with the presence of boats in the inlet.

I have done some research. Like I said, I'm 83 years old. Back when the boat Naujaq (the HBC boat – likely a reference to the Nascopie — 1911-1947) *was here, it had been moving, and all the narwhal fled and congregated up in that area, fleeing from the sound* (Adams Sound). [0007/8 2 at 18:19]

Before, there weren't that many ships; only the Coast Guard and cargo ship. Before the ship comes into Arctic Bay, the narwhal would run away from it to the other side; to Admiralty Inlet. [3 at 07:02]

As noted, given the extent of Admiralty Inlet and the location of the Nanisivik mine, it is likely that narwhal affected by noise, could relocate to the west side or further down the inlet. In these locations, ship noise would be considerably less than in the immediate vicinity of ships entering Strathcona Sound, along its eastern coast. In the case of Eclipse Sound, the ability to escape or to reduce the effects of ship noise is affected by the fact that there is no place in these waters where narwhal can escape the sound of passing ships that traverse all of these waters, from one end to the other.

Both ships and orcas had effects on the movement of narwhal, and played a historical role in how narwhal were hunted. The presence of orca whales would send narwhal to the shallow waters along the shore, where Inuit hunters had easier access to them.

It used to be that when, back then, when the ships were coming in all the narwhal used to go along the shore trying to get away from the ship. Same with the killer whale. If the killer whale comes in, the narwhal go along the shore and we go after them. They're closer. [0004 7 at 25:27]

Narwhal were not the only mammal that reacted to ships by fleeing from their presence and noise they made.

> *That* (habituation to ship noise) *is completely different from what I've experienced before. Back then, when the ship was far away, the seals would begin coming ashore to get away from the ship. All these narwhal would then flee.* [0006 11 at 25:29]
>
> *Well, ships are thought to cause that* (changes in the movement of narwhal) *too. When ships were* (first) *coming here, I became aware that the seals and narwhal used to flee so much from ships. The seals even tried going on land.* [11 at 25:29]

Ikpiarjuk (Arctic Bay) 1957, with the C.D. Howe, Moored Off-Shore

[Credit: Otto Schaefer (Frank Tester, personal collection)]

6.2.2 Habituation

As was true of Mittimatalingmiut hunters, hunters in Admiralty Inlet also made observations on the habituation of narwhal to ship noise. The tendency to flee is not what it used to be. Many of these discussions were held in the context of experience with shipping from the Nanisivik mine at Strathcona Sound.

> *They're completely habituated now. They don't even scare away from orca today. The narwhal and seals aren't afraid of orca anymore. They're so exposed to sound they've become habituated, I haven't heard of them fleeing anymore*. [0011 9 at 16:57]
>
> *Since they're more habituated - not as scared - they've stopped fleeing to the shore.* [0011 9 at 20:39]

However, the same respondent also indicated that too much sound may also be what narwhal are experiencing. The reference to 'too much sound' suggests that there may be a threshold with regard to underwater soundscapes. Once reached, how seals and narwhal respond to noise may change.

> *Marine wildlife have very good hearing. They've become accustomed to the sounds they hear, as it isn't the*

first time. They've heard them before. It's all (disturbance by ships) *due to them being bombarded with too much sound. That is what is different now with air breathing marine mammals today.* [0011 9 at 24:36]

It was also noted that sound doesn't have an impact on the number of narwhal as they will go elsewhere, if disturbed, to find habitat where there is less noise and they can successfully pursue their hunt for food.

If the DFO were to say that Admiralty Inlet narwhal were declining in numbers, (and that) *Admiralty Inlet seals are declining, no! They are not declining. The noise they are experiencing in the area has made them move off, as there is too much noise disturbance.* [0007/8 2 at 16:05]

These observations bring to attention the complexity of the current situation facing narwhal in the fiords and inlets of the north Qikiqtaaluk Region. There are multiple impacts affecting narwhal. These suggest that any one of them might have effects that are more consequential than would otherwise be the case. Narwhal can always seek other habitats if they are disturbed by noise, but as ice conditions change, affecting species depended on for food, changing location to avoid any one of a number of effects offers fewer possibilities.

6.3 Concerns about Behaviour, Hydrophones and Depth Sounders

Concerns of hunters about the effects of underwater noise emitted by devices either placed on the bottom or coming from ships has often been summarily dismissed by public officials and others meeting with HTOs.[74] It has been recognized for some time that the sounds emitted by depth sounders (also referred to as echo sounders or depth finders or sonar systems) have the potential to interfere with marine mammal communication as their frequencies fall within the same range as most marine mammals. "Even if only a small fraction of the 80,000 vessels in the world's merchant fleet as of 1999… are equipped with commercial sonar systems, the potential exists for these systems to adversely impact the marine environment. Depth sounders typically operate in nearshore or shallow waters."[75]

From what I've noticed and from what we've heard, narwhal can hear from long distances. Ships are very loud under water. That first one about the ship noise is obvious. And the next one is what I'm wondering now, if there is a factor that we don't know about; if there was an object that was placed on the sea bottom at Sannirut's waters, or elsewhere. Someone from the people who put objects down on the sea bottom knows, because the noise from ships, and the sea bottom objects, I think are the main

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74. The author has personally witnessed this on a number of occasions, having been present at meetings of HTOs where government or industry officials were trying to convince hunters that they had nothing to worry about. Part of the problem is that those communicating did not, themselves, appreciate the difference between depth sounders and hydrophones, the former being a problem, while hydrophones only record and do not emit any noise.

75. The National Academy of Sciences, 2003, *Ocean Noise and Marine Mammals,* Washington D.C., p. 67. There are currently (2023), about 118,000 commercial vessels in the world merchant fleet.

culprits. [0068 18 at 25:45] [76]

This concern is subsequently reflected in a call for research proposals that was issued by Transport Canada in 2020, calling for the development of alternative technologies for vessel depth finders *that do not use sound*.[77]

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76. There are two different devices used in Eclipse Sound and Milne Inlet. A depth sounder sends a signal to the bottom. It bounces off the bottom and returns to the device. It is used to measure depth of water beneath the ship. Depth sounders emit a high frequency sound that is not detectable to a human ear, but may interfere with communications made by whales. Hydrophones are used for research. They can be located on the ocean bottom or dragged behind a research vessel. They have microphones that record the sounds of passing whales and other sea mammals. They can be retrieved, and the information they have stored can be downloaded and used. They do not make any noise.

77. https://ised-isde.canada.ca/site/innovative-solutions-canada/en/development-quiet-depth-finder-technology

7. The Body Condition of Narwhal

In this section of the text, we present IQ observations about changes in the physical (bodily) health of narwhal in Eclipse Sound/Milne Inlet and in Admiralty Inlet and attempt to explore different explanations. Anthropogenic disturbance and climate change are likely responsible for affecting, either directly or indirectly, food intake by narwhal. Considerations identified by hunters and elders relevant to the physical health of narwhal are many, because body condition can be defined by indicators such as stress, body size and fat content.

Noise, the movement of ships, and dust are all considerations observed by hunters. What is going on *internally* with narwhal, that might explain what is observed by hunters and Elders, is not always something that can easily be discussed. This is an area where western science and Inuit Qaujimajatuqangit can work co-operatively. It points to the need to offer Inuit youth and others, opportunities to acquire the insights and skills required to do work of vital importance to Inuit control and responsibility for monitoring and the management of narwhal and other species.

Body condition is also a function of where narwhal may have been and what they may have been doing (for example, traveling long distances) or the availability of food in locations where they were previously located.

7.1 Narwhal in Mine Inlet/Eclipse Sound

Hunters from Mittimatalik reported that narwhal arriving in Eclipse Sound became skinny over the summer months. It seems that narwhal arrive with their energy reserves somewhat depleted early in the season, but still have comparatively more fat than they have over the summer months spent in the waters of Eclipse Sound and Milne Inlet. Instead of putting on more weight, they were reported as losing it.

7.1.1 Observations on Body Fat

A question about the condition of narwhal being hunted got the following responses.

> *Absolutely, yes, yes, yes! Especially for their feeding, as the narwhal caught up there* (Milne Inlet) *would have very thin blubber, and men would not go for a headshot anymore as they would sink immediately. So, we had to wound them first to be able to catch narwhal. Wound the animal first? It's crazy! They have less blubber from fleeing around so much.*
>
> *The narwhal are completely fat with thick blubber during the spring. When you catch a narwhal, they are fully able to float. During the summer we have noticed here that they are skinny. They sink sooner, and they look like long, thin narwhal. That they're skinny we have now noticed, and they sink quickly when you catch a narwhal. It's been some years now we've noticed this. When they first arrive during the spring, they are fat. They look as fat as they can be.* [0073 16 at 14:31]
>
> *Those caught at the floe edge* (near Button Point), *before ship traffic, those are able to float easily, so the men are able to retrieve them. But when they are in the fiords, they are skinny. They are skinny when they arrive up there. They are skinny. Yes, the impact is very strong. I think they go up there* (Milne Inlet) *to fatten up, but they can't relax anymore.* [0058 19 at 42:35].

7.1.2 Observations on the Flesh of Narwhal

The flesh of narwhal is typically white and sometimes yellowish in colour, particularly in the belly region. Inuit hunters made the following observations when asked about the condition of the flesh of narwhal they had hunted.

> *In the spring time I've seen a few with very — I'm not sure if it's related to the age of the narwhal — very yellowish spots in the fat. They're usually white. But I think the one I caught — a few of them — had very dark, yellowish blubber. I'm not even sure if it's age related or physical. We were told that any abnormalities we see in any species we need to take a piece out and send it out for testing.* [0004 7 at 20:41]
>
> *Since forever they aren't constantly the same. Their blubber gets yellowish areas, maybe because of age or something. They are always like that. …That is the only difference. The condition of the meat hasn't seemed to change since my experiences.* [0055 8 at 37:40]
>
> *They never have a uniform thickness of blubber. If a narwhal is skinnier, then the blubber will have more yellowish area, if it is fatter, then less yellowish areas. That is how different they are from each other. When they're skinnier their yellow areas are bigger. They've always been that way.* [11 at 66:02]

7.1.3 Observations on Changes in Diet

Hunters were asked what they found in the stomach of narwhal they hunted.

> *Today, I check the stomach contents and not many narwhal are well fed. Back then you could really tell. We used to see cod and the starfish that looks like a hand with a lump that resembles a head. And their stomachs would be full of turbot. I remember them. These are just stories today. I hardly see anything today, even though I check the stomach contents.* [0070 14 at 15:12]
>
> *It's usually those shrimp and starfish, along with cod and turbot that are usually in the stomachs.* [0070 14 at 14:15]

Sculpins, cod, little krill, maybe some turbot fish too. Sometimes we do (look at stomach contents) *but mostly we don't because when you cut up the stomach, it stinks.* [0074 21 at 08:15]

7.1.4 Explanations for Changes in Body Condition

The availability of food and the opportunity to feed are obviously related to the body condition of narwhal. The observations of Elders and hunters can and should be of critical importance in informing and directing future research in this area. These realities are well known to some Elders and hunters.

7.1.4.1 ANTHROPOGENIC DISTURBANCES

7.1.4.1.1 Decreased Availability of Food

The hunter quoted in what follows makes and important observation related to narwhal that would historically travel to Eclipse Sound and Milne Inlet in order to take advantage of the arctic char to fatten up. Tay Sound (Iqaluit) is found to the east of Milne Inlet (Appendix 3).

As soon as the char had migrated to the ocean, not just to there (Milne Inlet)*, but other fjords they used to go into, they used to go into Iqaluit* (Tay Sound) *but don't anymore. Up there, yes, as soon as the char had migrated to the sea, the narwhal would head up there, maybe to eat fish. Yes, when there is char, and when the char leave, they* (narwhal) *leave the area. I think that area is a waste of time to them now since it has no more char.* [0058 19 at 13:40]

Char was historically plentiful where Phillips Creek carries its fresh water into Milne Inlet, just west of the location of Milne Port. Char were also plentiful where the Robertson River empties into Qulluqtuq Bay (Appendix 3).

The following was suggested as a reason why narwhal, appearing in Admiralty Inlet, were skinny. The hunter is suggesting that narwhal arriving in Admiralty Inlet had difficulties with their food supply in Eclipse Sound and Milne Inlet. Another possible explanation is that their feeding was disrupted.

There may be two reasons for them doing that. The food they eat, the microorganisms, the little organisms, are food for the smaller fish like cod. If they die off now and the narwhal have no food left, they (narwhal) *may leave the area. That is suspected also. The microorganisms may die off. And if they do, the bigger organisms would begin to die off. If the narwhal with enough stored energy don't find feeding areas, they may leave.* [0071 14 at 15:10]

7.1.4.1.2 Decreased Access to Food

Energy used in fleeing from ships, hunters and orca predators, is also relevant to body condition. This would be particularly evident at the end of a season spent dealing with these circumstances in the northern waters of the Qikiqtaaluk Region. The observations made by hunters in both Admiralty Inlet, Eclipse Sound and Milne Inlet are interesting in light of the dramatic changes in the number of narwhal in Admiralty Inlet in the summer of 2021.

The ability to feed can also be affected by disturbances that cause narwhal to interrupt their feeding and, temporarily or permanently, locate themselves elsewhere.

It's obvious that is happening to them. It's very obvious that because of fleeing, they have lost a lot of weight. They are mating less; they are playing less. That is so very much obvious. And that their numbers are so few; that they only go up there to be scared off is obvious. To there (Milne Inlet) *absolutely, when there is ship traffic.* [0058 19 at 39:20]

The observations of Elders and hunters suggest multiple ways in which shipping is likely affecting the health of narwhal, as reflected in their body condition. Hunters suggested that if narwhal were no longer disturbed, they would recover.

They would go elsewhere. Well, they know where the major feeding areas are. They would leave for places with food. They may even be in this area more. Maybe to this area, or this one …. [0071 14 at 17:10]

I don't know where they go to, and if they have food sources there they wouldn't starve. They probably try not to go to places without food sources. They go to places with food sources as they have that knowledge. I'm not concerned for them in that manner at all. If they are no longer disturbed, they will fatten themselves up. [0059 19 at 23:10].

They're very familiar with the places. Ukkusauti has not been affected. They won't just give up. [0071 14 at 17:26].

7.2 Narwhal in Admiralty Inlet

The normal pattern reported by hunters is for narwhal to show up in the spring as being thinner — but generally in good shape- and to gain some weight over the summer months spend in Admiralty Inlet, so that they had enough energy reserves for a trip to winter feeding areas in Baffin Bay. Based on the observation of hunters, it is obvious that the condition of narwhal changes depending on the season in relation to migrations and energy used in traveling from one location to another.

Terrestrial and marine mammals are skinnier during the spring. During the summer they come here to fatten up. Even seals, even harp seals, even bearded seals during fall return fatter. It's obvious. It's the same for narwhal. [0006 11 at 35:50]

This summer (2022) *some big males would be pretty fat and the smaller ones probably don't get as fat, probably until they get bigger.* [0003 3 at 10:48]

Normally, this is what things would look like, having fattened up feeding before they leave as ice forms in the inlet.

