2012 Yukon North Slope Conference Proceedings

Pathways to Arctic Innovation

WMAC North Slope

Yukon Environment

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Pathways to Arctic Innovation

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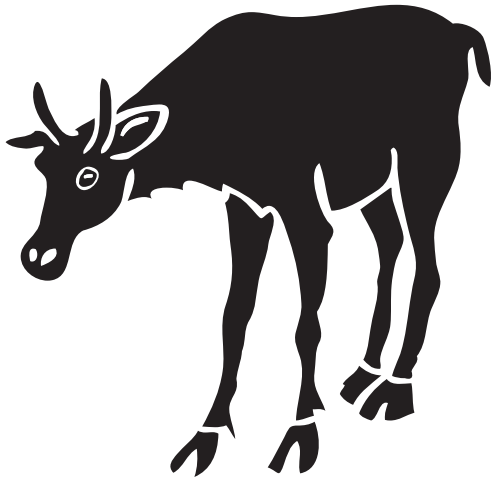
Pathways to Arctic Innovation

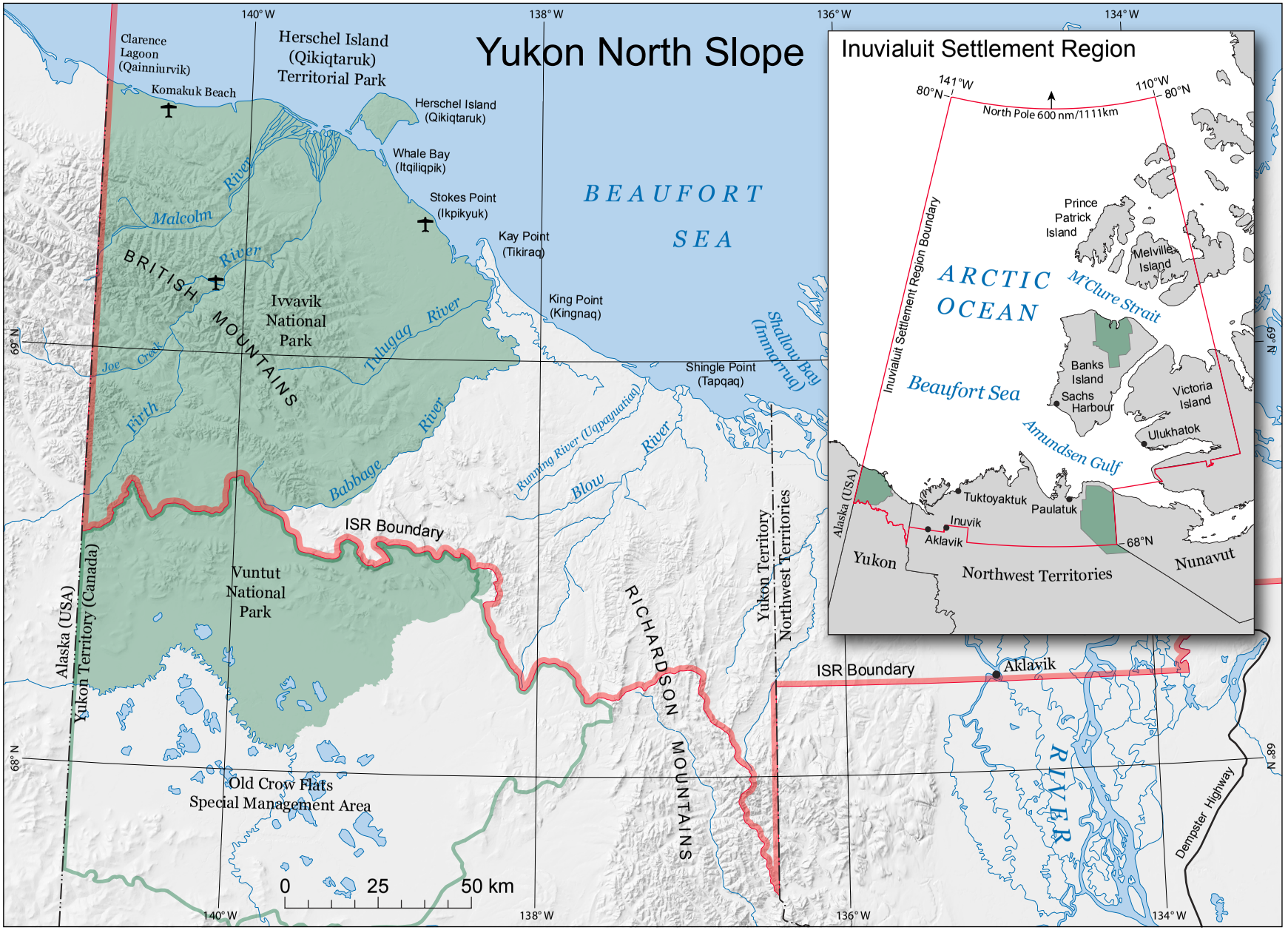
October 2-4, 2012
Whitehorse, Yukon



Dedication

This conference and its proceedings are dedicated to the memory of Andy Carpenter, a man of extraordinary wisdom, knowledge, and experience; and a man respected by all who knew him.

He was a Sachs Harbour hunter and trapper, a negotiator of the Inuvialuit Final Agreement, founding chairman of the Inuvialuit Game Council, and an ambassador at home and abroad on behalf of the Inuvialuit. The spirit, intent and content of Yukon North Slope Conferences are but a small part of the legacy of Andy Carpenter.


Yukon North Slope
Inuvialuit Settlement Region
Clarence Lagoon (Qainniurvik)
Komakuk Beach
Herschel Island (Qikiqtaruk) Territorial Park
Herschel Island (Qikiqtaruk)
Whale Bay (Itqiliqpik)
Stokes Point (Ikpikyuk)
Kay Point (Tikiraq)
King Point (Kingnaq)
Shingle Point (Tapqaq)
Shallow Bay (Immarruq)
BEAUFORT SEA
Malcolm River
BRITISH MOUNTAINS
Ivvavik National Park
Joe Creek
Firth River
Babbage River
Tuligaq River
Rumping River (Uqapayuatiaq)
Blow River
ISR Boundary
Vuntut National Park
Alaska (USA)
Yukon Territory (Canada)
Old Crow Flats Special Management Area
RICHARDSON MOUNTAINS
Yukon Territory
Northwest Territories
Aklavik
MACKENZIE RIVER
Dempster Highway
0 25 50 km
140° W
138° W
136° W
134° W
69° N
68° N
141°W
110°W
80°N
North Pole 600 nm/1111km
Inuvialuit Settlement Region Boundary
Prince Patrick Island
Melville Island
ARCTIC OCEAN
M'Clure Strait
Banks Island
Sachs Harbour
Victoria Island
Ulukhatok
Beaufort Sea
Amundsen Gulf
Tuktoyaktuk
Paulatuk
Inuvik
Aklavik
68°N
Yukon
Northwest Territories
Nunavut

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Foreword

In 1984, the Inuvialuit Final Agreement (IFA) was signed by the Committee for Original Peoples Entitlement (COPE) on behalf of the Inuvialuit, and by the governments of Canada, the Northwest Territories and Yukon. The basic goals expressed by the Inuvialuit and recognized by the parties in this Agreement, are captured in the following three principles:

(a) To preserve Inuvialuit cultural identity and values within a changing northern society;
(b) To enable Inuvialuit to be equal and meaningful participants in the northern and national economy and society; and,
(c) To protect and preserve the Arctic wildlife, environment and biological productivity.