But then when they start moving out, they're not really focused on eating anymore. They're trying to get out of the area. I don't know the word hibernation, but they collect the food before they go on to the winter grounds. [0004 7 at 16:59]

(When) *they start moving out, they cover long distances.* [0004 7 at 20:41]

7.2.1 Observations on Body Fat in the Spring

> *Yes, there are now some changes in how fat they are. They are hardly ever emaciated, but they're beginning to be thinner; maybe because of moving around so much. When spring arrives, yes, they become very fat.* (But compared to) *the past, they're not as fat anymore. All wildlife, including seals, are in that condition now. They're much thinner all times now. Even their meat has changed.* [0007/8 2 at 48:30]
>
> *They're thinner* (when they arrive at the floe-edge)*; not as fat. But in the spring and summertime they get fatter, and I think they move out after that. Right now,* (September 2022) *they're still healthy.* [0004 7 at 20:41]

Some hunters reported that not only do narwhal showing up appear to be 'different narwhal' than what they were used to seeing, but that narwhal do not appear to be as fat as they were historically.

> *When I was hunting in the spring time I found the narwhal to be a bit skinnier because they were travelling more, trying to reach their destination, their feeding ground. They were on their way to their feeding grounds in the springtime. They hadn't really started feeding yet. I found the blubber to be thinner.* [0004 7 at 16:59]

There are many possible explanations for the condition of narwhal when they show up early in the season at the floe-edge. Some of those can be explained by natural variations in the distances travelled during the migration, some come from closer wintering areas, some from farther distances.

> *There's ones that come in to the floe-edge, from closer; let's say that stay in the Devon Island area over the winter. And there are some that come from past Iqaluit, right in the middle of the ocean. Some of them would be fat, and some that come from further away would be skinnier. Probably they migrate far.* [0003 3 at 09:53]

Some other explanations deal with climate change and anthropogenic disturbances (see subsections below).

7.2.2 Observations on Body Fat in the Fall

One hunter shared the observation that normally, in the early fall narwhal have a lot of blubber. But in 2021, some had very little. In 2021, the narwhal population in Admiralty Inlet increased dramatically, as noted. He went on to speculate on why narwhal were showing up later in the season (early fall), with very little blubber.

> *Last year* (2021) *narwhal caught during the early fall … the narwhal that arrived here had hardly any blubber. During the summer, part of early fall, they have a lot of blubber and are very fat wildlife during the fall, as they have plenty of food sources. But some of those narwhal had very little blubber, because of what? Orcas? Ships? I don't know the cause, but I can try to guess. They are being disturbed too much, or their food sources have moved elsewhere. This is what I have noticed.* [0012 5 at 22:51]

Here is what a Mittimatalik hunter, interviewed in September of 2022, reported hearing from hunters with the HTO in Ikpiarjuk.

The Arctic Bay HTO reported that last year during the fall very skinny narwhal 'came through town', and they were all very skinny with big heads. They said in butchering them, the meat would immediately show due to a lack of blubber. That was during early fall, and they said the last two years have been like that. They couldn't find food somewhere, and became very skinny by the time they arrived at Arctic Bay. [0071 14 at 17:52]

They (hunters from Ikpiarjuk) *even said the heads* (of narwhal in Admiralty Inlet) *looked enlarged. They were so skinny.* [0071 14 at 19:05]

Hunters were asked for their impression of the condition of narwhal in the fall as they were leaving Admiralty Inlet, migrating to Baffin Bay. The following observation applies to the fall of 2021, the year that the number of narwhal in the inlet increased dramatically at the same time as numbers in Eclipse Sound/Milne Inlet declined considerably.

And in the fall, I think they tend to be skinnier before they leave. Or they might have come from a place — from Kugaaruk — migrating back, or something like that. [0003 3 at 16:16]

One hunter attributed the skinny condition of some narwhal to the fact that they were not narwhal that spent the entire summer in Admiralty Inlet. The following quote focuses on the movement of narwhal in and out of the inlet during the open water season, in search of food elsewhere. Success or a lack of success feeding elsewhere accounts for their condition upon their arrival in Admiralty Inlet.

From what I think, I know narwhal aren't static. Some that go somewhere else are fatter. Others going elsewhere are skinnier. Those that don't stay in our waters — those who go off somewhere — (when) *they pass through* (Admiralty Inlet)*, they are skinnier. Some narwhal loosely associated* (with Admiralty Inlet) *— although there are many — I think they may be in places with more food sources. They are fatter. But the others are pretty much the same. Some come up* (to Admiralty Inlet) *already fat. Some were a little bit skinny. If they get fatter, I haven't really noticed. From those caught, some are fat that had been at some place, maybe somewhere with available food.* [0055 8 at 50:48]

Other hunters did not report anything unusual with respect to the summer condition of narwhal or their condition upon leaving the inlet.

It's only the odd narwhal that will be skinny. They don't get so skinny. But it's obvious during the fall they return fatter, all aquatic life do that, even char. [0006 11 at 37:06]

But narwhal come in different sizes. Some are fatter and others are thinner. They are run by their genetics. When they're thin, they're thin. Today they are still fat and produce a lot of blubber. When they are fat their blubber renders more oil too. [0013 6 at 50:11]

7.2.3 Explanations for Changes in Body Condition in Admiralty Inlet

7.2.3.1 DISTURBANCE RELATED TO SHIPPING

The number of ships — cruise ships and ore carriers that traverse Baffin Bay and Davis Strait — may be affecting narwhal feeding in their winter habitat, or their movements, feeding and behaviour migrating back to Eclipse

Sound or Admiralty Inlet as the open water season approaches.

> *I don't know where they went to* (to spend the winter months) *but with transportation machines increasing along with boats, with the hunters increasing, ships increasing some of the narwhal look thinner.* [0012 5 at 22:51]

7.2.3.2 RELOCATIONS OF NARWHAL AND INCREASED COMPETITION FOR FOOD

It was previously noted that in 2021, a survey of narwhal in Admiralty Inlet suggested a population of 75,177 narwhal. When these narwhal arrived in the inlet is unknown. It is reasonable to assume that many relocated from Eclipse Sound/Milne Inlet, where numbers were at a record low. It was also noted that this increase likely had implications for their body condition, related to the availability of food. The following account lends credibility to the reasonable assumption the food supply available in Admiralty Inlet could not easily accommodate a population more than twice the size of one that had likely evolved to fit with the food available in that location.

> *I have two or three experiences. We always go boating and catch narwhal. From two years ago* (2020), *we find our narwhal are different. We notice them when we butcher them. We find the fat is very little, and we were asking questions to our Elders. "Why are they so skinny?" The Elders would say maybe their eating habitats are not enough, with lots of narwhal here.*[78] *They were questioning why. It was weird for us, but my father would say if there are too many narwhal going together you're going to see at least one narwhal is sick. Or when you butcher it, you're going to see a yellowish thing on their fat. Some of them are not healthy, as they have to swim long distances to go eat here. Every year it's always different. But right now, the ones we caught, they were skinny too.* [0002 12 at 23:44]

7.2.3.3 CLIMATE CHANGE

Changes in the condition and prevalence of ice in both summer and winter locations are important considerations to explain the decreased condition of some narwhal, because ice conditions affect the food chain. Changes to the sea-ice habitat due to climate warming throughout the ice-covered period might endanger the important linkage between ice-associated, pelagic and benthic food webs in the Eclipse Sound and Admiralty Inlet land-fast ice systems.

The availability of food and the ability to feed can be affected by climate change and ice conditions, or disturbances that cause narwhal to interrupt their feeding. Body condition can also be affected by the amount of energy narwhal expend in moving within an area or in travelling longer distances between summer and winter habitats. The effects of climate change and shipping on elements of the food chain in the sounds, fiords and inlets

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78. As noted earlier in the text, an aerial survey conducted by Baffinland in 2021, recorded 72,582 narwhal in Admiralty Inlet compared to 36,044 in the summer of 2020. Baffinland indicated that despite the dramatic decline in narwhal in Eclipse Sound/Milne Inlet, the total in the two locations didn't show a decline in the combined population. What they neglected to consider was the implications of this dramatic increase in the population of Admiralty Inlet for food supplies and the subsequent health of the narwhal population, noted here by hunters and Elders.

of the northern Qikiqtaaluk Region are not well understood. Scientific research in this area is complicated, and the results are often difficult to interpret[79].

7.2.3.3.1 Decreased Availability of Food

What do narwhal feed on, and how might their food and access to it be affected by climate change? What is the relationship between climate change and the location of food for narwhal?

The following observation suggests that changes in the salinity of arctic waters may be having effects on the food chain relevant to the species upon which narwhal depend.

> *And when the ocean gets salty the marine snails appear along with thin white organisms. I think are called ugjungnat. During the fall, when they should be showing up like at this time, when we were at Nunasia, all I saw was one. There weren't even any of the other kind. They usually appear. They act like they live in very salty water. During the fall they are everywhere. But there are none of them.* [0070 14 at 12:33]

7.2.3.3.2 Decreased Access to Food

In Baffin Bay, narwhal spend the winter months feeding primarily on Greenland halibut (turbot) as well as squid, shrimp and polar cod.[80] Rapidly increasing water temperatures and changes in ice cover in Baffin Bay have implications not only for species on which narwhal feed, but on the diving behavior used by narwhal in the pursuit of food. The result may be reflected in the extent of the blubber and energy reserves that narwhal show up with at the beginning of the summer season.

Hunters interviewed at Ikpiarjuk in September of 2022, a year after the dramatic increase in numbers in Admiralty Inlet, noted that there seemed to be an abundance of cod for narwhal to feed on. However, as noted elsewhere, the source of cod seems to have been primarily along the east, instead of the west side of Admiralty Inlet.

> (Narwhal are) *so fat they floated. And I was hearing recently, this summer* (2022)*, that narwhal wouldn't sink. They are very fat at this time. I don't know the cause, but we have so much cod here this summer.* [0005 10 at 56:18]
>
> *Later on in the summer, when we caught some, they were thick; the blubber became thicker. They're fatter. I think when they were feeding and more settled down, they're no longer moving about as much. I found that they get healthier in the summer.* [0004 7 at 16:59]

The illustration on the following page shows environmental considerations affecting narwhal. These include dust and other contaminants that affect food sources.

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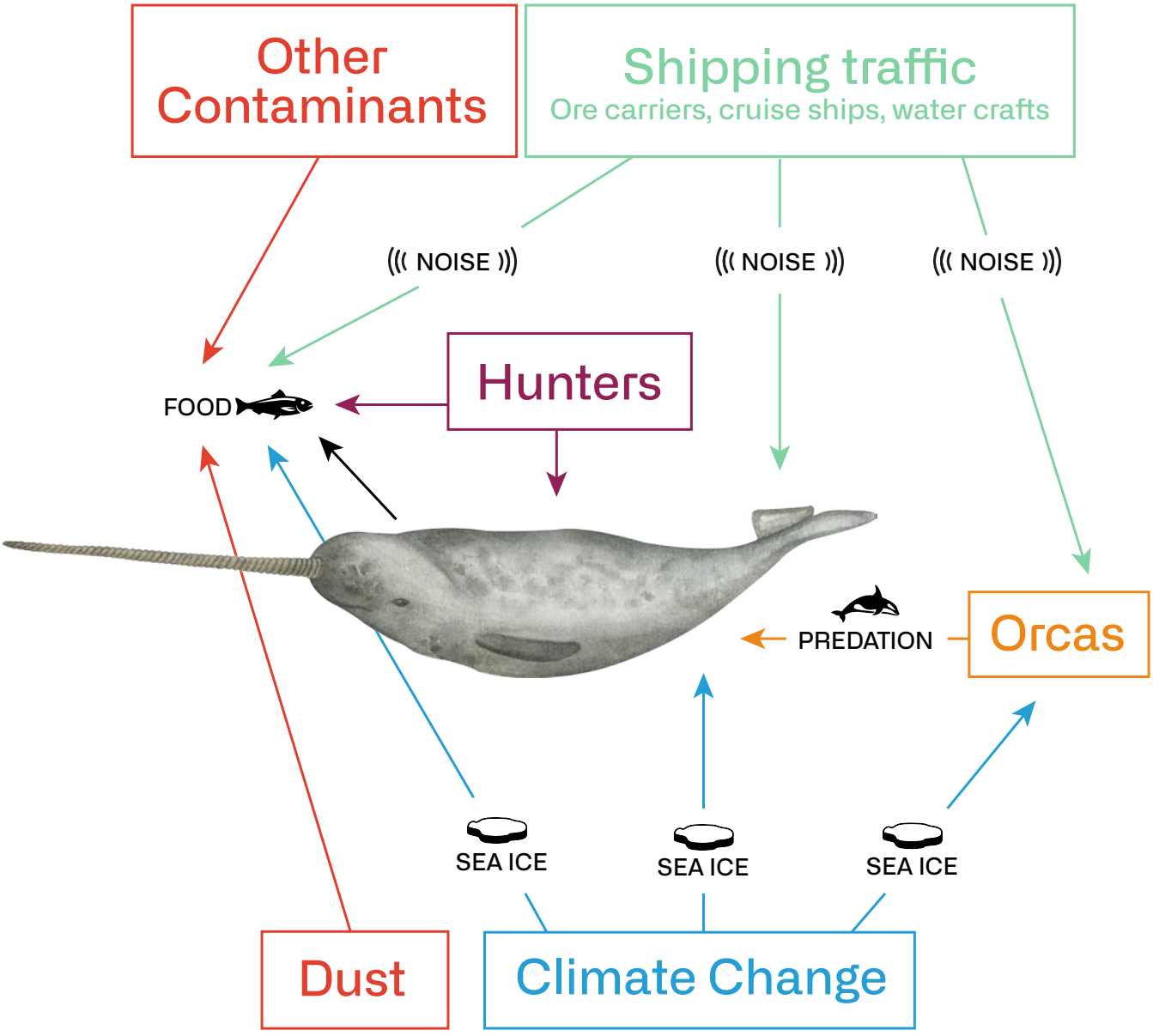
79. Doreen Kohlbach, Steven H. Ferguson, Thomas A. Brown, Christine Michel. (2019). Land-fast sea ice-benthic coupling during spring and potential impacts of systems changes on food web dynamics in Eclipse Sound, Canadian Arctic. Marine Ecology Series. 627: 33-48, https://doi.org/10.3354/meps12071, p. 44.

80. COSEWIC. 2004. COSEWIC *Assessment and Update Status Report on the Narwhal in Canada*. Ottawa. Her Majesty the Queen in Right of Canada. p.18.

The impact of ship noise, climate change and ice conditions also affect food sources (fish). Noise has a direct effect on narwhal, their behavior — including feeding behavior — and location. It also affects orcas.

Ice conditions also affect where narwhal are capable of traveling. The same is true for orcas as a predator of narwhal.



Factors affecting the health, location and number of narwhal in the waters of Milne Inlet/Eclipse Sound and Admiralty Inlet, Qikiqtaaluk Region, Nunavut Territory

8. The Mary River Mine and Iron Ore Dust

One of the more notable and persistent issues with regard to Baffinland's operation has been iron ore dust. Baffinland crushes ore at the Mary River site, loads it onto trucks, and hauls it to Milne Port where it stockpiles the ore prior to loading it by conveyor belt into ore carriers. All of these operations generate dust. Dust control has been a significant issue for Mittimatalingmiut and was a major concern raised in the hearing process for the Phase 2 Proposal. The extent of the problem is more than obvious from the experience of someone involved in attempts to monitor and control it.

> *I deal with dust issues. I am a part of a committee that meets to deal with dust. I was up there this summer for meetings on dust matters. Yes, dust has had a huge impact. The iron ore at Milne Inlet; the dust is almost always blowing away. That dust had a huge impact.*
>
> *We were at Qulluqtuq Bay too, this summer. The dust had been blown there. We would find dust in the gullies. The QIA employee who works there and I were walking around. This is how we saw it. The dust has gone everywhere.* [0059 06 at 11:13]
>
> *The dust is continually being blown away. I've tried to say "put a wind fence around it and put another one on this side". The dust would stop blowing away. It would stay in place. They tell me if we do it this way the dust won't spread.* [0059 06 at 11:13]

Possible effects on the food chain and for species at the top of this chain are concerning for Mittimatalingmiut. While breathing in iron ore dust is known to have negative effects on the respiratory system, its effects on other species and the food chain have received little attention. Given the importance and extent of the mining of iron ore, internationally, this is perhaps hard to explain. Given the extent of the problem, as outlined above, concern among Elders and hunters is not hard to explain. The dust has a very visual presence.

> *It's obvious the dust has had an impact. When dust goes on water, it does not stay on the surface.*

When it sinks it causes dust to spread, and that is obvious. The wildlife feed on microorganisms we can't see. I believe the organisms that we can't see have been killed off by the dust. I think the area up there has less animals, as they have less to feed on. That is the impact I believe the dust has when it settles on the bottom. [0059 06 at 16:54]

There is iron ore all over the world that is getting into flowing water, but their dust (Baffinland's) *is over the top! I know about the iron ore there. They dig it up, and the wind blows frequently there, blowing dust to the shoreline and into the sea; all the dust collecting. It may very well be too much; all the dust that is spreading. Well, the dust is a major hazard. That is obvious.* [0070 01 at 17:50]

Near Milne Inlet, the seal breathing holes become disgusting. How bad it must be to be an animal. [0078 02 at 23:50]

An ore carrier loads up at the Milne Inlet port of the Mary River Mine on north Baffin Island.

[Nunatsiaq News, (2020) Greenland wants a say in Baffinland's expansion plans. Apr 20. (Photo from Baffinland]

What many Qallunaat fail to appreciate — regardless of what is or is not known about the biological effects of iron ore dust deposited on land, in water bodies, on vegetation or on other species — is the impact that is recognized as a result of Inuit culture and the way in which Inuit regard other species. Other species are seen, not unlike themselves. They give birth, travel as Inuit did historically to locations where food was to be found, play, protect and show their young how to hunt.

The sight of other species covered in and coping with iron ore dust is offensive, disturbing and insulting. It is as insulting and disturbing as would be the case if someone opened the front door of their home and found their living space covered in iron ore dust. Other forms of life deserve the same respect shown to human beings. The concern expressed by hunters and Elders is indicative of these relations and feelings.

The dust has had a huge impact. It made animals reddish. Foxes — even ptarmigan — would become red on their bellies. Ptarmigan that had gotten dust on them there were found at Igloolik. They were red from dust. It was obvious they came from there. It has had an impact. Yes! That we know. [0059 06 at 11:13]

When winter arrives all the sea ice near Milne Inlet will become reddish. The seal breathing holes near Milne Inlet will be red, red, red! The inside of their dens will be red. That is how they live in dens up there now. [0059 06 at 11:13]

Dust Covers a Freshwater Lake near the Mary River Mine

(The person contributing this photo did not wish to be identified)

There are also implications for use of snow and ice covered with iron ore dust; for drinking water when out on the land or sea-ice, and travelling. What follows are observations by one woman, travelling to and from Igloolik with her husband, who was participating in the annual Nunavut Quest race. Access to Igloolik involves traveling, for part of the journey, the valley and route followed by the road in trucking ore to Milne Port from the mine at Mary River.

This spring we went to Igloolik during the Nunavut Quest race. On our way back from Igloolik, we were still deep inland before we reached a place called Inukturvik. The snow became noticeable. It was brown. It wasn't white at all. It got disgusting, and as we got closer it got worse. That you would drink from it, eat the snow is disgusting. It's unhealthy. As we got closer and passed by Mary River the snow was all brown; as brown as this, darkish like these, the legs (qamiit)*. It was darkish. It's horrible snow.*

And then we arrived at Milne Inlet and reached the sea ice (by way of) *its river. The ice was postmarked and didn't even look like sea ice. We only stopped for a little while, then made our way here.*

It is bad now. Like up there inland, if someone's snow machine broke down and they only had the one snow machine, and you can't use the snow there for drinking, what will they do? They will get very thirsty. If they don't have shortwave radios no one will know about them. These matters are very bad. And we are the closest community and we aren't getting any financial assistance. And so, we have no wildlife anymore, but we are not getting any support whatsoever! That is the situation we're in. And only a few people are employed (at the mine)*. That we are being polluted is the only thing we know.* [0078 15 at 24:14]

9. Cultural and Personal Impacts

This section of the text deals with concerns often underplayed, or given too little attention in the hearing process dealing with proposals, like the one put forward by Baffinland. This is not only true for the Nunavut Impact Review Board. It is an observation that applies to the conduct of Environmental Assessment conducted anywhere in Canada.

The problem is conveyed by the language of assessment. The term 'environmental assessment' is commonly used in relation to the impacts of development projects. In the hearing process, and with regard to the research put into preparing for a hearing, effects on the physical environment receive by far the most attention, resources and effort. Social, cultural concerns and economic well-being get too little attention. It is assumed that providing jobs is a benefit that goes unquestioned. The social, cultural and economic impacts are largely assumed to be positive. The social and cultural implications are seldom researched in any significant way. This is easily confirmed by attention to the content of the incredible volume of material prepared by Baffinland, and submitted to NIRB in the hearing process.

The lack of attention given to social, cultural and socio-economic concerns is hard to justify. Terms of reference, spelled out for the Nunavut Impact Review Board in the *Nunavut Agreement* do not give priority, or a particular emphasis, to bio-physical effects. Section 12.2.2 states that a primary function of NIRB shall be: "(c) to review the ecosystemic and socio-economic impacts of project proposals".[81] It is unfortunate, given the mandate that the word "culture" — as in 'cultural implications' — does not appear in the wording of NIRBs responsibilities. Implications for the preservation and respectful development of Inuit culture deserve far more attention in the hearing processes conducted by NIRB than the evidence suggests, is currently the case.

While the observations found in this section have been implied and in some cases, stated in other sections of the

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81. *Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada* (The Nunavut Agreement). (1993) Article 12, Part 2, Section 12.2.2.

text in relation to other subjects, in this section we have focused specifically on the social, cultural and personal implications of the loss of narwhal, and other related impacts associated with the activities of Baffinland. The following observations, comments and concerns expressed by Mittimatalingmiut make it clear that the implications of development for culture, health — including mental health —and socio-economic well-being, deserve more attention than they received in dealing with the Baffinland Phase 2 Proposal.

Given the implications of Baffinland's Phase 2 Proposal for Mittimatalingmiut, the focus of this section is very much on their experience, observations and concerns.

9.1 Access to Country Foods

The nutritional and cultural significance of narwhal raise the issue of food security in relation to the current status of narwhal in Eclipse Sound and Milne Inlet. The following observation on decreased access to this country food is concerning. For obvious reasons, local hunters and Elders feel disappointed, angered and anxious.

> *Well, we're absolutely experiencing food insecurity for our traditional foods compared to the 1980s, for sure. Today when someone catches a seal or fish and invites people to pick some up, some of us don't get any and don't get to eat any at all. We're short of char now, the seals have almost all left now, there is no more narwhal now. Even the birds have even left the area, the geese, for whatever reason. We are definitely experiencing a shortage of our traditional foods today.* [0063 04 at 17:18]

The following is taken from a conversation among Raigilie Ootook, Rhoda Koonoo and Qamaniq Sangoya in Mittimitalik.

> *Qamaniq is our only source of that food now, the only one who can catch a narwhal* (for us)*.* [0065 22 at 35:48]
>
> *That's the case for me. When someone who caught a narwhal and didn't want to deliver some, they go on the radio and tell people to pick some up. And when you do go you're too late and the maqtaaq is all gone. Because I'm so slow, the pieces are quickly grabbed up.* [0065 23 at 36:15]
>
> *That's true, they run out quickly They get them all very quickly.* [0065 22 at 36:32]

A shortage of maqtaaq has implications for feelings and social relations in the community as hunters barely get enough maqtaaq to meet their own family needs, and often don't have any to share with others.

> *For that reason - for suddenly rushing into it and operating - we're now going through hard times. Today we're not eating much narwhal skin* (maqtaaq)*. We're not getting narwhal meat for caching. We don't have any meat at all for drying now. Today some of us are being cut off; especially those of us without anyone to hunt for us. That is the situation we're in. We're not eating hardly any narwhal skin.* [0063 17 at 25:14]
>
> *All the community members eat meat. They can all eat narwhal skin and seal meat. It's healthy for their lives. This situation* (a significant decline in the number of narwhal summering in Milne Inlet and Eclipse Sound) *definitely needs to be corrected. It definitely deserves work to correct it.* [0070 01 at 06:07]

We're absolutely experiencing food insecurity for our traditional foods compared to the 1980s. For sure! Today when someone catches a seal or fish and invites people to pick some up, some of us don't get any, and don't get to eat any at all. We as Inuit, our lives are our culture. We were taught growing up to co-operate with others and keep trying to do that. But we are definitely running out of food. There isn't enough to share now with our traditional foods. We're short of char now. The seals have almost all left now. There are no more narwhal now. Even the birds have left the area; the geese, for whatever reason. We are definitely experiencing a shortage of our traditional foods today. [0063 04 at 32:00]

The decline in the number of narwhal in Milne Inlet, Eclipse Sound to an estimate of 2,595 in the summer of 2021, and 4,592 reported as a modest recovery in numbers in 2022, doesn't compare with the 12,039 narwhal resulting from the aerial survey of 2016, shortly after Baffinland started shipping ore.[82]

Today, it's very regretful with so few wildlife. My husband and sons have been out hunting all summer long. They've been hunting and catching a bit of game. The last trip they were on, they caught a bearded seal. Someone caught a seal too. They caught an eider duck. That was how their trip turned out.

Last year no one cached narwhal meat and skin at all. We were impacted all winter. The fermented meat we would have eaten during winter — the game we would have caught during summer — was not there. So, all winter we were impacted. It was only because we were given some fermented meat from another community that we were able to have some this winter. This summer I don't think too many people cached meat, and that will impact us all winter again. [0071 03 at 31:28]

The social, cultural and health implications of a shortage of narwhal are captured in the following quote from a well-known hunter and advocate for Inuit rights.

There needs to be an improvement somehow — urgently. There is need now. Many hunters, by not catching game, are facing harder food insecurity. There is food at the store. We can buy some. That's okay. But when Inuit are raised on traditional foods, they are in a situation of more craving for those foods. You're missing out when living off store bought food; when you're used to traditional foods. Your body is missing out on nutrients. That is not fair. When you haven't eaten seal meat for a while, you even get sick quicker; be it caribou, char or narwhal. Yes, that is the situation. [0071 03 at 28:27]

The absence of narwhal in relation to food security was noted in one way or another by every elder and hunter interviewed. This is not a simple longing for the past, as revealed by the following comment about use of the internet in discovering different ways to cook maqtaaq.

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82. WSP. (April 27, 2023). Marine Mammal Aerial Survey Program. Baffinland Iron Mines Corporation. p. iii. WSP purchased Golder and Associates in 2021. Golder had previously conducted narwhal surveys for Baffinland. WSP was once called Genivar, a Montreal-based engineering consulting firm. Between 1993 and 2006, it acquired over 30 other firms in its field and subsequently, a large British firm, WSP. This made it one of the largest engineering consulting firms in the world. Its primary activities are providing engineering and development advice to the oil and gas industry, industrial development projects, and the mining industry. The focus of this division of WSP on the socio-economic and environmental implications of mining interests that constitute a primary source of its revenue is a combination of activities that deserves attention. What might we expect from results of research conducted within this organizational and business context?

Yes, well back then when we didn't really have any outsiders, we didn't really follow other recipes. Today we are learning about other cooking styles from the world's people. We are starting to copy them. When we now have the internet and Google today, we are better able to cook maqtaaq and the meat in different ways. We can make a stew or fry it. [0063 04 at 12:35]

"2000 Salmon" in Seine, Salmon River, Pond Inlet, July 18, 1927.

Photo by Leslie Livingston. Source: Library and Archives of Canada ID 3846450

What Mittimatalingmiut are experiencing is a noticeable change in the availability of all species that they depend on, of relevance to food security. The cumulative effects of industrial development and climate change are notable in relation to these important observations.[83] The result is considerable hardship.

And this summer we've had to search very hard for them, that's the only way we hunt narwhal now. And if we hear something, if someone says something we will be on our way there in fast boats. That's how hard we're working now, that didn't use to be the case. If someone caught a narwhal there would always be other ones. Someone will catch one too. It is never like that now. Even if the narwhal are far away anywhere we try to go after them quickly now, even if they're very far away. This has become a hardship for the community members of Pond Inlet. [0067 18 at 44:32]

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83. Cathyrn Clark Murray, Selina Agbauyani and Natalie C. Barr. (2015). Cumulative effects of planned industrial development and climate change on marine ecosystems, *Global Ecology and* Conservation, Vol. 4, 110-116. Very little research has been done on the implications of cumulative effects for Arctic environments.

9.2 Food, Culture and Implications for Mental Health and Well-Being

While much of what has been cited in this text deals with the physical health implications of a decline in narwhal and other species, the implications for mental health and well-being are also important. This was noted by hunters and Elders from Mittimatalik, most affected by a declining number of narwhal, as well as caribou. Inuit history is one of loss and at times, feelings of hopelessness.

> *How we would survive was hopeless. We as Inuit use these animals as food. We can't survive on southern foods only. I can't survive on them only. It felt hopeless as to how I would survive. How would I be able to have a dog team. I have been impacted by these things.* [0058 19 at 04:34]

The loss of wildlife, attributable to industrial activities like those associated with the Baffinland Iron Ore Mine and the shipping of ore through a Marine Conservation Area — along with climate change — are sources of considerable anxiety for Mittimatalingmiut. There is considerable anxiety among Mittimatalingmiut in contemplating a future where wild game is no longer an important part of both the diet and the culture of the community.