Yukon North Slope

Section 12 of the IFA includes the provisions for the Yukon North Slope, which is described as; "all those lands between the jurisdictional boundaries of Alaska and the Yukon Territory and the Northwest Territories, north of the height of land dividing the watersheds of the Porcupine River and the Beaufort Sea, and including adjacent nearshore and offshore waters and islands." Section 12 designates the Yukon North Slope as having a special conservation regime with protection of wildlife, habitat and traditional native use considered paramount. In keeping with this, Ivvavik National Park and Herschel Island - Qikiqtaruk Territorial Park were created. The area east of the Babbage River is identified as an area in which controlled development may take place, subject to the provisions of the IFA. Section 12 also establishes the Wildlife Management Advisory Council (North Slope), with the mandate to provide advice to the appropriate ministers on all matters relating to wildlife policy and the management regulation and administration of wildlife, habitat and harvesting for the Yukon North Slope. Section 12 also identifies the requirement for a Yukon North Slope Conference to be hosted by Yukon government, to promote public discussion among native organizations, government and the private sector with respect to management coordination for the Yukon North Slope.

2012 Yukon North Slope Conference

The ninth Yukon North Slope Conference was held in Whitehorse, Yukon, October 2 - 4, 2012. The theme of the conference was Pathways to Arctic Innovation – Arctic Wildlife Conservation & Co-Management, Lessons Learned and Future Challenges. This theme was especially significant after the passage of more than 35 years since the signing of the first modern day land claim agreement in Arctic Canada, and the introduction of an approach to wildlife conservation and management that is referred to today as "co-management."

In this context, the conference focused on the sharing of knowledge and experience from jurisdictions and organizations across the North, with a special focus on Arctic Canada. The conference included four moderated panel discussions with experts speaking to each topic. A question and answer session provided delegates including; aboriginal organizations, wildlife management and environmental impact review boards, researchers, and governments from across the North an opportunity to share and discuss:

- Major challenges they face in wildlife conservation and management;
- How these challenges relate to aboriginal knowledge, resource use and rights; and,
- How co-management contributes to sustainability-based resource development.

Special attention was paid to how these challenges could be met and what innovations could be applied. One hundred and fifty eight people from Alaska to Labrador participated in the conference.

Yukon government hosted the Yukon North Slope Conference in partnership with the Wildlife Management Advisory Council (North Slope). A very special thank you goes to Mr. Robert Bell, who generously agreed to chair the conference. Appreciation is also extended to the Wildlife Management Advisory Council (North Slope) and the many other people who contributed in making this conference a success.

This report is based on the transcription of audio tapes recorded at 2012 Yukon North Slope Conference. This publication is not intended to serve as a complete and accurate representation of the entire conference. Where necessary, the material has been edited for clarification and some postulations were made regarding what was said.

Day 1: October 2, 2012

Welcome and Opening

Evelyn Storr
Father we thank you for the opportunity to come together, and listen to the concerns and the issues that affect the people we represent. We are so grateful for all that you have left us with, Lord. We think about other people in other parts of the world that don't have that opportunity and Lord we thank you for that opportunity.

And when we meet together like this, we know there are people from our homes or from our regions who are in need, Lord. We pray for them. Lord, they need your comfort and they need your strength to get through whatever they are dealing with.

We pray for the speakers, we pray for the leaders and ask that you will just grant us the wisdom, the knowledge, the understanding of those of us who are receiving it. In Jesus' name we pray, Amen.

The Honourable Currie Dixon, Minister of the Environment
Thank you very much, ladies and gentlemen; thank you for joining us here in Whitehorse; I know that part of my gig is to welcome you all to Whitehorse, I know that some of you have come a very long way and have had quite a journey to get down here. I'm sorry the weather couldn't be better for you, to welcome you, but as we all know, the bad weather is the result of federal policy and I suggest you take any complaints up with the federal government. However, I would caution you that if you do so, you are in jeopardy of having your budget cut, so I would be a little bit careful with that.

It's ironic that it's me opening the North Slope Conference; I've never been to the North Slope; I have never walked the ground; I have never drunk the water; and I have certainly never hunted the North Slope. I don't have a background in biology; I don't have a background in wildlife management. But I think this emphasizes the importance of the local knowledge in environmental management; it's something that is represented well through the IFA and the governance structures that you all work in.

Using local knowledge supports a basic democratic principle—that those who are most affected by decisions should be involved in how those decisions

Evelyn Storr, Council Member, Wildlife Management Advisory Council (North Slope)

are made. It's a very important point and it's one that will resonate with you over the coming days as you discuss the institutions and the structures that come out of the IFA.

My second point is to do with something I do know about and that is governance institutions, particularly aboriginal self-government models. I can say with

Minister of Environment Currie Dixon delivers the opening address.

certainty that the institutions that you work under are some of the most unique and progressive in the world. The Game Council and the other management structures that have evolved over the years are remarkable.

So keep in mind that the world is watching. There's never been more attention, academic or otherwise, paid to the North and to the Arctic regions of the world. I wish you all the best. Once again, I welcome you all to Whitehorse and wish you a very successful conference. Thank you very much.

Lindsay Staples, Chair, Wildlife Management Advisory Council (North Slope)

Again, good morning everyone, my name is Lindsay Staples. I am the Chair of the Wildlife Management Advisory Council North Slope, one of the co-management bodies established in 1984 by the Inuvialuit Final Agreement.

When I was sitting at my desk last night thinking about what I would say this morning, I was thinking I could use some of the records of the last eight conferences. There's a lot we are talking about at this conference that we've talked about in previous conferences. But of course, since that is more than two decades ago, our take on these issues is quite different than it was.

There are issues that resonate with us now that we weren't tuned into 20 years ago, issues like climate change and the alteration of ecosystems. Co-management itself was just a phrase, and we didn't understand what it meant. So part of the work was to figure that out and certainly some of the early conferences looked at that.

The thing that is remarkable about this conference is that it is the requirement of a Land Claims Agreement, and I don't know of any other conference that has that status.

The important theme of this conference is innovation. It strikes me that the negotiators who, in 1984, were crafting the Inuvialuit Final Agreement came up with the idea of a conference as a requirement of the agreement. It was an innovative idea and it remains unique today.

A great deal has happened since the signing of the IFA in 1984.The many Chairs of past North Slope Conferences are a real who's who of people who have been connected to the North Slope as a region, or to the Inuvialuit as a people, or the people involved with negotiating the Agreement. These individuals are all connected through these channels.

The very first Chair of this conference was Andy Thompson. Andy was a brilliant lawyer who taught at the British Columbia Law Institute. He started the West Water Institute, focusing on water policy. Andy did a lot of work in the early years working with the Inuvialuit on the Agreement. Tom Berger has chaired two of these conferences. Tom's connection is well known; his report on the pipeline had a lot to say about the people who use that land. Hugh Faulkner was a minister of DIAND at the time when the Agreement (in principle) was signed off. He actually made the trip from Zurich to come to this conference

and chair it. John Naysmith was a federal negotiator for the IFA process. Bob Blair wrote a book about the MacKenzie Pipeline. He was the president of a major pipeline company in Calgary that launched one of the earliest proposals to build a pipeline the length of the Mackenzie Valley. We had an Alaskan Chair, Robert Weeden. Robert was a very special writer and academic who taught at the University of Alaska. He had a deep attachment to the Alaska portion of North Slope, and he thought deeply and wrote about the challenges that faced it with the discovery of oil at Prudhoe Bay in 1968. And John Donihee, who is back with us this year, was the previous Chair of this

Lindsay Staples, Chair, Wildlife Management Advisory Council

conference. He has a longstanding relationship with the people of the North Slope. Bob Bell, who is our Chair this year, has a long and passionate attachment to the North Slope area. Among his attachments to the Inuvialuit Settlement Region are his many years as Chair of the Fisheries Joint Management Committee.