> *Hunting is very important; going out on the land. For a healthier body and mind, not just being idle, it is better. And what we catch supports our food security and is healthy for the body. The youth who hunt more are more mature and not committing crimes like others who just stay in town. That it is very beneficial that way, I know about.* [0073 16 at 03:03]
>
> *I grew up in Arctic Bay and Pond Inlet and began to mature in Pond Inlet. I grew up with a father who hunted very much, and my mother was very skilled at working with traditional foods. Ever since I can remember I went on trips with hunters, right up to today. This is absolutely in my blood, hunting, camping, traveling. When I don't travel my body and mind become uncomfortable. …This was the kind of life I grew up in.* [0073 16 at 00:14]

There are serious implications for Inuit culture and ways of being of a loss in wild game and the lifestyle that goes with hunting and 'being on the land'. Loss of culture has already taken a toll on Inuit culture and well-being, reflected in a high suicide rate, especially for young men, and social problems related to domestic violence, substance use, rates of incarceration, depression, anxiety and cultural confusion. In relation to industrial development, changing lifestyles and the social, cultural and personal challenges, these deserve far more attention than what they received in the NIRB hearings for the Baffinland Phase 2 Proposal.

> *I don't know what we will do. The future is hard to anticipate. Survival is dependent on wild game. We Inuit are unique. We aren't the same as Southerners. Those of us who live in the Arctic, our dependence on game is entirely different from their lifestyles. We Inuit are unique, surviving on game. We do live on store bought foods, but we eat a lot of meat. And many people eat meat; people who can eat meat.* [0077 15 at 07:07]
>
> *There are many Pond Inlet people who are hunters. Their food containers don't have any contents at all when they come home. They don't even see the game they're hunting when they return home. That I'm not the only one feeling negative things is obvious of something missing. That is impacting the mind. This is bringing on a hardship.* [0073 16 at 19:31]

A serious problem, with mental health implications related to Baffinland and impacts on narwhal, is 'feeling helpless' or powerless. Powerlessness has received increasing attention in the field of mental health and is associated with anxiety, stress and depression.[84]

> *I know Baffinland or any other mining companies they're not going to stop once they found what's buried under the ground and I know I'm powerless to do anything. With Baffinland and they word there are always twisting and it's kind of frustrating especially knowing that you can't really do anything about it.* [0074 21 at 17:43]
>
> *The mining company and QIA get huge amounts of profits the people who live in the communities here are losing their livelihoods instead. For that reason you have an issue, a hardship and anger that you being to feel. This situation seems to be of urgency now, the situation we're going through.* [0073 16 at 19:31 2nd part]
>
> *When I go up there, that there was no narwhal I wasn't happy about after. When I would see narwhal there, I used to be overjoyed in the past. I was glad that there would be narwhal and so I would wait for them even more. After Baffinland arrived and you go up there, there is nothing; no seals, no bearded seals. It even makes you want to cry instead. It makes you feel like your soul is crushed* (tussuli)*. It would make you feel that way, not just me, other hunters have felt that way.* [0058 19 at 10:48]

9.3 Economic Impacts

While it is common to assume that resource development projects provide beneficial economic opportunities for Inuit, there are other costs associated with these activities that deserve more attention in a hearing process.

9.3.1 Increased Costs of Hunting and Lost Opportunities

In the case of narwhal hunting, the relationship between the costs of hunting and the reward has changed for Mittimatalik hunters. The result is that considerable effort and economic hardship often produces little by way of results. The following quotes from hunters make this clear.

> *I've been out hunting almost all summer by boat and used up a lot of gasoline, a lot of supplies, I've spent a lot of money. I come home empty handed, and I'm not seeing any support coming my way. As I keep losing more, I feel inside that I'm getting madder. For example, you tell Baffinland something and they won't hear you.* [0073 16 at 16:44]
>
> *But today there are very few narwhal. They need to travel far distances to hunt them from Bylot Island or elsewhere. When they do catch narwhal, we don't have the meat to make dried meat anymore. Yes, if there was a narwhal on the beach and someone had brought up some meat, then we all can make dried meat.* [0063 04 at 17:18]

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84. The most extensive and recent treatment of this subject can be found a book by Paul Gilbert. (2017). *The Evolution of Powerlessness.* London and New York. Routledge. Powerlessness deserves more attention with regard to Inuit experiences with colonialism, its prevalence with regard to current situations and circumstances in which Inuit find themselves, and its relationship to high rates of suicide.

Frustration and anger are two emotions that can be added to the sense of helpless noted in what was discussed above.

> *It is regretful when we go to a place with no narwhal when it seems there would be narwhal. When there are no narwhal. Even when ships are still they make a lot of noise, that the narwhal had fled is regrettable. We use a lot of money but it can't be helped, there's nothing we can do about it, I guess. Frustrated, angry and it's very hard to explain I know they should be there but they're not there and the cost of that.* [0074 21 at 17:17]
>
> *Absolutely* (the narwhal decline since 2008)*. You could hardly see any. It became a waste of time to wait for them. When you go up there to hunt you lose money, the money spent on food and gas will just be wasted so it looks like not a lot of people go up there now. Well, people have cabins up there, so I would use them to know about the narwhal situation, as they aren't able to stay in one spot.* [0058 19 at 32:30]
>
> *Up to today, this summer I hardly saw any narwhal, I caught a few that I lucked onto. We use huge amounts of fuel to go to many places. For example, when really hunting we have several boats we need a certain amount of fuel as outboard motors guzzle gas. We buy several 45 gallons of gas, we are losing a lot of money because of them.* [0069 14 at 35:59]
>
> *Spending lots of money on narwhal hunts now but the last couple of years I hardly got anything didn't even catch it in last year of my son go one. This year's, one week camping trip is almost two grand* ($2000.) *or so, and coming home empty handed, it's not the best deal in the world. Right now it's very hard to see them or catch a narwhal, but ten years ago, I would catch like twenty in one summer and twelve the next.* [0074 21 at 13:20]

The loss of narwhal is also the loss of income from tusks. The price paid for tusks depends on the length. Prices vary, but a tusk over 7 feet in length can reward a hunter with $12,000 – $15,000, depending on the condition, with double tusks often being sold for more than $50,000.

> *We are now always catching not enough seals and narwhal after Baffinland came, that is noticeable. We have lost so much money now through tusks, narwhal skin.* [0058 19 at 27:45 2nd part]

9.3.2 The Cost of Dog Food

The importance of dogs in the traditional lives of Mittimatalingmiut and Ikpiarjumiut has previously been noted, as has the cost of dog food. It is currently (2023) about 3 times what it costs in southern Canada. The loss of narwhal has implications for those keeping dog teams, especially in Mittimatalik. Dog teams are still important and Mittimatalik and Ikpiarjuk have dog teams. In Ikpiarjuk, the Nunavut Quest is an annual dog team race from the community, south to Iglulik. Dog teams are important to hunting, tourism, expediting and transportation.

> *If the wildlife actually all run out, I don't know what we will do. It will be regretful if the dogs die off; if they starved it would be regretful. The poor dogs! When they're your dogs and starving, it will be terrible. They do eat southern dog food, but they aren't used to it as they're not made like southern dogs. They're used to eating meat, so they would get tired of store-bought food. In the near future, I wonder how it will be next year. Maybe all the game will be gone. Well, maybe it will be harder to hunt them, not just narwhal.* [0078 02 at 07:07]

An inability to feed dogs with meat obtained from narwhal hunting is disturbing to those who are working to keep Inuit culture alive.

> *I noticed this summer* (2022) *they* (dog team owners) *didn't have enough dog food. Men were going out in rough seas trying to catch game for dog food. I saw this happen this summer. Dog team owners too are the ones who keep culture and traditions alive the most. When they ran out of dog food, you felt sorry for them and wanted to help them. When they're impacted that much, and not getting anything back or any support, no one will give them money. The mining company and QIA get huge amounts of profits. The people who live in the communities here are losing their livelihoods instead. For that reason, you have an issue; a hardship and anger that you begin to feel. This situation seems to be of urgency now; the situation we're going through.* [0073 03 at 19:31]

Without access to traditional sources of meat, the cost of feeding a dog team is prohibitive.

> *Our dogs ran out of food. They were completely out of food, so the 3 bearded seals they caught will be used for dog food now, as we have two individual dog teams, owned by two men. They need to live. Like people they need to eat too. They don't necessarily need to eat daily, but we people need to eat daily, more than once a day. The dogs aren't like that, but they eat a lot of meat. They eat meat. They need to live too.* [0078 02 at 07:07]

9.4 Implications of a Loss of Narwhal for Inuit Culture and Identity

The loss of narwhal in a community like Mittimatalik has serious implications for Inuit identity, culture, and social relations.

9.4.1 Culture Loss

Loss of culture and identity is another topic that evokes feelings of anger, frustration and depression. This speaker regrets the absence of young people in active participation on committees dealing with issues like the preservation of narwhal. Young Inuit, like himself, don't participate more actively in matters affecting the future of Inuit culture

> *I've been mad for a while; we young people just haven't been able to say anything. Men talk with each other all the time along with people younger than I am. People a little older than me don't speak up. They don't belong to committees. It actually gets you mad now, we used to have customs, we would ferment meat and skin for food during winter to be eaten at Christmas… we would give some to our friends, relatives to people that wanted some. We did all these things, we don't do them today.* [0067 18 at 32:06]

Food security and culture are intimately linked. It is both the experience and meaning of hunting and learning

to hunt, as well as the way in which country foods are shared and experienced by Mittimatalingmiut that is of considerable importance. Food is a mediator of social and cultural relations essential to family and community relations. The role narwhal meat can play in "working together" is an important observation made in the following quotes:

> *It is our traditional culture to share. As Inuit we have a custom where food is important. For example, if we don't see our relatives we invite them for a meal to strengthen our bonds, treat them nice, and love them. If the family gets together, they will be able to work with each other better. And that is a long time tradition for Inuit living their culture. Nobody was to be excluded at all back then. For that reason, our Elders would invite people to share their food with them. Even the youth would take part, as it makes their lives calmer. Food was a huge priority for them in the past, as it was the only means of survival.*
>
> *So in that way it was important that the food was respected and celebrated so that people would go home calm. Food was a huge priority for them in the past, as it was the only means of survival. Back then our parents didn't really rely on store bought foods growing up. This custom needs to continue; that food be used to calm people down — that it needs to be visible. But due to the shortage, "My children need to eat too", is all some hunters can say, although they want to share. Our traditional food today is obviously not enough now, ever since the mine began.* [0063 04 at 36:40]

A more elegant and insightful statement about the importance of country foods to social relations and social well-being in Mittimitalik is hard to imagine.

It is common for middle-aged and older hunters who recognize the social and cultural significance of hunting, to make maqtaaq and narwhal meat available to anyone in the community who needs and wants it.

> *It's only from the HTO's freezer that some of us buy maqtaaq to eat. We aren't given so much good maqtaaq anymore; like the ones with the thinner hide. You do hear of people asking others to come, pick up some maqtaaq. But we're no longer getting what we want; some of us. When someone has sold some maqtaaq to the HTO, we rush there to try and get some maqtaaq. That is our custom now.* [0063 04 at 06:42]

9.4.2 The Transmission of Knowledge to Future Generations

The hunting of narwhal and food preparation played, historically, an important role in the development of children. The loss of opportunities to learn the skills and relations associated with this essential aspect of Inuit culture likely has no small role to play in the difficulties many Inuit youth are currently experiencing.

> *If we're not catching any narwhal, we're not teaching the kids that much. My parents or my father's and his friends catch up to a dozen or so, and cache a lot of it. But now we're lucky if we catch one or two maybe four, tops, for weeks. So we are extremely lucky to catch one or two at least. For that, it's not really worth caching the meat, because the whole town wants maqtaaq.* [0074 21 at 35:30]
>
> *It's been several years now — well — as my children were growing up, they always came along if the weather wasn't too cold. My son keeps coming along even during the very cold months, and that is how he is growing up. It's been some years now that the education my son would have gotten, he has had less of now. The things he would have seen he is seeing less of as the wildlife move farther away. That's*

because the area isn't being habited anymore, especially with marine wildlife. [0073 03 at 04:51]

Narwhal not only contribute to community cohesion and relations, they play an important symbolic and ceremonial role in family life. Here are a few quotes that illustrate the cultural importance of narwhal to family relations.

It (loss of seal and narwhal) *has a huge effect* (on family), *especially to my grandchildren. Caching meat, my children experienced that more, since they became aware of meat caching. My grandchildren began learning too. But we're hardly catching anything. They're gaining a little experience; the knowledge they would be gaining also for the skins of seals and the meat, these things along with making dried fish. It has a definite impact on the teaching we would be providing, due to the lack of almost all game. In that aspect, it has a huge impact.* [0070 01 at 01:25]

If the wildlife will keep diminishing at this rate (our traditions will be lost). *They* (youth) *won't be learning the traditions. Those who don't know the traditions won't learn. They won't be learning, and boys won't learn about butchering narwhal if the narwhal will keep on decreasing.* [0078 02 at 27:56]

10. Lessons Learned: Conclusions and Recommendations

Recommendations presented by Elders and hunters in Mittimatalik and Ikpiarjuk are presented in this final section of the text. Recommendations reflect the very different situation of each of the communities. Understandably, many of the recommendations by Mittimatalingmiut address the presence of Baffinland and its activities.

However, the recommendations and observations advanced by hunters and Elders in Ikpiarjuk may also have relevance to other aspects of the management and consideration of narwhal in Mittimitalik. They suggest what conversations and enquiries with all hunters and Elders might look like. Therefore, observations and recommendations made by them are included in this section as helpful to thinking about 'ways forward', by way of policies, practices, hunter education and regulation.

10.1 Recommendations from Mittimatalik Hunters and Elders

10.1.1 Subsidies/Equipment for Hunters to Travel Further in order to Hunt

Evidence suggests that narwhal have vacated the waters of Milne Inlet and Eclipse Sound, the result of a soundscape created by shipping that has interfered with their ability to feed, breed, and 'relax'. IQ has also identified behaviour that suggests that narwhal are stressed and skinnier, unhappy with their circumstances and no longer enjoy time spent in these waters. Hunters note that narwhal have gone elsewhere, something substantiated at the present time by aerial surveys conducted on the population in Admiralty Inlet, and observations and information received by hunters reporting on the sighting of narwhal in locations along the Arctic coast as far west as Kugluktuk.

Hunters have requested that they be allowed to travel to these locations in order to hunt. This is a complicated matter affecting permits, and would require negotiation, co-ordination and the involvement of Inuit currently living and hunting in these locations. The most immediate and feasible response to this request would be to permit hunting in Admiralty Inlet by hunters from Mittimatalik. Logistics — transportation and access to equipment required at another location — are concerns related to this solution.