So, the conferences have attracted some wonderful people. Over the 24 years that these conferences have spanned, we've looked at a broad scope of issues from conservation and managing development to the challenges being posed by climate change for environmental management. We've looked at off-shore oil and gas development; we've looked at best practices for environmental monitoring; but after 24 years, I don't think we've taken the time to ask ourselves, how are we doing with co-management? What could we do better? What's stopping us, and what do we need to do, to overcome these barriers? I think these are important questions as we look at the experience of the last 40 years.

It was really the settlement with aboriginal peoples, about 40 years ago, that started these regimes we call co-management. I'd suggest that when we think about co-management, we usually simply think about a bunch of new boards and committees being created. It's much more than that; it's the introduction of a new sort of governance, in Alaska as well as on the Yukon North Slope. These new regimes are the efforts of federal, state and provincial governments, and the aboriginal peoples who these affect, to achieve some form of reconciliation between themselves and the role of the aboriginal people in the decisions that affect the environment, and the rights to use the land.

Again, why 40 years? President Nixon signed the Alaska Native Claims Settlement Act about that time. For all these settlements across Canada and Alaska, there are some similarities and some remarkable differences as well.

One unique thing about the Alaska Native Claims Settlement Act is that it was legislated, not negotiated. And it has given rise to some really interesting institutions: the Alaska Eskimo Whaling Commission, the Eskimo Walrus Commission and a host of others. Then in 1975, the James Bay and Northern Quebec Agreement ushered in the Hunting and Fishing Coordinating Committee. The key notion here is the coordinating committee; this particular language in the Agreement is really important for us to take note of.

In 1984 for the Inuvialuit Land Claims, the term 'joint committee' was used instead of 'co-management,' articulating this notion of cooperation and collaboration.

Then in 1990, we got the Yukon Umbrella Final Agreement and the creation of the Yukon Fish and Wildlife Management Board and local Renewable Resource Committees. In 1992, the Gwich'in Land Claim Agreement created a whole series of new boards, such as the Gwich'in Renewable Resources Board, and the Gwich'in Land and Water Board. In 1993, the Nunavut Land Claim established a number of very unique boards with novel approaches to resource management and the participation of Inuit in that management. In 2004, the Labrador Inuit

Land Claim Agreement ushered in the Torngat Wildlife and Plants Co-Management Board; and then, most recently, in 2007, the Nunavut Land Claim Agreement gave us the Nunavut Marine Board.

These are really remarkable institutional developments. It's not just creating some new boards and a bunch of recommendations that may or may not be well received. What this is really doing is redefining a new governance relationship.

I am not really worried about the contents of this conference and how it will unfold. In planning the conference we were more concerned about putting the right people in the room. If you put the right mix of people in the room, the conference kind of takes care of itself. I've never felt as confident about a conference as this one, with the mix of people we have. These sessions are meant to be conversations, rather than a series of talking heads parading in front of the room for three days. The idea is to have a conversation, and it's obviously challenging when you get 150 to 160 people in a room like this one. But I can't emphasize enough that it's not just what happens at the front of the room, it's about what happens throughout the room as well. So as you hear people speak over the next couple of days, I hope that you will treat it as a point of departure for comments, and you will share your knowledge and experience with the rest of us.

Some people have come a long way to be here, and I feel really indebted to those who have come this far. I would really like to acknowledge Aaron Dale, who works with the Torngat Secretariat and has come all the way from Labrador. The idea of having a conference focused on Arctic regions began last fall with a number of us who were in Iqaluit at the Polar Bear Range States meeting. Jamie Snook (who worked with the Torngat Secretariat) was there, and we talked over lunch about what the possibility would be of getting everyone to come all the way to Whitehorse for an event to talk about co-management. Right away Jamie said, "I'm in." As a "new player on the block", he was interested in learning from our 40 years of experience. But we can also learn from the Torngat Board because it hasn't carried the baggage we do. They are innovators too, and we can all benefit from being together.

I would also like to acknowledge Gregor Gilbert who is deeply involved in the Nunivak region in northern Quebec. At that same meeting in Iqaluit, Gregor expressed great interest in being here, and I really want to thank him for coming.

Nunavut Tunngavik Incorporated expressed an interest in coming (although at the last minute, they were not able to make it). Michael d'Eca, who is legal counsel to the Nunavut Wildlife Management Board, is with us and I want to thank him for coming.

John Cheechoo from Inuit Tapiriit Kanatami (ITK) is with us. ITK is the national Inuit organization in Canada, representing four Inuit regions – Nunatsiavut (Labrador), Nunavik (northern Quebec), Nunavut, and the Inuvialuit Settlement Region in the Northwest Territories and the Yukon North Slope. Of course, there are many, many Inuvialuit people here from the six Inuvialuit communities, and I want to thank them for being here. They are important partners in the co-management of the Yukon North Slope and the Western Arctic.

Taqulik Hepa is the Director for the North Slope Borough's Department of Wildlife Management. She has made one of the longest trips to get here: she's come all the way from Barrow, Alaska, and I can't thank her enough for making the trip.

I'm really delighted that, among others, Walter Bayha from the Sahtú Board is here; there are people here from various land claim organizations and boards in the Yukon. Thank you for being here.

There are many people here from the Yukon government's Department of Environment and Department of Energy, Mines and Resources. I think it's a real opportunity for you to contribute your views and your thinking to the discussion, because you are part of the partnerships we are exploring at this conference.. I would like to thank you for your support.

We've got four panels over the course of the next three days. Today's panel is made up of some remarkable people, and the topic is co-management. How are we doing, what have we learned, what are

the challenges and what innovations are needed? Our thinking was to have a panel that would roll throughout the day on a series of presentations, questions and answers. The discussion should be treated as an informal conversation.

Tomorrow morning we have a three-person legal panel. There are a lot of legal issues, challenges and case law that have evolved around the implementation of Land Claims Agreements, particularly as they relate to land use, management and institutions. With the individuals on that panel, we will be well served.

In the afternoon we have a wonderful group of people, from local community members through to scientific researchers and traditional knowledge holders of academic and non-academic institutions, looking at how we use our knowledge to best inform our decisions about land and wildlife management. As most of us know, there is a legal requirement in many of our agreements to ensure that traditional knowledge is incorporated into decision-making. Some would suggest it's been a slow process. This panel will reflect on what we've done well and what we can do better.

The final panel on the third morning will look at managing the extremes. They will look at areas where there are high conservation values, high traditional use values, and very high potential resource values. We can think of a number of cases, certainly in the Yukon, in certain parts of the Arctic, and in northern B.C. where we've been struggling to reconcile highly divergent values and interests. So the intent of this panel is to look at creative ways to overcome the impasses of the past, and to solve what have been longstanding conundrums—ways to break the impasse between conservation and development interests.

Many people have said, "Why are we looking at all these other regions when it's called the North Slope Conference?" In the early years of this conference, the focus was on this area we call the North Slope. There's much we can learn from regions with issues similar to the ones we have here. Similarly, there is much we can share with the other regions. The partnerships we have developed over 20 years are remarkable. So the idea of the North Slope Conference is to look beyond our backyard and learn from the experiences of the other areas. Again, I would like to welcome everybody from these other regions.

Having said that, we are going to take a few moments to acquaint you with this region called the North Slope, and what makes it so special. Then, we will open up the discussion to a focus extending from the North Slope of Alaska right through to Labrador.

Danny C. Gordon, who grew up on the Yukon North Slope and who is deeply attached to it, has agreed to share his knowledge and experience of this area with the rest of you. You are all privileged and blessed to hear what Danny has to say about this very, very special area.

Frank Pokiak, Chair Inuvialuit Game Council

I will now call on the Chair of one of our partners, the Inuvialuit Game Council, Frank Pokiak. Frank has been the Chair of the Inuvialuit Game Council for some time now. He lives in Tuktoyaktuk. Frank has a deep attachment to his culture, his people, and the land.

There are certain times of the year where Frank is totally unavailable because he is doing what matters most to him, and it's not being in meetings like this, it's being out on the land. I am delighted that Frank was able to attend this conference. Frank, if I could call on you to introduce the Conference Chair.

Frank Pokiak
Thanks Lindsay. I think this is a really important conference for us to be at and I am going to encourage our Inuvialuit members to speak out at this meeting. This is where you have a chance to share information with scientists and other people.

My name is Frank Pokiak and I'm from Tuktoyaktuk. I am pleased to be here and I would like to welcome you all here. I hope you notice I wore a tie today, and it's pretty tight, so now I know how my dogs feel.

I would like to welcome Bob Bell here to the Conference as the Chair. The North Slope Council and the Inuvialuit Game Council are pleased to welcome Bob Bell as Chair for the 2012 Yukon North Slope Conference. Bob has had considerable involvement with the Yukon North Slope and played a key role in the implementation of the Inuvialuit Final Agreement. Bob graduated from the University of Manitoba with a Masters in Science and Limnology and has worked as a teacher and a principal in rural Manitoba. He taught in Aklavik and Hay River before joining the NWT Wildlife Service. Bob worked to establish a conservation education section with the NWT Wildlife Service. He went on to work as the Director of Wildlife Management and Chief of Technical Services, heading the Department of Science and Technology. Bob represented the NWT during the development of the Porcupine Caribou Management Agreement. He then went back to private practice in northern Saskatchewan.

In 1988, Bob was asked jointly by the Inuvialuit and the Department of Fisheries and Oceans to chair the Fisheries Joint Management Committee. He knew how important country foods were to the people of the Inuvialuit Settlement Region, and how they had been distanced from the management of those resources. Bob accepted and occupied the position until March 2009. It was of real benefit to the Inuvialuit that he chaired that group for that long.

I think it's really important that everyone here partake in discussions. I said to my daughter the other day at

Bob Bell, Chair, 2012 Yukon North Slope Conference

the hearings in Tuktoyaktuk into the proposed Tuk Highway, "Well, if you're afraid to do that, if you don't speak up now, you are going to regret it." So, she actually went up and she spoke. It's really important that you bring out your concerns.

I would also like to welcome Taqulik. We've been trying to get her into our region for the past two years. It's good to see her. And, with that, I would like to just welcome you all, and to welcome Bob as the 2012 North Slope Conference Chair.

Bob Bell, 2012 Yukon North Slope Conference Chair
Good morning. First of all, let me say how pleased, and indeed humbled, I am to be here. I might add I am also a bit puzzled, because when one considers the accomplishments of those folks that Lindsay named (the Chairs of the Conference), I found it hard to see myself in that line-up. So I scratched my head and came to the conclusion that they probably figured, well, he has grey hair, he's getting old and might not be around too long, so we should tap him for some of his experiences. So that's what you are

going to hear this morning.

Slide
That is obviously Andy Carpenter who was supposed to be a co-chair at the last conference (that didn't take place). They had asked Andy first, so when they asked me, I had no difficulty accepting because, first of all, Andy and I had worked together on a number of presentations and a number of other efforts. We worked together in negotiations, and I knew from the way that he worked, all I would have to do is ride on his coattails and chip in once in a while.

Slide
This slide doesn't have a great deal of significance, except that it is the late All Saints Cathedral in Aklavik. It's one of the most beautiful buildings in the North and it burned to the ground in the early 70s. It was a huge loss; it was an architecturally beautiful building, built with wood and stained glass that had come across the ocean; some of the furniture was the same.

It was wonderful that it was there, because the airstrip in Aklavik ran right by it so it was one of the first things that you saw when you were coming into town.

My wife and I arrived in Aklavik in the fall of 1969, flying in a Beechcraft from Inuvik where the freight doors wouldn't close. It was a beautiful fall day, the trees were in lovely fall colours, the sky was absolutely blue, no wind. The weather was warm, and flying across the delta in those kinds of conditions is about as good an introduction to that part of the world that you are ever going to get.

Anyway, I ended up in Aklavik with a few days to prepare my classes for the start of the year. It was an exciting time.

Slide
It was an exciting time in many other ways, too. This is the famous Manhattan that made the transit of the Arctic in that year. It was the largest tanker, or ship of any kind of that time, that was constructed on the U.S. east coast and then they set about making it bigger. They cut it into three chunks. They shipped each chunk to a different shipyard (because they were on a very tight timeline), made a number of adjustments to it, put new engines in it and attached to the front, an ice-breaker bow. So it was set to go in short order and headed off on its Arctic odyssey.

Slide
This map shows the track that it followed through the Northwest Passage. It had to make a detour south of Banks Island because of ice conditions to the North. But on its return trip it took the planned route. It picked up one barrel of oil and took it back east. It was a symbolic barrel because it was from the Alaska North Slope, from Prudhoe Bay. Not many of us knew at the time that this was really a feasibility test, because there was a discussion about whether it would make more sense to ship the oil from Prudhoe Bay to refineries on the east coast, through a whole series of tankers like this one, or to ship across to Valdez, as they ended up doing, by building a pipeline.

This Manhattan story was one of the catalysts that ignited, or inflamed, the people of the MacKenzie Delta and especially their newly established Committees for Original People's Entitlement (the forerunner of the group that (eventually) negotiated the Inuvialuit Final Agreement). It certainly brought people together. In fact, there is a really interesting CBC news clip from that day, a quotation from Agnes Sumner, who was heavily involved in the fur trade (and the president of COPE at the time). She demonstrated the impact that this stream of tankers could have on the lives of the people who live in that area. So it was a catalyst, from the ISR point of view—a stimulus for getting together and getting something done. When the dust settled from that contentious trip, the powers-that-be decided that this wasn't going to be of use and the Northwest Passage has been left (for the most part) to itself ever since. What's going to happen, no one knows.

Slide
This is 1974 and that's the late Sam Arey. He's panning for gold in the Firth River, so this is well before there was a park. A group in Aklavik, not surprisingly called the Gold Syndicate, had invited me to join their organization to do some exploration for them up along the Firth River. We were following the idea of a couple of prospectors who had gone from the Klondike over the Crow Flats and the mountains to

the Firth River and discovered a pretty fabulous gold showing—not placer but hardrock—on the mountains close to Joe Creek. The rumour was that this was so rich that the quartz veins (that the gold was located in) would be wired together by the gold when the brittle quartz was broken with a hammer. (This does occur.) It was not unreasonable, and it sure would have been nice.

Slide
When I first started off at university, I majored in geology, and had the wonderful opportunity of spending a couple of years wandering the woods of northwestern Ontario and northern Saskatchewan. We had a canoe full of prospecting tools, one of the more prominent ones being dynamite and cords and blasting caps and all the things that go along with it. That sort of thing just wouldn't be allowed anywhere in Canada nowadays. So we dragged everything up to the likely showing and drilled some holes and this is the result. I am showing this slide because it shows that few of us are resistant to the lust of riches and the chase, and the environment usually pays the price. It encapsulates our relationship to our environment and sometimes it isn't too happy.