> *The animals aren't gone from far away places. If the places far away will still have wildlife, if we're given the ability to go far to hunt, if there are assets like a big boat — something —or by aircraft … Once there are actual benefits in place — and I will be working to that end — that's where I stand.*
>
> *It's not that I'm very mad, but I don't like what's happening. If there is going to be a project anywhere, although the community's responsibilities have changed, they shouldn't have to become very poor. Whatever foods they need, they need assistance continuously. For example, here, if they received subsidies, that would help very much; if the communities are able to get subsidies and money for everyone to be able to buy food. If that were the case, and I want to work on fixing this matter, that the people not just have things taken from them, but they themselves too need to get things. And that is the situation we're in now.* [0069 14 at 4:56]

10.1.2 Encourage Sharing

The problem of feeding dogs was noted by a number of those whose observations have been recorded in this text. The importance of not wasting the narwhal meat and its importance in feeding dogs are noted. This suggests that some attention might to be directed to this issue in both Mittimatalik and Ikpiarjuk and in any initiative to train and orient young hunters.

> *But some men who don't have dog teams give too. They encourage others to donate the meat. When meat is removed, thick blubber is included. So it will be good dog food, not just plain meat. It must have blubber.* [0078 15 at 18:59]

10.1.3 Baffinland Should Use Another Shipping Route

Research for this report on narwhal and Inuit Qaujimajatuqangit was conducted before NIRB made a recommendation to the federal government that permission for Baffinland's Phase 2 expansion not be granted.

Baffinland has indicated that it will now proceed with development of the southern rail route to Steensby Inlet. However, the cost of building this railway is considerably more than what a railway to Milne Port would have cost. Whether or not Baffinland Iron Mines will be able to raise enough capital to undertake construction of this railway is questionable.

Following rejection of Phase 2, Baffinland approached the Nunavut Impact Review Board with a request that the permission it had originally been given to ship an additional 1.8 million tonnes, above the 4.2 million tonnes for which it had previously been given approval, be extended. NIRB recommended this to the federal government. This was opposed by the Mittimatalik HTO. Approval was given by Dan Vandal, Minister of Northern Affairs, November 20, 2023.

Baffinland was given permission to proceed with building a railway south from the Mary River Mine to Steensby Inlet on December 28, 2012. Baffinland's attempts to build a northern railway to Milne Inlet reminded some

hunters and Elders of the history of the development of the mine. A complete history of development of the mine can be found in Appendix 1.

Map of Mary River Mine, Road to Milne Port, and Approved Route of Southern Railway to Steensby Inlet

CBC New North, Feb. 17, 2023

> *I'm just hoping that they will start run to their original plan of Baffinland that was to go through the other side of Baffinland and stop blowing through Eclipse sound.* [0074 21 at 21:48]

10.1.4. Mining Should be Improved Using Inuit Qaujimajatuqangit

Some of those interviewed advanced the conviction that IQ was needed to address the problems and conflicts between industrial activity and environmental preservation while respecting the right to hunt, and Inuit culture. This is a difficult balance to achieve in an industry where meeting the expectations of investors seeking the maximum possible return on their investments, is a consideration affecting the way in which environmental and social costs — in this case, borne by Mittimatalingmiut and Ikpiarjumiut — are addressed.

Baffinland's approach to dealing with environmental and other considerations related to its operations are like all mining companies, affected by risks associated with the industry, and the cost of borrowing money to develop and expand operations. Dealing with the environment and social issues is a cost.[85] These tensions are reflected in the IQ observations made in what follows.

> *All this mining activity has to change. It has to be improved using Inuit traditional knowledge. It needs a lot of work to fix it. [0070 14 at 16:39]*
>
> *It's not that we're totally against mining — all of us. That jobs are needed is well understood. But if it is having too much of an impact, halt it for a while, making adjustments. I want to see that option more. Its*

85. D. Humphreys. (2001). Sustainable development; can the mining industry afford it? *Resources Policy.* 27: 1-7.

impact is already huge. I believe they really need to work on adjusting the project. [0070 14 at 19:49]

Inuit aren't just against projects, mining, etc., but when the wildlife becomes more and more impacted, life becomes impacted too. When the environment is impacted, when the animals are being impacted, changing their habits, Inuit with hunting and travelling in their blood are affected. When this is beginning to change it's not right. I hope mining can continue without us losing our culture. If we're to lose our culture … our ancestors worked hard to survive on game by good stewardship, doing things in a smart manner, making clothes for cold weather, making hunting clothes from wild animal skins. After they fought to survive, this tale of what we're experiencing, because of a mine and losing our culture is not just. There needs to be an improvement somehow — urgently. There is need now. [0073 16 at 28:27]

It seems that is the only way. During a public meeting we tried to tell them we would be impacted with our animals in this way. They don't want to listen at all. They say Baffinland's operations today have no impacts on wildlife. They keep repeating that, and today it is now completely obvious that we are definitely impacted through our wildlife. As that is the situation I would tell the CEO that it's not his culture. He shouldn't be trying to deal with them, and I won't let you out of the house unless you agree to my statements. That is what I would tell him. [0064 17 at 41:09]

I would tell them of the need to properly fix everything. For example, they just jumped in and began to mine. They didn't agree with Inuit, although they tried to say this is happening. They were supposed to have listened to the Inuit. They need to properly work out the details and regarding wildlife. They begin to agree to what is said. Like they need to back up a little bit now. They need to say 'yes' to Inuit. Inuit mean the truth when they speak. They speak the truth when they say we have no more wildlife. [0078 15 at 30:25]

These observations suggest the need to develop a popular (accessible, and appropriate) opportunity for Inuit to acquire a better understanding of the economic and social logic that governs the mining industry, challenges and implications for the environmental (and cultural) protection, and the important interests and concerns articulated by hunters and Elders participating in this research.

10.2 Concerns and Recommendations from Ikpiarjuk Hunters and Elders

Ikpiarjumiut Elders and hunters were asked two questions toward the end of conversations held with them. "What are your concerns or worries about narwhal and narwhal hunting in Admiralty Inlet?" and, "What recommendations do you have for QIA or anyone else involved with the management of narwhal in Admiralty Inlet?" In recording what was said, we have noted contexts within which the concerns and recommendations advanced by hunters and Elders can be more fully appreciated and understood.

10.2.1 Support for, and the Preservation of Inuit as a Hunting Culture

This is a concern related to the well-being of both male hunters and their families. The theme has previously been

noted by Inuit women in studying the effects of mining on women and children in Qamani'tuaq.[86]

> *For me, as a person, narwhal hunting is important. So when we go out narwhal hunting I'll forget about Arctic Bay, the internet — everything — all the stress when we go out narwhal hunting, because we will only be family. That is the most precious gift I get.*
>
> *As a family, when we go out hunting, we're sharing this together. For my husband and other men, they won't talk if there is stress or anything. I notice them when they are out hunting. They will leave all the stress behind. That is what I notice with all the men. If they're here in the community, they will stress more staying home. Seems they are hibernating like polar bears; not doing anything. But if they're out, their minds will be working, making it less stressful, enjoying it with family. That is what is most valuable to me.* [0002 12 at 08:48]

10.2.2 Narwhal Conservation and Hunting at the Floe Edge

The conservation of narwhal was related to hunting practices and changes in the environmental conditions and circumstances under which narwhal are hunted.

> *We need a good leader now. We need someone who we can listen to; an older Elder telling us what to do. We are not listening to them, because the Elders tried to tell us not to get the first ones every year, every year. Nowadays, when younger hunters see* (narwhal)*, they tend to go after them right away without even talking to an Elder.* [0010 1 at 22:02]

An important concern was the attention being paid by young hunters to the wisdom and guidance of Elders.

> *My concern is the younger hunters, not the mammal. As long as we listen to our Elder's sayings I don't think it's going to affect the mammals - narwhal. We also have to be careful not to harvest too much now. Some people harvest too much, and sometimes* (parts of the narwhal) *end up in the dump. Not good. And during spring time, we used to age them - start aging them - like bury them. Nowadays, even when it's got cold, they tend to bury it.* [0010 1 at 29:45]
>
> *We have lots of younger, or even some that are older than me. …We have to tell them to do that more traditional way of hunting. Those are the guys that are willing to listen, not the younger. The younger generations don't really listen anymore.* [0010 1 at 34:00]

Many of those interviewed noted that young hunters are hunting in ways that don't respect traditional practices that older hunters and Elders recognize as being of continuing importance to the way narwhal are treated.

> *Since the last 10 years, or less than 10 years, it has changed a lot. Younger hunters tend to hunt right away.* [0010 1 at 31:33]

One recommendation was that hunting at the floe-edge, early in the season, no longer be permitted. Showing

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86. Karina Czyzewski, Frank Tester & Nadia Aaruaq. (2016). *The Impact of Resource Extraction on Inuit Women and Families in Qamani'tuaq, Nunavut Territory.* Pauktuutit Inuit Women of Canada & the School of Social Work, University of British Columbia (Vol. 1, A Qualitative Assessment; Vol. 2, A Quantitative Assessment).

respect for narwhal as they return to their summer habitat was a concern of hunters and Elders.

> *Regarding hunting at the floe edge in Arctic Bay and Pond Inlet, in the near future that needs to be shut down. We want to have narwhal. If they keep allowing hunting at the floe edge our narwhal will keep disappearing.* [0007 2 at 66:41]

Hunting early in the season off the floe edge is an exercise in using one's tags to hunt narwhal with the most valuable tusks before they are taken by other hunters.

The other concern with hunting at the floe edge has to do with giving the impression to narwhal that they are about to enter unsafe waters. Consequently, they may go elsewhere. Narwhal are seen as thinking and sensitive beings that should be recognized and respected.

> *I think people are wrong when they think animals don't think.* [0010 1 at 25:23]

Another concern is related to conservation. Where a hunter is primarily interested in the value of a tusk, and where a number of narwhal are taken with this in mind, the ultimate use of the rest of the body may be neglected.

> *If I were in charge, the tag, we need to catch several narwhal for the year — for us to be safer— I think the tag numbers need to be decreased, at least for us here in Arctic Bay. Yes, you can make some money from it, but we're wasting food now, as long as we get the tusk. This has definitely become bad. What I feel is that if the tag numbers are decreased, the danger would definitely lessen. That is how I feel.* [0007 2 at 45:17]

10.2.3 Young Hunter Education

Suggestions were made for educating young people interested in becoming hunters. A young hunter education program is currently being developed in Ikpiarjuk.

> *That situation* (education) *definitely needs to happen. But we who have the knowledge only have a short time left. That is obvious. For example, I'm being recorded. Using documents on how animals should be hunted should definitely be written down, on how animals should be hunted.*
>
> *There are mature people who are very capable. I myself can't travel far anymore. Yes, there are people who can teach this. It's only if this matter is learned that it is better. For example, today even little ones are allowed to catch narwhal. I don't know, I don't go see people, but* (a little one) *doesn't know where to place the kill shot when shooting. I don't know why they let them shoot. It was only when we became big that we were allowed to shoot. How to fix that issue? I don't know. I think it's only when we turn 16 that we're allowed to apply for a firearms certificate. Is that correct? We've been allowed to apply, but that rule isn't followed anymore, so it's very weak now. The people are now taking control.*[87] [0007 2 at 34:56]

A hunter talked about his experience with a course offered to younger hunters a number of years ago. The content, as he described it, is worth some attention.

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87. A license is issued by the RCMP upon application. Someone must be 18 years of age to hold a firearms certificate.

During the spring — well, when spring is approaching in April — the HTO are given tags for spring, summer and fall uses in separate batches.

For the younger men who don't have parents to teach them the HTO held a course. I too was a committee member. We made a wooden narwhal. We informed the community members who wanted to take part through radio and other media. We included youth who don't have teachers; who have lost parents. And even those with parents, we taught about the kill shots for narwhal; how they can float, and how they are to be butchered.

There needs to be more courses for community members, for the reason that you can't hunt narwhal willy-nilly — well, all wildlife, especially narwhal. They have to have rules too when hunting narwhal. The rules our late parents learned on how best to hunt narwhal, which they learned, today are now unknown by youth; by the younger people, as of course, they don't have any teachers. There need to be materials created on hunting and boating. There is a definite need for teaching materials. [0012 5 at 51:32]

10.2.4 Concerns Related to Climate Change and Fermented Maqtaaq

Inunaq is created by burying maqtaaq later in the hunting season when temperatures start to drop, and to retrieving the result the following spring. It is important that inunaq not be exposed to sunlight; be wrapped and buried carefully. A failure to do so can result in contamination of the inunaq and the risk of food poisoning – botulism.

This is what concerns the hunter quoted above. As a result of climate change, narwhal enter the inlet earlier in the season than was true historically. Furthermore, the summer period is longer and warmer than it used to be. Burying maqtaaq too early runs the risk of both rot and botulism. Instead of caching the maqtaaq in July, it is, as a result of climate change, advisable to cache it sometime later in August.

(Climate change) *needs to be fully understood, because it isn't as cold anymore. The sea ice breaks up earlier and forms later. We rely on these meats for sustenance. Our daily food - the smell, fat, even polar bear fat - has changed due to climate change. This is actually happening.* [0007 2 at 52:23]

10.2.5 Climate Change, the Health of Narwhal, and Research Concerns

In response to a question as to what effect staying longer in the inlet as a result of a longer open water season was having on narwhal, one hunter made the following observation.

In the fall I think they tend to be skinnier before they leave. Or they might have come from a place — from Kugaaruk — migrating back or something like that, during the fall. [0003 3 at 15:52]

Climate change has multiple implications for narwhal. Climate change intersects with and affects other activities with potential implications for narwhal health and behaviour. These are articulated by this hunter, who ties together anthropogenic effects identified by others.

My concerns are related to natural things like climate change or the ice. When the ice doesn't break up early enough, narwhal will move out of the area, go somewhere else to where it's more open water. So the longer the ice doesn't break up they'll stay off the area too. That is what I'm afraid of. If there are more ships coming in too — like tourist, cruise ships, yachts or sailboats — we don't know what they are

carrying. They might put some kind of device in the ocean if they're activists. If they want to protect the animal, they might put some kind of sounding device in the ocean to scare them off. What I'm afraid of is that. [0004 7 at 32:35]

Inuit have a history of dealing with 'activists'. Their experience is with, and knowledge of, the behaviour of Greenpeace activists in dealing with the seal hunt off the coast of Newfoundland in 1976. This had implications for the sale of pelts of seals caught by Inuit. The price of pelts from seals hunted by Inuit plummeted as European states banned the import of pelts from Canada. This took place long before the *Nunavut Agreement* of 1993, and the creation of the hunter support programmes currently in place to assist Inuit hunters. The sale of seal pelts was critical to Inuit food security, and Inuit as a hunting culture.

In June of 2014, Greenpeace apologized to Inuit for the effect its campaign had on Inuit hunters and Inuit well-being.

10.2.6 Noise: Narwhal, Cruise Ships and Depth Sounders

Hunters and Elders expressed their concerns about noise and its impact, not only on narwhal but on all wildlife. Similar concerns have been expressed by Mittimatalik hunters. The following comments relate to the matter of depth sounders discussed in Section 6.1.2.

When they have placed objects in our near waters it is impacting the wildlife. All wildlife live in quiet places. They grow up in completely silent environments, regardless if they're marine mammals or land animals. They don't live in noisy places. They live in very quiet places in complete harmony, as they have to physically get at their food sources, and they will eat.

The things they now place close by in the ocean, they say are recorders. Some of them are used for research purposes. And many numerous ships come to the Arctic. We were told about their depth sounders at a meeting. Their depth sounders emit noise. They said they emit sound constantly to check for depths. So many ships are emitting noise. I think this is impacting wildlife and narwhal in some ways. Wildlife live in very quiet places. [0012 5 at 29:54]

Concern was raised about narwhal leaving an area in response to noise.

The animals are conditioned so that they don't want to hear noise pollution all the time. They tend to leave the area if they keep hearing noise. Some do habituate, but those that habituate tend to be fewer. Some can't habituate. For any wildlife, many don't habituate. Yes, they will leave the area. They are leaving the area in Pond Inlet. When wildlife keep hearing noise they leave the area; all wildlife, regardless of species. [0055 8 at 40:28]

In response to the effects of noise, noted previously as one of the concerns of Ikpiarjuk hunters and Elders, it was suggested that limits be placed on visits by cruise ships; something that has recently been put in place by the Hamlet of Mittimitalik.

My opinion is that I would want the cruise ships to be stopped if that were possible. They travel everywhere, and don't go to do anything. If they were stopped I would be okay with that. [0002 13 at 34:50]

10.2.7 Narwhal Numbers

Concern was expressed over the number of narwhal and the relocation of narwhal in light of changing environmental conditions.

> *I don't think the narwhal will decrease in numbers, but they will go to other places now and then as they are wildlife. It's not that that they're dying off. They move to other areas as they are marine mammals. It's their home. They will probably move off to other areas, but I don't think they will decline in numbers.* [0006 11 at 68:06]

Concern was expressed about the way in which research scientists gravitate toward numbers, with the fear that their lack of attention to the knowledge of local hunters might result in policy decisions based primarily on numbers uninformed by Inuit knowledge. The following comment was made by a hunter who has worked extensively with Qallunaat researchers.

> *Once the scientists with their numbering — they see the numbers are dropping — right away they start making rules. "No. Your quota is now 50 from 100." No, we don't want the scientists — whoever is responsible for the quota — to jump in and assume the worst right away. Wait for the Inuit to tell. The Inuit hunters, they know what's going on.* [0004 7 at 32:35]

10.2.8 Baffinland and Resource Development

When asked about his concerns for the future, a young hunter stated the following, focused on his concerns about the effects of iron-ore dust on marine mammals and other species, and the need for testing. This is also a major concern of Mittimatalik hunters.

> *Maybe get more samples and see if Baffinland … well Baffinland has so much dust that goes to land and ocean. It seems like* (marine mammals and other species) *are affected by that. Getting more tests would probably be the answer if the iron is affecting the mammals. There are narwhal, seals, harp seals, bearded seals, arctic char, codfish, and bowhead whales. Orcas are not here for a long time. They just come by a little bit; not for long. Then they will probably go to a different area. All those mammals, if they can get tested more than usual, this would probably give the answer if* (dust from mining operations by) *Baffinland is affecting the mammals.* [0003 3 at 17:41]

This hunter was asked if there was any evidence of dust in Admiralty Inlet. He responded with;

> *On the ice here we see it a little bit.* [0003 3 at 18:59]

10.2.9 Training and Monitoring by Guardians

The following suggestion supports the work of guardians, and suggests that more training and more work done by guardians is important given the threats to narwhal that are now present in locations like Admiralty Inlet.

> *If we could record that somehow, with the Inuit hunters voluntarily giving their information to whoever is collecting the data, over time we could tell this was the cause of that. We could tell what was going*

on in that area; what changed. Why are the hunters catching less now? What was around that area? We used to catch them here, what is happening this year? Is there any ship that passed by? We need to figure out if the cod are not feeding there anymore. These are very difficult questions to ask. They're (narwhal) *in the ocean. We don't know what they do in the ocean.* [0004 7 at 41:36]

The observations made by one hunter on the conduct of western science in the study of narwhal and narwhal habitats are both insightful and worth serious consideration.

Well, (the results of scientific research) *don't always match the information in Inuit traditional knowledge. Since Inuit were born and have lived here through its years, they are pretty aware of the truth. But scientists only believe in what they learn* (in school). [0055 8 at 40:24]

The hunter used the following example to illustrate the importance of Inuit experience when it comes to the question of whether or not narwhal in Admiralty Inlet constitute a distinct population. He makes the point that they are not.

Scientists also say the pods that go to Greenland aren't from the same population as those that come here. That time we met in Nuuk, I think it was in'68, I asked a question (of the scientists), *as they don't use guns in Greenland. Don't you see narwhal with scars on them?* (In waters such as Admiralty Inlet) *No, we do see them. So it's obvious that they* (narwhal) *go anywhere.* [0055 8 at 30:50]

The importance of involving and employing Inuit in any and all research was emphasized.

We want research projects so we too can be a part of them. They say look through the internet and you will see. I, as an Inuk, am not able to look stuff up quickly. [0005 10 at 52:06]

When I became chair (of the HTO) *we used Inuit knowledge for a caribou study, and we used skidoos for the work. This was a great set-up. For Inuit to be involved here I think would be convenient. They are our wildlife.* [0005 10 at 64:53]

10.2.10 Formalizing Advice Given by Elders

The point was made that checking with Elders, and relying on their advice, are critical to successfully relating to narwhal in Admiralty Inlet. Elders are important to determining the status of narwhal. Bringing Elders together on a regular basis for this purpose is what is implied by the following observation.

We want to know what is happening with wildlife, all wildlife. We want to know beforehand what is going on, and not suddenly find out. I think some of our Elders know all about what is going on. The Elders are very educated. They've been alive for a long time, so some Elders are able to predict things dead on. [0005 10 at 47:12]

10.3 Summary of Key Recommendations

The following are key recommendations based on ideas and suggestions and concerns put forward by hunters

and Elders participating in this study. While narwhal are the focus of this study, the following recommendation deal with concerns both directly and indirectly related to what is currently and likely to happen to narwhal populations in both Milne Inlet/Eclipse Sound and Admiralty Inlet.

These recommendations also apply to the several Inuit communities of Foxe Basin where the Steensby Port and the railway is planned to be built in the near future. These communities will likely experience very similar environmental impacts, as well as personal, cultural and economic challenges, as ones experienced by Mittimatalingmiut with Baffinland mining activities.

- **More attention and resources need to be directed to the education of young hunters.** This should not be restricted to the hunting of narwhal. It should also focus on training young hunters as well as experienced hunters for assuming responsibility for monitoring narwhal and other species affected by industrial development.
- **Inuit should take over and be entirely responsible for the research important to adaptive management.** What adaptive management is — its strengths and limitations in dealing with project effects — also needs to be taught. This is relevant to hunters in Ikpiarjuk as well as Mittimitalik as an increase in activity related to resource development can be expected in relation to the devolution of lands and resources to the Nunavut Government.
- **Attention needs to be paid to education directed at any and all Inuit — including students in institutions like Nunavut Arctic College — in better understanding the resource development industry and resource development companies, how they operate, how they are owned and managed, and what this means for environmental research, protection and regulation.**
- **NIRB needs to be encouraged to pay more attention to the social, cultural and personal costs of resource development.** NIRB needs to ensure that staffing includes individuals who understand social, cultural, socio-economic and the personal costs associated with resource development and the importance of IQ in researching and documenting these effects. These costs, associated in this case with the loss of narwhal, were noted and given considerable attention by hunters and elders. They must receive more attention in hearing processes going forward. NIRB needs to ensure that independent and credible research is conducted in relation to these concerns.
- **Attention needs to be given to the capacity of HTOs in dealing with the content and volume of material submitted to the NIRB and of critical importance to their interests and ability to participate in a fair, equitable and meaningful way in technical committees dealing with terrestrial, marine and social concerns related to resource development projects.** HTOs were overwhelmed with the volume of material that needed to be reviewed in order for them to participate fully and effectively in the hearing process. This is a problem that needs to be addressed.
- **Communities, community groups and associations should be funded to conduct research on socio-economic, psychological and the cultural consequences of resource development projects.** This data and information is essential to a just, fair, complete and democratic process considering the implications of resource development projects. They must also be financially supported in developing the capacity to conduct and to play critical roles in working with researchers capable of focusing on IQ in generating data and information critical to the consideration of these projects.
- **Attention needs to be paid to issues and concerns related to hunting narwhal at the floe edge, early in the season.** This is both a matter of hunter education and of regulation and control. The use of tags to accomplish this is a consideration.

- **Hunters in Mittimitalik are facing a considerable decline in the number of narwhal spending the open water season in Eclipse Sound and Milne Inlet.** Consideration needs to be given to facilitating their ability to hunt elsewhere. There is little reason to believe that with the continuing shipment of ore – including the recently approval given to a continuing shipment of an additional 1.8 M tonnes of ore, that narwhal populations will recover. Alternatives need to be developed for Mittimitalik hunters.**Mittimatalingmiut have suffered considerable losses associated with Baffinland's current and existing activities.** These are very much associated with the loss of narwhal in Eclipse Sound and Milne Inlet. These losses affect hunters, their families, relatives, Elders and to some degree, the well-being of the entire community. Mittimatalingmiut should be compensated for the loss they have and continue to experience. This is not only a matter of food security.
- **Protecting Inuit lifestyles and culture will soon be a very significant challenge for communities and Inuit committed to the preservation and practice of Inuit as a hunting culture.** This is a major consideration that deserves further study and consideration, especially in relation to the devolution of federal jurisdiction and responsibilities to the Nunavut Government. There are 13 chapters to the Agreement that outline the powers and responsibilities to be transferred to Nunavut. The Agreement takes effect, April 1, 2024.[88] However the devolution of power and responsibility to the Nunavut Government is to take place over the next 3 years, commencing April 1, 2024.

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88. https://www.rcaanc-cirnac.gc.ca/eng/1352471770723/1537900871295

11. A List of Elders and Hunters Contributing to the Text

The middle number, (i.e., 0057 XX at 23:27), refers to hunters and Elders listed below.

IKPIARJUK

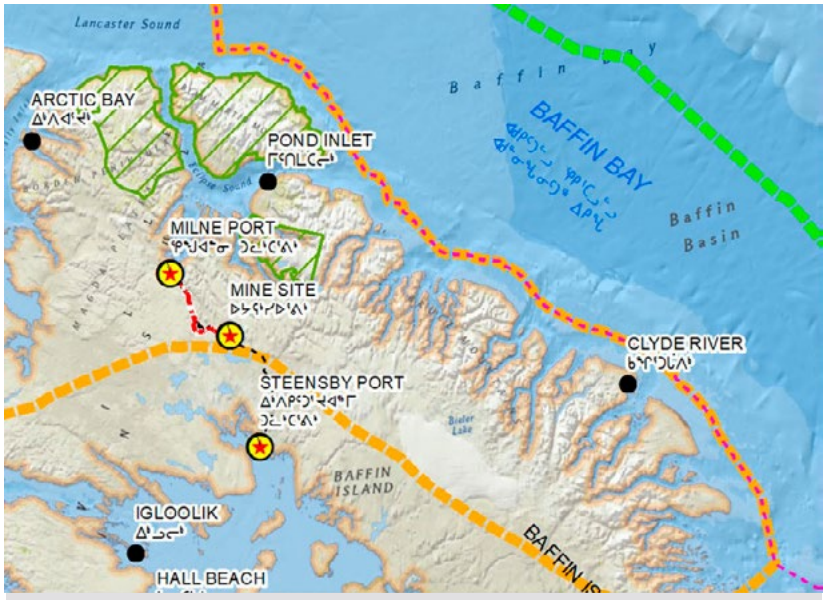
1. Adrian Arnauyumayuq
2. Isaac Shooyook
3. Jason Issigaitok
4. Bernice Kalluk
5. Jonah Oyukuluk
6. Kigutikarjuk Shappa
7. Mishak Allurut
8. Olayuk Naqitarvik
9. Qapik Attagutsiak
10. Qaumayuq Oyukuluk
11. Sakiasee Qaunaq
12. Valerie Qaunaq
13. Michael Qaunaq

MITTIMATALIK

14. Charlie Inuarak
15. Elisapie Inuarak
16. Enookie Inuarak
17. Kaujak Komangapik
18. Norman Inootik
19. Panoely Innuaraq
20. Raigilie Ootook
21. Tommy Aglak
22. Rhoda Koonoo
23. Qamaniq Sangoya

Appendix 1
Baffinland Iron Mines: A history of development of the Mary River Mine

The Mary River mine is located 160 km SSW of Mittimitalik and 105 km by road, inland from Milne Port at the southern end of Milne Inlet. For readers unfamiliar with the region, the mine is located almost mid-way between Milne Inlet to the north and Steensby Inlet at the northern end of Foxe Basin, southern coast of Baffin Island. [89]



Location of the Mary River Iron Ore Mine

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86. The area stripped in green is Sirmilik National Park, including Bylot Island Migratory Bird Sanctuary, the northern tip of the Borden Peninsula to the right, and Stevenson Inlet to the south. The orange line outlines the North Baffin (Qikiqtaaluk) planning area. The red dots indicate the Nunavut Settlement Area in the region. The green line indicates the boundaries of the Qikiqtani Region of Nunavut. The orange line encircling this part of Qikiqtaaluk (Baffin Island) designates the north Qikiqtaaluk planning region.

This iron ore deposit is among the richest in the world, being between 65% and 75% pure ore. Its location also means that there are significant challenges related to mining the resource. Those challenges are an important part of its developmental history.

Discovered in 1962, the deposit is on Inuit-owned lands, confirmed by the 1993 *Nunavut Land Claims Agreement*. Murry Watts, who discovered the deposits, head of a company called British Ungava Explorations Ltd., was never able to find investors interested in developing the site. In 1986, Baffinland Iron Mines Ltd. acquired the claims and leases.

Understanding the economics of the mine and development of this site are important to appreciating how costs – social, cultural and environmental – have been addressed in development and operation of the mine.

These also explain what ultimately happened; a proposal to develop and ship ore from Milne Inlet using a truck haul road to the port. This was followed by a Phase 2 proposal to develop a railway to Milne Inlet instead of Steensby Inlet, and to ship 12 million tonnes per year through Milne Inlet and the Tallurutiup Imanga National Marine Conservation Area created in Eclipse Sound. Approval for shipment from Steensby Inlet – an idea temporarily abandoned with the Phase 2 proposal - had been granted in December of 2012 following a review of the proposed development and hearings by the Nunavut Impact Review Board, commencing in 2008.