Slide
So now we will jump ahead to 1989 to the first of the North Slope Conferences. We had worked with Aklavik to establish their bowhead whale harvest. We had taken their recommendation to the Minister, Alex Aviugana. Liz Snider (who was, at that point, our only friend at DFO headquarters in Ottawa) and myself literally chased the Minister, Tom Siddon, down the halls of the West Block. He was coming back from a meeting in St. Johns over the cod fisheries and was dressed in a very nice black suit, shirt and tie, and high rubber boots (with his pants tucked into them). Our foot race must have been successful, because we did get our meeting, but we didn't get what we were looking for.

Slide
Here it was 1991, and that was Titus Allen (the late Titus), the late Danny A. Gordon and the very much alive and with us Billy Archie in front of the carcass of the whale they took that year. This demonstrates a couple of things. One of them is that it was proof that the hard-fought-for IFA really had an effect. The other thing that it demonstrated was that it was possible for two groups who had been pretty diametrically opposed (the Department of Fisheries and Oceans and the people of Aklavik) to actually get together and sing the same tune. Burton Ayles, who is one of the people out there in the audience, was one of the people who was instrumental in making sure that that happened.

Slide
Most of you will recognize the people in this picture—the Prime Minister and his Ministers of Fisheries and Oceans and Health on the shores of Tuk harbour. They were in town to announce the recognition and protection of the Tarium Niryutait Marine Protected Area area in the Beaufort Sea. It was something that everyone has been working for. What was really impressive was that at the end, Prime Minister Harper stood there at the front of the room by the podium and invited anyone that wanted to come up and greet him, shake his hand and have their picture taken with them. He was almost the last man out of the room. Everybody had drifted away and he was just comfortable and happy to be there; however, events that have unfolded since that time have made me question the value of the bargain.

Slide
With respect to the bargain that Canada and the Inuvialuit struck, we have to ask what happens when one partner in a bargain redefines itself and its responsibilities. There was never a glimmer of a thought leading up to the signing of the Final Agreement that the federal government would become less capable than they were at that moment. In fact, the feeling was that they would grow and become more capable.

So now we have Bill C-38, which identifies mechanisms to change the Fisheries Act, to eliminate most of the habitat department provisions and the staff that is supposed to evaluate the impacts that things have on fisheries habitat. Further, the Bill radically eviscerates the environmental impact assessment process. For example, in my home province of Saskatchewan, over 700 projects that were in the pipe for federal screening have just simply been removed. If you think about it, that's in Saskatchewan, which is booming with uranium,

diamond, and potash developments, and with pipelines and roads into the North.

For those in the ISR, this may seem like a very distant problem, not likely to have an effect in this part of the world, but there are, after all, screening committees and the Review Board. There are two wildlife boards; there's the fisheries committee. All of these should be a front-line defense for the important wildlife and fish species. But none of those bodies I just mentioned have any budgets for that sort of thing. The people that I referenced earlier in the front-line departments of the federal government, the science departments, have been so largely removed that the necessary information flow into the environmental assessment programs just won't be there.

It's becoming increasingly clear that, whatever the motivation is, the federal government is eviscerating the science departments (Stats Can, Fisheries and Oceans, Environment Canada, and Parks Canada). Spokespersons, when cornered to give answers, say that these services can be better delivered by the private sector, or the universities.

In fairness, that might be partially true, especially in the provinces, but it certainly is not true in the North. Look at the contributions that have been made to our understanding of fish and wildlife populations by government scientists such as Ian Stirling, John Nagy, Lois Harwood, Anne Gunn, Bill Bond, Gary Stern, Jim Reist, David Mossop, Dorothy Cooley and so on. Most of these people are either at their retirement stage, or they have been retired, so they are not going to be able to feed in. In fairness, we can all think of some university researchers who could fit into this elevated category. The one that comes to my mind is Ross McKay. Projects funded through the private sector in the North are tied to the length of the grant, which is usually four years. The point is that the lifelong commitment to a species (as in the case of persons who have devoted their careers, such as Stirling) is not possible with private sector funding. I will mention four things that I think might be helpful.

First, it is the time for innovation, whether it is driven by the need or imagination, and one would hope that it will be by imagination. I am going to ask you to press the legal panel on the responsibilities of a partner in a bargain. Take an opportunity to congratulate your colleagues who have made substantial contributions to the Yukon North Slope. Then, in spite of all my gloomy reflections, look forward with enthusiasm and optimism in the spirit of my grandfather who told me, "Bobby, you have to believe in the good of the common man."

Lindsay Staples
We will be producing a set of proceedings as we've done for the previous eight conferences. We've also introduced an innovative element over the last year. We've generated a series of podcasts, which we refer to as The Living North. Through iTunes you can download those podcasts (we're seeing downloads to 35 countries) that deal with everything from Chris Burn and his work on Hershel Island to people talking about what co-management is and how it works. The genius behind the podcasts is a woman by the name of Meagan Perry. Meagan is attending the conference in order to generate a series of podcasts. She may buttonhole you with, "Wow, you seem really interesting and you've got something to say." (Of course you can decide if you want to participate or not.) Meagan has done a wonderful job of generating these podcasts and it means we can move into the social media world. Thank you, Meagan, for being here.
We will also have poster sessions later on today and tomorrow. Please take advantage of the posters to learn more about ongoing research on the Yukon North Slope and adjacent Beaufort Sea, and my thanks to the people who've prepared them.

Bob Bell
Thank you, Lindsay. I have this wonderful opportunity to introduce our next speaker. Danny C. Gordon and his wife Annie were among the first to welcome my wife and I to Aklavik. Danny was, and I expect still is, a very good curler. My introduction to Danny came when he asked us to be a part of his rink for the Aklavik International Bonspiel. It was a twenty-four hour, three-day event. I really began to realize what a fine person he was. He is truly a force to be reckoned with, with anything to do with the North Slope, the Delta, on the foothills, or wherever you may happen to be. I am looking forward to hear what Danny has to say.

Plenary Session: Yukon North Slope: The Land of the Midnight Sun

Danny C. Gordon

Good morning. Thank you, Chairman, ladies and gentlemen. I was quite reluctant to wear this shirt for some time. My mom made it for me in 1958 and asked me to wear it on special occasions. It can't get any more special than this. I am glad to be here, and I want to honour my mom for making this coat of many colours. I've been asked to speak on the Arctic North Slope, the Yukon North Slope area. I am just going to talk about some things that I know about. This shirt tells you I am from Alaska—it's the way they dress. My parents were born in Point Barrow, Alaska, and we migrated to Canada from Alaska. We started right after the world war in 1946. We moved from Point Barrow to Barter Island and finally to Canada, Hershel Island, in 1946 by dog team. I titled my talk today, "Land of the Midnight Sun, the Yukon North Slope: flowing with milk and honey and muktuk". That's my vision—that's what I see and that's what I get. Later on we are going to have some caribou. We harvest it and that's my pride and joy on the land. I also want to use the map, as we moved on from west to east, I want to demonstrate where we are going.

Slide

This is me in 1946, getting ready to walk from Point Barrow to Canada. There were eight of us, three boys, three girls, and Mom and Dad. We came with one dog team from Point Barrow and our first stop would have been Barter Island. The first part of the trip from Point Barrow to Barter Island took us about three months. We had only six dogs and the dogs get tired. We stopped many times for a few days at a time to rest and feed the dogs and put them back where they need to be to pull our load. We had one big sled. Everybody that could walk, walked. I guess I must have walked eight hundred miles to get to Aklavik. We didn't complain; we didn't know any better—there was no other way.