ECONOMICS AND IRON ORE MINING

These changes in the original proposal put forward by Baffinland, and behaviour of the company in the hearing processes that subsequently took place to deal with changes, are associated with financial realities and risks associated with developing and operating the mine. These are risks and behaviours common to the mining industry and the development of new mines everywhere in the world.

Iron ore is a commodity found in many places in the world, and demand for steel (and hence iron ore) changes for a long list of reasons. The result is that fluctuations in the price paid for iron ore can be dramatic. These realities help explain events affecting Baffinland's development plans, with implications for narwhal and narwhal hunters. For this reason, they are important.

Iron ore prices declined considerably from about 1975 until the year 2000. The erratic price for iron ore on world markets prior to 1975, likely explains the difficulty that Murray Watts and his associates had in finding capital to develop the mine. Prices then rose dramatically until the financial crisis of 2008 (Figure 1).

Given the high cost of developing and removing ore from the site — despite its quality — the international price for iron ore has played a significant, 'behind the scenes' role in the challenges faced by Inuit in dealing with Baffinland. Understandably, anything seen to increase the costs of operations, to challenge initiatives deemed essential to attracting investment, and to affect the ability to cover high-cost loans, was met in the hearing processes with well-orchestrated opposition from Baffinland.

Pressure on the Nunavut Impact Review Board (NIRB) to make a decision on the Phase 2 Proposal as quickly as possible, and threats to close the mine or to lay off workers if the company didn't get what it was asking for are but two examples.

Threats like this are commonly used by mining companies, internationally. They should be seen as a tactic to put pressure on approval processes. No government wants to be seen to be hurting working people by taking away their jobs. If a mine is profitable, these threats are seldom serious. Mines have been known to reduce production and lay off workers when the price of what is being mined drops below the cost of operating the mine. If this persists, a mining operation will be shut down.

This is why paying attention to the international price being paid for iron ore, coupled with claims being made in a company's investment prospectus, are important to fully appreciating what is happening with regard to claims made by companies like Baffinland.

In 2002, two individuals, one of whom had written a thesis about the possibility of developing the Mary River Mine, acquired a controlling interest in Baffinland Iron Mines. In 2004 they went public with the creation of Baffinland Iron Mines Corporation (BIMC), and soon raised funds for further exploration of the site.

As noted, commencing about 2003, the world price for iron ore started to increase rapidly. In 2006, BIMC presented the Qikiqtani Inuit Association (QIA) with a proposal to develop the site and to build a railway south, to a deep-water, all-season port at Steensby Inlet. It proposed to produce and ship 18 million tonnes of ore a year from the mine. The 143 km railway was estimated at the time to cost $1.2 billion. A route north to Milne Inlet (105 km) was also considered. Milne Inlet, however, does not offer an all-season port.

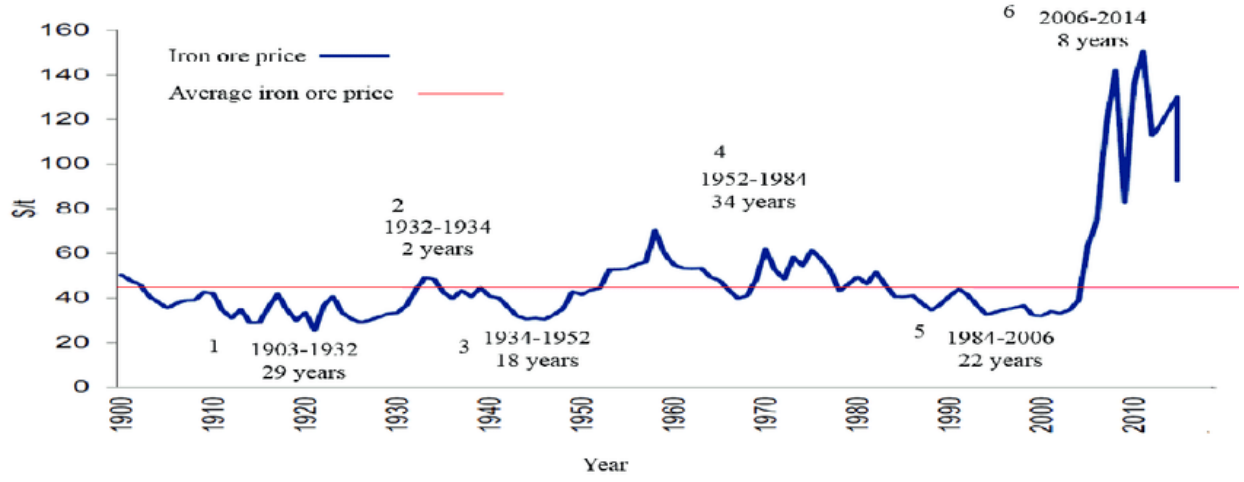

Figure 1 : Iron Ore Price Comparisons, 1900 – 2010. The literature suggests that the increase in price shown here had much to do with industrial demand from China.
Source: https://www.researchgate.net/figure/ron-ore-price-in-comparison-by-average-iron-ore-price_fig1_284727251

Finding capital to develop the mine, despite the rising price of iron ore, remained a problem. Unlike opportunities for the development of iron ore in other world locations — Australia, notable among them — the risks associated with Baffinland were considerable. The costs of development, operation and extraction in an Arctic location meant that the viability of the mine depended on a reasonably high international price for iron ore. Capital to develop the site comes at higher rates of interest, rewarding those risking investment in a mine in this challenging location.

By 2007, with iron ore prices still rising rapidly, construction of a tote road to Milne Inlet was undertaken. In April of 2007, Nunavut Impact Review Board (NIRB) hearings were held in Mittimatalik, Ikpiarjuk and other affected communities to approve a proposal to carry ore by rail and to ship it through Steensby Inlet. However, the fiscal crisis of 2008-2009, further challenged this proposal. The proposed railway to Steensby Inlet was an expensive undertaking.

Furthermore, the cost of building the railway was rising rapidly and the financial crisis was making investors

everywhere nervous. NIRB hearings, held in Igloolik in 2009, also identified major concerns about icebreakers operating all year-round to keep the Steensby Inlet port free of ice.

Baffinland Iron Mines Camp at Milne Inlet.

Source: CBC North, Nov. 15, 2019

Plans started to change. By 2008, Baffinland had mined large bulk samples of ore to be tested by the German steel company ArcelorMittal. To get the ore to mills in Europe, Baffinland upgraded the tote road it had built, connecting the mine at Mary River to a port at the far southern end of Milne Inlet. This route had been used to get supplies required to build the mine at Mary River. They proceeded to make the road an all-weather operation, and shipped the ore samples from their port at Milne Inlet.

Tests confirmed the quality of the ore. The idea of getting permission to ship ore from Milne Inlet during the open-water season from August to October, until enough capital could be found to build the railway to Steensby Inlet, developed from this experience. In 2008, a joint venture agreement was signed with Nunavut Tunngavik Incorporated, followed by a memorandum of understanding in 2009. Baffinland was given the rights to explore for other ore deposits and develop 170 km^2 of land adjacent to the mine.

WHO OWNS WHAT?

Two years later, a complicated contest emerges for ownership and control of Baffinland. In August of 2010, a mining executive, Jowdat Waheed, was hired by the president of Baffinland, Richard McCloskey, to study ways of raising the capital needed to develop the mine. Little did he know that Waheed would use the opportunity to challenge McCloskey's ownership interests in Baffinland.

Waheed partnered with a Toronto deal-maker, Bruce Walter. They ended up creating a vehicle for acquiring Baffinland from the two men who had a controlling interest in Baffinland at the time; Gordon McCreary and Richard McCloskey. Nunavut Iron Ore Acquisition Inc. was to be the vehicle to do this and was, in turn, owned

by a private Houston Texas-based fund that would pay for takeover of the company. At about the same time, ArcelorMittal — a large Germany-based steel-maker — made an offer to purchase Baffinland.[90]

Gordon McCreary was opposed to any of this. He headed to China to try and find a deal that would prevent ArcelorMittal or Nunavut Iron Ore Acquisition Inc. from acquiring the company. He discouraged other shareholders in Baffinland from accepting either of the offers that had been made. He was opposed to the idea that Waheed had developed of shipping ore from Milne Inlet as an alternative to building a railway south to Steensby Inlet. Ultimately, ArcelorMittal and Nunavut Iron Ore Acquisition came together as partners in purchasing Baffinland in 2011. ArcelorMittal became the project operator.

These transactions were tumultuous, including investigations by the Ontario Securities Commission as to the role of insider trading in the takeover. The ownership share has since changed, with Nunavut Iron Ore owning 72%, and ArcelorMittal, 28%, as of June 2020.

MONEY: UP AND DOWN WITH PLANS ALL AROUND

Politics played a role in the development of the Mary River mine. In 2011, the Conservative government of Stephen Harper set out to promote northern development with the idea that mining would become central to northern development. His timing, in the case of Mary River, could hardly have been worse. By 2012, the price of iron ore on world markets was, once again, in steep decline. It recovered briefly, but declined sharply starting in 2013 (Figure 2). By 2013, capital for the development of mines like Mary River was becoming hard to come by.

The 2013 steep decline in the world price for iron ore can be seen in Figure 2. Finding investors for Baffinland's plans for an expensive railway and port at Steensby Inlet became an impossible undertaking. Baffinland changed its plans dramatically, dropping the idea of raising about $4 billion in capital to a lesser amount of about $740 million.[91] The ongoing volatility of iron ore prices is obvious from Figure 2.

The price of iron ore continued to decline until 2016. It recovered considerably after that. By 2020 it had reached a peak of $229.50 (U.S.). This explains to a considerable degree, why Baffinland's plans kept changing and with prices like this, why Baffinland became keenly interested in increasing its production as soon as possible.

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90. ArcelorMittal is one of the largest steel producers in the world. Based in Luxemburg, the largest share of the company is owned by Lakshmi Mittal, an East Asian Indian investor. The company bought DOFASCO, a Hamilton Ontario steel maker, in 2006. In 2022 its assets were estimated to be about $100 billion. The price of steel declined considerably between 2011 and 2015 causing serious financial problems for ArcelorMittal. This likely explains it backing away from ownership of Baffinland, leaving Texas investors in majority control of the company. Despite being fronted by a Canadian Acquisition Company, Baffinland is Canadian in name only, with profits going outside of the country to pay foreign investors (owners), and Canada benefiting from money spent on contracting, employment, royalties to QIA and some taxes.

As Baffinland expands, the Canadian employment per tonne of ore mined will drop considerably as labour is affected by economies of scale and is replaced by mechanization. The introduction of a railroad to get ore to port will be but one example of this trend as the volume mined increases. Ironically, given the impact of climate change on the Arctic and marine mammals, the global steel industry in which ArcelorMittal is a major player and to whom Baffinland iron ore is being sold, is one of the largest contributors to greenhouse gases, estimated at 9% of total global emissions between 1900 and 2015. The irony in this is hard to miss, as Baffinland, in defense of its operations, has attributed the decline in narwhal in Eclipse Sound to climate change. (Peng Wang, Morten Ryberg, Yi Yan et al., 2021, Efficiency stagnation in global steel production urges joint supply – and demand – side mitigation efforts, Nature Communications, Vol. 12, 2066: https://dio.org/10.1038/s41467-021-22245-6.

91. Pav Jordan, Jan. 13, 2013, "Baffinland Iron Mines Sharply Scales Back Mary River Project, *Globe and Mail.*

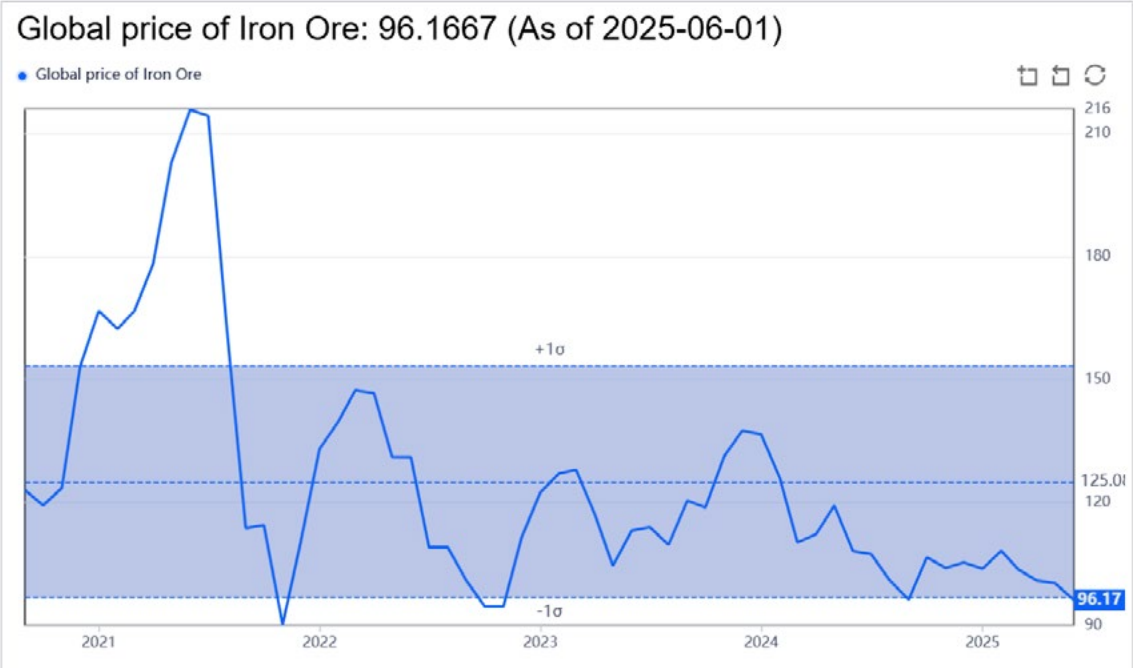

Figure 2: Iron Ore Prices,2021 – 2025. The impact of COVID on the production and consumption of steel-based products is evident from this graph. However, prices have not recovered to pre-COVID levels and opinion is that they are unlikely to do so. Prices have fluctuated with changing demand, primarily affected by China, and a consequence of over-supply. The de-carbonization of processes for making steel is one of many factors affecting demand and price.

Source: https://www.gurufocus.com/economic_indicators/2834/global-price-of-iron-ore

THE MARY RIVER PHASE 2 PROPOSAL

On May 28, 2014, after holding hearings in affected communities, NIRB approved Baffinland's proposal for an Early Revenue Phase allowing them to haul by truck, on the road from the mine to the port at Milne Inlet, up to 4.2 million metric tonnes of ore per year for shipment through Milne Inlet and Eclipse Sound during open water season. A few months later, in October of 2014, Baffinland submitted its Mary River Phase 2 Proposal to the Nunavut Planning Commission.

Behind the scenes, Baffinland had already been working on a bigger proposal when the Early Revenue Phase Proposal was given a green light by NIRB. It had a Phase 2 Proposal in mind that included 176 ships carrying ore from Milne Inlet through Eclipse Sound. It included a proposal to use ice breakers to extend the shipping season to up to 10 months of the year. When announced, this caused considerable and understandable alarm among Mittimatalingmiut.

These realities put considerable pressure on the company, reflected in management of the costs of development and operation. These considerations have implications for dealing with the social, environmental and regulatory costs associated with development, and operation of a mine. If Baffinland had been a bigger company with profitable and 'paid for' operations elsewhere, its behaviour in developing the Mary River Mine might have been different.

In May of 2021 iron ore prices peaked, falling to 105.50 (U.S.) per tonne by May of 2022. Iron ore is currently

trading (September 2023) at 121.69 (U.S.) per tonne. It is reasonable to assume that expectations and interest on the money invested in Baffinland by the Houston-based fund controlling Nunavut Iron Ore are considerable.

The financing of mines like Baffinland and the formulas used by investors to determine the financial health of a mining operation are another topic. It is likely true that the best asset Baffinland has is the quality of the ore it mines. Otherwise, Baffinland, on a world scale, is a small, expensive operation producing a low volume of high quality ore.

All of this plays no small role in the aggressive approach taken by Baffinland in planning and operating in a manner intended to generate as much return on the investment over as short a time as possible. Getting as much ore to market in as short a period of time as possible has implication for how the mine is operated, the number of years in will remain viable, and for Inuit employment and benefits.

This has implications for its relationship with Mittimatalingmiut, and dealing with Inuit concerns for protecting resources that are culturally and environmentally important. The Mittimitalik Hunters and Trappers Organization (MHTO) and the Qikiqtani Inuit Association are challenged by a mining operation dealing with dramatic fluctuations in the international price of iron ore, the ownership of the mine, and the expectations of investors with regard to their capital. All of this was demonstrated in a risky decision by Baffinland to try to get permission to ship ore through habitat of one of the largest narwhal populations of in the world, and a sensitive marine conservation area intended to protect Inuit interests, culture and resources.

The Phase 2 Proposal initially required serious changes to the road carrying ore from the mine site to Milne Port, and permission from the Planning Commission to widen the road and twin portions of it. Baffinland wanted to use much larger trucks to carry the ore. It applied to increase the volume of ore shipped to a total of 12 million tonnes a year. The Nunavut Planning Commission, on April 9 of 2015, having looked at what Baffinland was proposing, told Baffinland that its amended Phase 2 Proposal would require a full assessment. What was proposed did not conform to the North Baffin Regional Land Use Plan.

Baffinland then went to the federal Minister of Aboriginal Affairs and Northern Development under the Conservative government of Stephen Harper, and asked Bernard Valcourt for an exemption under the North Baffin Regional Land Use Plan. Valcourt chose to ignore what Inuit had put in place to protect their land use interests, and granted the exemption. Baffinland then took its amended Phase 2 Proposal directly to NIRB.

They got two nasty surprises. The board informed Valcourt that the proposals were so significant that they required a full hearing by NIRB. By October of 2015, the Conservative government of Stephen Harper was also no longer in power.

AN ARCTIC RAILWAY

In February of 2017, two years later, with the exemption in place, and as iron ore prices were starting to rise, Baffinland went back to the Nunavut Planning Commission with a different idea. It requested an expansion of the transportation corridor to allow for the building of a railway to Milne Port. After holding public hearings in Mittimitalik on this idea, approval to change the boundaries of the transportation corridor to accommodate a railway were given approved on March 18, 2018.

By 2018, Baffinland was also pushing the limit of the 4.2 million metric tonnes for which it had received approval in 2014. On April 23, 2018, it applied to increase the amount allowed by the Early Revenue Phase by a further 1.8 mta, to 6 million metric tonnes. Approval to do this for 2 years was granted, and the request was later renewed.

It now being theoretically possible to build a railway to Milne Port, Baffinland went to the NIRB with its Phase 2

Proposal to increase production from 6 million tonnes a year to 12 million tonnes. It proposed to move the ore to the port at Milne Inlet by means of a railway built parallel to the existing tote road. Given that Baffinland already had approval to build a railway south to Steensby Inlet that could be used to ship a further 18 million tonnes of ore per year, the total volume of ore shipped could theoretically be 30 million tonnes a year.

The hearing process, commencing in November of 2019, was long, affected by the COVID 19 epidemic, complicated, and involved consideration of multiple environmental and social consequences. In May of 2022, NIRB recommended to the federal minister that permission for the Phase 2 Proposal not be granted in light of "significant and lasting negative effects on marine mammals, the marine environment, fish, caribou and other terrestrial wildlife, vegetation and fresh water". It also noted that "these negative effects could also impact Inuit harvesting, culture, land use and food security".

The Federal Tiber bulk carrier leaves from the Milne port, carrying the first shipment of ore from Baffinland's Mary River project.

Source: CBC North, Courtesy of Baffinland, August 11, 2015

In deliberations associated with the application, the effects of noise and movement that would be generated by an increased number of ore-carrying ships, emerged as the most significant concern in what Baffinland was proposing. The loss of narwhal in the waters of Eclipse Sound and Milne Inlet as a result of the shipping Baffinland and the testimony of Inuit hunters and Elders raised serious concerns about the Phase 2 Proposal.

NOT OVER YET

With all this in mind, it might have been expected that any increase or even a continuation of the amount of shipping Baffinland was undertaking through Milne Inlet and Eclipse Sound would have been seen as threatening to the narwhal locating in Milne Inlet and Eclipse Sound during the open-water season.

By April of 2023, Baffinland was once again asking for another renewal of permission to ship an additional 1.8

million tonnes per year of ore from Milne Inlet.[92] In 2022, Baffinland, employing a well-worn tactic, threatened to lay off 1300 employees and 400 contractors if it was not granted this request.[93] In September of 2023, in a move that appears to run counter to reasons given for recommending that the Phase 2 Proposal not be approved, NIRB recommended approval of Baffinland's request to increase shipping for the 2023 and 2024 seasons.[94]

On November 20, 2023, Dan Vandal, Northern Affairs Minister, approved this request. Baffinland can ship and additional 1.8 M tonnes of ore until December 31 of 2024. It can also ship more in a subsequent year if it was unable, due to ice or other conditions, to ship its approved annual total of 6 million tonnes of ore.

It is little wonder that Inuit of Mittimatalik and the MHTO had a nearly impossible time keeping up with all the changes and demands made of them to participate in hearings and to digest the incredible volume of paper generated by Baffinland. Plans kept changing. Underfunded, underappreciated and forced to operate in time scales completely outside of Inuit culture, Inuit in affected communities and those working with them struggled to keep up with the incredible volume of material submitted to hearing processes in relation to plans that kept changing.

What the Qikiqtani Inuit Association, the Mittimitalik Hunter's and Trapper's Association, and Inuit from other affected communities encountered in dealing with Baffinland's changing plans was daunting and challenging, to say the least. Having never dealt before with an industrial project of this scale, what they accomplished was nevertheless, remarkable. And what exists 'behind the scenes' — the finances and operations of a mining company in a larger world of finance, investment and considerations of time from what can best be described as 'another planet' — played no small role in the challenges confronting Inuit of this north Qikiqtaaluk Region of Nunavut.

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92. *Canadian Press*, April 25, 2023, "Baffinland requests further production increase at Nunavut iron ore mine".

93. *Nunatsiaq News*, May 26, 2022, "Baffinland warns of layoffs in 'emergency' request over shipping limits".

94. *Nunatsiaq News*, September 14, 2023, "Review Board backs Baffinland proposal for higher shipping limit".

Appendix 2
Maps Showing Features Referenced by Hunters and Elders

This appendix contains maps of Eclipse Sound and Milne Inlet, showing locations that are referenced by hunters and Elders contributing to this text.

ADMIRALTY INLET

It also contains references two on-line sites where other maps can be found that contain considerable details of Admiralty Inlet and Inuit camps and locations of importance, many of them to traditional and contemporary narwhal hunting.

This interactive map, which is revealing of the attention paid to intimate details of very many locations, can be found at: https://www.google.com/maps/d/embed?mid=1fn7ifqhEp0UhoWMXwFQsjsaf4j8&ll=73.84326782829797%2C-83.6240053244765&z=7

MITTIMITALIK AND IKPIARJUK

Another collection of maps prepared by the Inuit Heritage Trust contains information detailing and naming locations in syllabics. These are locations known to Inuit hunters, Elders and others from both Mittimitalik and Ikpiarjuk. They are indicated in syllabics and Inuktitut and English interpretive keys are provided.

These can be found at: http://ihti.ca/eng/place-names/pn-seri.html

Maps that show locations of importance to Mittimitalik hunters and Elders have been reproduced on the following two pages.

Place Names for Milne Inlet and Nearby Sounds, Fiords and Inlets

Place Names along the Sounds, Fiords and Inlets frequented by Mittimatalingmiut

Appendix 3
Narwhal and Policy Implications of the Nunavut Lands and Resources Devolution Agreement

The Nunavut Lands and Resources Devolution Agreement has potentially significant implications for the protection of lands and resources in Nunavut Territory including the protection of narwhal and Inuit culture. In light of the experience with Baffinland and the impact that Baffinland's activities have had on narwhal – as witnessed by the Elders and hunters of Mittimitalik, the implications of the agreement deserve careful consideration. The agreement transfers, over time, land and resources that are currently under federal jurisdiction, to the Government of Nunavut.

The Agreement is the conclusion of a longstanding commitment toward the vision of self-determination Nunavummiut. There are 13 chapters to the Agreement that outline the powers and responsibilities to be transferred to Nunavut. The Agreement takes effect, April 1, 2024.[95]

The Agreement is consistent with Canada's signing onto the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP). The Agreement transfers to the Government of Nunavut, where 84% of the population are Inuit, the right of ownership, the responsibility of management, and direct benefits from the lands and resources of Nunavut Territory. The Agreement addresses the rights defined in the UNDRIP to a considerable degree.

At the same time, the implementation of the Agreement has the potential to intensify and complicate tensions between the benefits of resource development, currently outlined in Article 25 of the Nunavut Agreement, and other provisions scattered throughout the agreement dealing with wildlife (Article 5), wildlife compensation (Article 6), conservation areas (Article 9) and ongoing issues related to land use planning (Article 11).

Issues relevant to the conservation of resources central to Inuit culture, as was the case with the Baffinland Phase 2 Proposal, are likely to intensify. The focus of attention in decision-making and management, will no longer

95. https://www.rcaanc-cirnac.gc.ca/eng/1352471770723/1537900871295

be the authority of a non-Inuit institution; the federal government. Decisions affecting conservation of species like narwhal — and by implication, Inuit culture — will now be made within Inuit culture and by a territorial government responsible for Inuit interests. Complicating this situation is the difference between centers of power in Nunavut Territory — Iqaluit, Rankin Inlet and Ikaluuktutiak — and outlying communities, where traditional cultural pursuits and interests are, to a considerable degree, different from the focus of energy and attention found in the administrative centers of Nunavut.

This complicates the relationship between regional organizations such as QIA and local HTOs and municipal councils. This has already been demonstrated in the case of the Kivalliq Inuit Association and a 2014 by-law that prohibits anyone serving on a municipal council within the Kivalliq region, from serving on the board of the Kivaliiq Inuit Association.[96] While the QIA currently has no equivalent by-law, the relationship between communities and the organization is likely to be strained considerably as the Agreement takes force. The case for municipal politicians being involved in board decisions merits debate and consideration.

It may be that the current arrangement that allows staff or board members to serve as a hamlet mayor or councillor, while reviewing overlap in the case of a director, makes sense. But in relation to potential and future conflicts related to mining and resource development, conflicts such as those involving Agnico-Eagle's gold mine and caribou protection for example, will no longer involve the role of the federal government in resource development in Nunavut Territory.[97] Conflicts will now be contained within and between Inuit organizations. The Agreement is bound to test, to a greater extent than has been the case to date, relationships among the GN Department of Environment, local HTOs and regional Inuit Associations.

The Nunavut Government will soon find itself increasingly and directly responsible for the financial well-being of its citizens. This puts pressure on the government to develop and manage resources seen to provide employment and revenues. Mining is currently advertised as playing a critical role in this development. Corporate Law Firm, Osler, notes the following.

> *Devolution may signal a spike in resource investments in Nunavut, as it has in other territories. For example, a short two years following the NWT devolution agreement, year-over-year private-sector capital expenditures in the territory increased by 25.9%, driven largely by a 40% increase in expenditures in the mining and oil and gas sectors.*[98]

At the same time, as revealed in hearings into the Baffinland Phase 2 proposal, resource development has serious implications for wildlife and land-based resources that are the foundation of Inuit culture. Furthermore, conservation issues are now a matter of both national and international concern in relation to the climate/environment emergency. In many ways, climate change is merely a symptom of something far more important: our treatment of the environment that we depend on for our survival. This puts the concern of Inuit for narwhal

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96. Beth Brown. 2017. Inuit organization by-law forces mayor and councillors to resign in Kivalliq. Nunatsiaq News. July 4. https://nunatsiaq.com/stories/article/65674inuit_org_bylaw_forces_mayor_and_councillors_to_resign_in_kivalliq/

97. CBC News North. Nov. 8, 2022. Agnico Eagle not doing its part to protect migrating caribou, says Nunavut government. https://www.cbc.ca/news/canada/north/meadowbank-caribou-road-closure-agnico-eagle-1.6643389

98. Sander Duncanson, Sean Sutherland, Lisa Mannery, Ashley Light. (2024) Nunavut to take control of Crown Land within territory following devolution agreement with Canada. January 24. https://www.osler.com/en/resources/regulations/2024/nunavut-to-take-control-of-crown-land-within-territory-following-devolution-agreement-with-Canada

- and all other species - and for the impact that industrial development has on the Arctic environment that has been their home for thousands of years, at the cente of global affairs of vital importance to all of us. Managing the tensions involved in conflicts between resource development, the protection of narwhal, and all other species and ecosystems within the territory, is about to become a matter of greater and serious concern and potentially, considerable conflict within Inuit communities and culture. These are matters of human rights, with important legal challenges and precedents.[99]

The experience with, and the condition of narwhal, in relation to the current activities of Baffinland Iron Mines — documented in this report — set against the devolution of authorities and responsibilities found in the Agreement signed with the Federal Government, require careful consideration. They have implications for the development of policies, priorities and the procedures of institutions — including regional Inuit associations and the Nunavut Impact Review Board —that deserve further study in relation to emerging challenges for conservation and the protection of Inuit culture.

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99. These considerations are addressed in a paper recently published by two legal scholars focused on international law. While there analysis pre-dates the devolution agreement, it nevertheless anticipates it and deals with the tangled relationships involving collective Inuit rights in relation to the United Nations Declaration on the Rights of Indigenous Peoples, federal responsibilities and jurisdiction, conservation issues and climate change. Sandrine Le Teno and Christine Frison. (2021). Sea-ice Melting, Collective Inuit Peoples' Rights and the Human Rights Discourse: A Critical Legal Analysis of the Nunavut Governance System. *Environmental Policy and Law.* 51: 223-234.

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