Slide

And this is the way we travelled, by dog team. This is not my slide. I took it from somebody else, but it is the same scene. That was the only way to move, except in summertime, when some people migrated from Alaska to Canada by sailboats and small schooners. We did it by dog team, and for sure, so did many others.

Slide

This is my home, my birthplace, Barter Island, Kaktovik. That's taken about seven years ago. It's growing. Except for Mom and Dad, pretty much all ten of us were born here.

Slide

If I knew that I was going to be up here one day to do a presentation, I would have talked to my dad a lot more than I did about migration to Canada. I regret not doing that. From Barter Island to Hershel Island, it took about a month and a half (with many stops). We arrived at Herschel Island in mid-winter and, to my amazement, there were at least 40 families living there, in Ptarmigan Bay and the region around there including Naqokik, and Nanaluk. Small groups of families were scattered and they were all harvesters. Their only source of income was trapping—white fox, coloured fox, polar bears, wolves and wolverine.

First, I want to honour Roland Saaruaq, the gentleman now on the screen. He was there at Ptarmigan Bay when we got there, and we were neighbours for two years. I helped him get some wood and some ice for drinking water, so we became very close friends while we were there. My dad built a cabin I am going to show a little later on, right next to his. You see how he's dressed in seal and seal boots (and they don't leak and you can see the bottom has been oiled quite a bit so that it becomes waterproof). He was born at Shingle Point, Yukon, in 1888. It was a privilege for me, and it still is, to have known someone like him who was born in the 1800's—1888 actually.

Slide

This is Shingle Point now. This is right at the Point, and that's the way it looks today. In fact, up until about 20 or 30 years ago, there were no cabins (except for) two log cabins at Shingle Point. There are now over 53 cabins. People go there for the summer, building cabins and harvesting whales, caribou, fish, and preparing for the winter.

Slide

If you've been around Shingle Point, it is broken into

three pieces. The Point is one camp, my cabin is the middle camp (the white spot) and there are a bunch of houses out there by the ocean.

Slide
And there is the end of Shingle Point—they call that one "down the hill." That's the way they communicate, with CB radios. They're calling from the Point and they call "down the hill." We're middle camp and the Point is right at the start.

Now I want to take you on a trip, from here. Imagine that I want to travel with Roland Saaruaq because he was born there and as a young man got his own dog team and started travelling west from here.

Slide
This is still in Yukon. This is my cabin at Blow River. I've got four cabins, all the way along the Yukon North Slope. I fell in love with the land and I use my cabins for hunting, harvesting and travelling.

Slide
Shingle Point is right there. We're travelling west—we're at King Point. I'm imagining that Roland Saaruaq would have travelled with dog team and would have made some camps there. In his day, he didn't build log cabins, he would have built some sod houses—putting sticks right up, instead of sideways, and making the sod house out of the ground.

This is Police Cabin. There were patrols made a few times a year by RCMP from Herschel Island to Aklavik. This is one of their first stops and that is the police cabin. Now it is all in ruins, a few sticks showing up. This was taken about 30 years ago. There used to be a harbour as well, right here, but it closed up. A big ice floe came in and pushed the gravel up and blocked it up. We used to be able to go in there with schooners, but it has been blocked for close to 30 years. We still go there, but we now pull up next to the camps.

This is King Point. The Inuvialuit name is [Kingnaq]. It's good fishing—lots of char, Dolly Varden scientists would call it. And that's my family.

Slide
And this is one of the strolls that we take while we are there, go for a walk and enjoy the land. Pick up stones and different items like that.

Slide
This was my second daughter. She is now 55 (just taking a guess), but anyway, here she was very tiny. That land isn't there anymore due to slumping and eroding.

Slide
Here is a hill that is gone as well. It's slumping quite badly into the ocean. These are just to show you that the land is very different than we used to know.

Slide
This is still at King Point—fishing and getting ready for the winter.

Slide
That's King Point from the bottom, looking west near the police cabin. This is about 35 years ago, so the cabin is quite far back. That hill isn't there anymore. We would just land, pull up the boats and enjoy life.

Slide
So that's King Point way out and Philip's Bay. There are cabins and people used to live there when we were at Ptarmigan Bay. Actually there's an Inuvialuit name for this one. Niaquliq means 'looks like a head.' When people travel with dog teams or myself, when I'm skidooing, we use landmarks. So that's what we head for. It's called Niaquliq and Archie Erigaktuk, Billy Archie's grandfather, used to live there for many years. And the other person that I know about that used to live there is Joe Inglangasuk. That's Mervin Joe's grandfather. And there were many others there. That land was well used.

Over this way is the Babbage River. That was a main run for the char going up into the mountains. So whenever people make camps, I always find they consider probably a few things. One would be shelter: shelter from west wind, east wind. Another is wood, and another is water source. There is one just a little ways up in this area. And there's got to be good hunting. Caribou go there and there's good fishing.

Slide
This was taken just about three weeks ago, at Blow

River. We were hunting caribou and we got some ptarmigan with a shotgun. These are my great-grandsons; I guess that's the sixth generation of my family right there. So I take them, and I try and teach them as much as I can about how to travel and where not to go and what to do and how to prepare. They plucked those ptarmigan by themselves.

Slide
This is Philips Bay. These are the cabins. There are about four of them. There's a graveyard and some sod houses farther down on the beach.

Slide
Travelling west, we are at Roland Bay. Old Roland had two camps here. At his summer camp he set up his tent and went fishing for char and herring. And the caribou is abundant in that area. We met him there quite a few times on our travels in the 1950's and 60's.

So this bay is named after Roland—actually Saaruaq. Way back then people did not know how to spell their names so when people registered in Aklavik with the RCMP, they used their family name. Billy Archie is called by that but he's actually something else, as is Mervin Joe. And that's the way they entered Canada, registered under those names.

Slide:
We're still at Roland Bay. This one is his cabin inland and that's his winter cabin. That big inland lake has a lot of white rockfish and there's a small creek. They all come out after break-up and he goes there for the summer with his dogs.

Slide:
We're at Ptarmigan Bay now, right here on the mainland. This place is dear to me: we've been there this summer and twice during the winter. That's my cabin that I built 28 years ago. I moved this cabin there in '96. Just this summer, when we went there, I had to move it again and it's down on the beach now. All of that land is eroding. It's all ice. I've lost a lot of land. The rest of the island is good. Actually, there's lots of edible wild rhubarb in this area. That's the entrance way, it has got good shelter from the wind. This is where we go a lot for vacation.

Slide:
When we came from Alaska to Ptarmigan Bay [Qarrialuk] my dad built this (winter of 1946). We lived in there for just about a year and it's still there, although it's starting to come apart in areas.

Slide:
Land of the Midnight Sun is still flowing with milk and honey and muktuk.

Slide:
We're back to Ptarmigan Bay preparing Arctic char—making dried fish.

Slide:
I think it's 1967 in this photo. We were at Ptarmigan Bay, and people from Alaska came with their little schooner. That's my dad's brother, Fred, and Archie Brower, and Dorothy, Fred Gordon's wife. And that's my dad over here; he didn't comb his hair. And that's my mom, and that's my girlfriend.

Slide:
This is at Ptarmigan Bay. This is Ugruk (bearded seal). There were two of them—this is the female and this is the big male. I was within 15 feet of this one. (I took that with an 8-mm movie camera.) He'd just come out to rest up.

Slide:
At Ptarmigan Bay, whales come in once in a while, so we took a lot of photos and movies.

Slide:
This is one of the Eider ducks nesting at Ptarmigan Bay. There are a few of them around. I was about three feet from this guy, and she is lying on her eggs. There are lots of Eider duck and a lot of different kinds of waterfowl in that area. It's rich.

Slide:
This is at Ptarmigan Bay again. The caribou come around. When we were there one time, with young Bailey, the lawyer, we had a tent behind the wind break. This small female caribou went to sleep between the tent and the wind break.

Slide:
This is one of the caribou—I took a picture of him

before I shot him.

Slide:
The land has supplied me and a lot of other people for many years. Some of the things the land gives to me are the grizzly bear, and wolverine.

Slide:
The land is the best in the world.

Slide:
That's us travelling by snow machine. We skidoo a lot, sometimes 40 miles inland. And then we say, we're going to climb this hill – and we climb. And then, there's another hill beyond that. And so, we just kind of quit and start for home because we can only see so much. Beyond what we can see, there's more, and there's more … and there's more.

Slide:
That's one of the joys of snow machining. It gets really steep. Once on our way back we were going down so fast with snow machines that our ears plugged. It's like coming down on the aircraft.

Slide:
This is the Babbage River.

Slide:
We're back to Ptarmigan Bay. Fishing is always good there; we always get something. That land supplies me, and many others.

Slide:
I cook once in a while.

Slide:
There's one of the hills that are very sharp and we (Joseph Allen and Lawrence Rogers) went on top.

Slide:
This is just some of the fish that we get, and we dry them, preserve them. We hang some of them and take them home and eat them. Quak is frozen fish.

Slide:
There are seven plants in this photo. I put them there and took that photo. That's some of the plants that grow here, and there are many, many more.

Slide:
This was a month and a half ago at Herschel Island. Shelly is the fifth generation, and those two young guys are my great-grandsons (the sixth generation). We got three caribou.

Slide:
And here we are, loading up some of the meat, taking it back to our camp. Preparing it for lunch, we would boil the tongue, boil the jaw, boil the head and have a feast.

Slide:
This is Herschel Island. I can imagine this place holding that many families way back, when people used the land. And that's where our camp is—inland from Herschel Island.

Slide:
This is Herschel Island scenery: Avadlek Point they call it, West Side Point. In fact, I took one of these plants home, but it fell apart.

Slide:
Another sunset.

Slide:
This is Herschel Island about 35 years ago. That's the ice house.

Slide:
We're going west to Nunaluk. That's actually the Firth River, where the Arctic char spawn up into the river and Joe Creek and all those areas. That island is now fairly small. This is about 30 years ago, at least, and that log cabin was built by Allen Opik from the Delta. There are only 3 or 4 feet of land left—that log cabin will be gone.

Slide:
These seven sod houses were just a little bit west of Nunaluk about 30 years ago. The logs and small sticks are all laid up upright (some of them longer and some of them shorter). I'm sure our people from way back didn't have saws or axes to cut with so they just pick up what they can, put the wall up, put some dirt around it and perhaps caribou or seal skin roof to

close it in.

When I see these historical sites, I always take note—for myself. This place has a shelter, lots of wood, (always) a water source, and good fishing and caribou migrating through.

Slide:
The harbour is right here, and those cabins are all in this area. There are tons of wood and over this way is the water source. The people that put us on the map used to live in those homes.

Slide:
We're at Clarence Point, just before the Alaska border. That's the Hudson's Bay store and that's the warehouse. That warehouse is not there anymore. There used to be 11 sod houses right here, but they're all in the water. Some of them are still up in here. Actually, one of our people was the manager of this store. His name was Irish Kerouya. One of our people, migrated from Alaska to Canada. We got there a little bit late—about 7 o'clock. The store was already closed so we didn't get any supplies. Actually, it was abandoned when we went there but it was still useable. That's Clarence Bay (Qainniurvik).

Slide:
That's the same Hudson's Bay store. A lot of this is fir lumber and that's why it stays and it doesn't break away and rot as quickly.

Slide:
This one is during winter time. That's just the back part of the house at Clarence Bay; the warehouse is gone. This is one of our skidoo trips there.

Slide:
This is our camp at Clarence Bay in summer time.

Slide:
That's Clarence Bay in 1972.

Slide:
That's Clarence Bay from the air.

Slide:
That's the story of my trip on the North Slope. There are just no words to describe the land that is the Yukon North Slope. Those of you that live in Whitehorse, or on the inland part of North Slope, you don't know how privileged you are to have the land that I just described to you. The best thing I know how to do, I want to do, and I hope the government does, is to keep the land the way it is so people can keep using it. I recently went down and got some fish and some caribou. The North Slope is kind of like my warehouse. I've said it before—when I go there, when I open the door when I get to Yukon, there's caribou, there's fish, there's ptarmigans, there's ducks, there's whales, there's seals—and my highway for both boating and snow machining. When I leave, when I'm done hunting and going back to Aklavik, I close the door and I always think, the land has been good to me—it's given me enough food for the winter. Now I am going to close the door and leave it just the way I found it. I take all my garbage to Aklavik (both when I'm skidooing and boating). This is my pride and joy and I hope—I think I know—that Yukon is proud of this land.

So, Roland Saaruaq is the first one I want to honour—I guess you have to be born in 1800 to get your name on the map. I think it's our turn next time they make some maps. There are lots of rivers, lots of mountains that are not named. One of them is Sleepy Mountain. Hopefully, we'll name that one with one of our men or one of our ladies. That's my hope.

From here I am going to talk about another gentleman.

Slide:
And here I have Harry and Minnie Inukiklak. These people are dear to me because my wife's grandfather migrated from Wainwright, Alaska. I need to be corrected, a little bit west of Point Barrow. He was born in 1890 and migrated to Canada by dog team. You'd be amazed with how many miles this man covered—exploring and learning. There's a new word that I learned, 'innovation.' It means doing new things, and this man did. He didn't have a map or a compass. He just followed the ocean along the shore and found himself in Coppermine. Can you imagine that? Coppermine now is Kugluktuk. He went there by dog team. I don't know if he has a name on the map at Kendall Island. He's got a channel that's named after him, but I don't know if it's on the map

or not, 'Harry Channel.' And he's got one of these sod houses that he built. It's still there (in ruins) but they keep telling me you can see it.

So he went all the way to Coppermine–Qitirmiut. I would imagine he must have passed through Tuk and Bailey Island and Paulatuk. And I guess I talked to him a little bit about this. And because he was Annie's grandfather, I muskrat hunted with him three or four times, so I knew him very well. I have a lot of respect. He taught me a lot and I'm sure if I would have talked to him a lot more, he would have told me a lot more things that I would like to know about him. But anyway, he went that far and decided to backtrack. From there, he went to Paulatuk. I have been told that he lived there up to four years. This is what I've been told by some of the elders. He's got a sod house that he built there only about a half a mile from the settlement, and is still visible. He was the one that built it and it is a landmark that he left behind. He was a handsome man. His wife was from the Delta as well. And their first daughter was born in 1910, in Canada. So you can see he bought a schooner, and he harvested and trapped. It has one mast, and he bought a scow with it so it would have cost a few dollars, but he paid for it with cash from the income from harvesting. He travelled all the way to that far place and went back, and finally settled in the Delta. That's my land now—that's my country. I trap and I hunt in that area for muskrats (Alukkasik). Just about 35 miles north of Aklavik is where he settled and passed away in the 1950's. He is my hero. Actually, Minnie is buried at Herschel Island. 1947 she passed away. Her grave site is there on top of the hill.

So thank you for your patience, and that's my trip. Thank you.

Lindsay Staples
A few brief remarks before we move on: The essential book on Herschel Island (Danny talked a little bit about Herschel Island), which was produced by our Council, and edited by Chris Burn (who is with us), is available for sale at the book store on Main Street. It is quite a remarkable story about the natural, social and cultural history of Herschel Island. Following Danny's talk, you may want to look at it to learn more about a special part of the Yukon North Slope.

There is a presentation this afternoon in the poster room by Jason Duffe, who is associated with the eSpace project. This is a project that is conducting a videography of the Arctic coastline for a number of reasons, not the least of which is a contribution to contingency planning as it relates to oil spills. It is a really interesting technical piece of work. I would note that one of the speakers on Thursday morning is Barry Worbets. For those who have known Barry a long time, you will know that he worked for Gulf Resources in the early days of Beaufort exploration. Barry actually was responsible for producing one of the first environmental sensitivity maps of the coastline. So you can look at what Barry did in the 80's, but a lot has happened technologically since Barry did his work and I'd really encourage you to check out the eSpace presentation.

Finally tonight, courtesy of the Joint Secretariat, there is a wine and cheese event. And the film "People of the Feather" is being screened as well, so please enjoy.

With that, John Cheechoo is going to take you through the afternoon. John is the moderator for this panel. For those who don't know John, he has been, for a number of years now, the Director of Wildlife and Environment for ITK (Inuit Tapiriit Kanatami, the national Inuit organization) in Ottawa. And John, as part of his work, has been heavily involved in many of the issues that we work on in an international forum. Part of John's work is working to achieve some level of coordination and collaboration across Inuit regions in Canada, and that's no small job. He's also heavily involved in the international work.

Panel 1: Applied Co-Management: Challenges and Innovation

John Cheechoo – Panel Chair
Thank you, Lindsay, for inviting myself and ITK to moderate this panel. This is the first time I've ever been at this meeting, but I take a big interest in how co-management is taking place in the Arctic regions. When we advocate for polar bear conservation issues, for instance, we put a lot of emphasis on how co-management is working for Inuit in the Arctic

regions. We see that it is working towards those conservation goals. There is a lot of criticism which would shut down things such as polar bear trade. I think the co-management process is an important part of explaining to the world how it works in Canada, and how innovative it is compared to other

John Cheechoo, Director, Inuit Tapirit Kanatami

areas of the world. I have been to many different international forums with Larry and Frank, with a number of Inuvialuit as well as other Inuit in other regions, and we talk about those issues and try to let people know about what's taking place in the Arctic and that people aren't just killing off animals at will. Sometimes it's hard to explain, but we keep doing it.

I'm originally from the James Bay region of Ontario/ Quebec area. The people there do a lot of fishing (whitefish and trout) and hunting (goose, moose and caribou). In Ontario, on the west coast of James Bay, we have a treaty which is one of the older treaties in Canada (1905). It was part of the treaties that were being struck in the 1800's and early 1900's. And on the east coast of James Bay, we have the James Bay–northern Quebec region where one of the modern land claims treaties have come about.

I have been fortunate to live in both the world of an old treaty and that of a modern one. And people are related to each other on both coasts. They have families and have intermarried. They follow the same type of culture, but there is a big difference when you cross that border from Ontario to Quebec, because of these different treaties. It was certainly very important that, back in the 1600's, part of the biggest push in the James Bay and Hudson's Bay areas was, of course, the Hudson's Bay Company coming in to get furs to satisfy European demand. So there has always been a backdrop or a push for resources from the land. In the early days it was fur; in 1905, when the treaty was struck, it was all about, not only creating a country, but also about getting at minerals and forests.

In the James Bay/Quebec Agreement, from 1905 to 1975 (70 years), there was that same push to get those resources such as hydro. But the big difference throughout that whole time was how aboriginal rights were carved out. In 1905, the clarity about aboriginal rights was not there, as it has been in the modern land claim agreement. In 1905, Duncan Campbell Scott and a couple of other commissioners went down the rivers for a summer, and began to put together a treaty for huge tracts of land. There wasn't an implementation process. We didn't have access, or options to take legal action. The treaties themselves are very old and they weren't very well negotiated.

What I see in terms of the modern land claims agreements, is that issues and processes are spelled out better now. They are written down and negotiated (some over 20 – 30 years). With the modern treaties these processes are there for resource sharing. I have found the co-management boards themselves very interesting. The process is important in itself, as it is a sort of meeting point for all the parties involved. In treaties, like the 1905 one, there is nothing like that. The treaties were meant to set people aside in order for expansion to happen. So it is very important to see this genesis of treaties, from the early days of trade to treaties to now, when rights have been carved out a lot more differently. I'd like to broach that discussion with the people who are here from Alaska across to eastern Canada and Labrador.

Co-management is about a crucial relationship

between aboriginal people and federal/ provincial/ territorial and state governments, and is part of modern land claim agreements such as the Alaska Native Claims Act, the James Bay and northern Quebec Agreement, the Inuvialuit Final Agreement and the Nunavut Land Claim Agreement, the Labrador/Inuit Land Claims Agreement and the Nunavik/Inuit Land Claim Agreement. From Alaska to Labrador and elsewhere, these and other agreements establish a variety of shared and collaborative arrangements for the management of wildlife, including fish and marine mammals, habitat, parks and other areas of special natural and cultural significance, as well as the environmental reviews of proposed developments. This session will explore the challenges and lessons learned, and the innovations required to make co-management work to the satisfaction of aboriginal, federal, territorial and provincial and state authorities. This is no easy task, but I think when the co-management process came to be, it meant that people had to work together. The spirit of that is very important because previous treaties didn't have that. Modern land claims agreements have become much more complex in terms of representation, legal aspects and so forth.

Dan Lindsey has worked in the Yukon for the majority of his career, initially in Renewable Resources field positions. This was followed by an immersion in early land claims negotiations such as the Yukon Umbrella Final Agreement. Since those days, he has managed various operational programs ranging from environmental protection and compliance of fish and wildlife management activities. He has had considerable involvement in the initial implementation and ongoing working relationships with the Yukon Fish and Wildlife Management Board, various Renewable Resource Councils and, in the early times, the Porcupine Caribou Management Board.

Dan Lindsey
Danny's presentation was one that was obviously from the heart and really shows the tie to the lands and the history of the folks. I know when Danny talks in earnest at the WMAC North Slope meetings, everybody pays attention.

I'm going to talk about co-management from the Yukon Government perspective.

There are essentially four different types of collaborative management processes, and the North Slope is what people here are familiar with. For the IFA, the Wildlife Management Advisory Council was the ground-breaker for collaborative management. A lot of people look to the IFA as setting the standard. We have another unique relationship with the Gwich'in Comprehensive Claim and it is a different mechanism, a little bit more complicated. It echoes the Yukon First Nation Final Agreements, but is unique in itself.

I don't want to go into each individual one. We have 14 Yukon First Nations and we have 11 Final Agreements. We have the Yukon Fish and Wildlife Management Board and various Renewable Resource Councils. Members are nominated by the Minister or the First Nations, but they don't represent the First Nations or the Yukon government. The Porcupine Caribou Management Board is another unique collaborative process. And there may be others yet to come. The additional piece here is that, within some of the Agreements, there are sub-components. So if you look at, for example, the Kwanlin Dün Final Agreement, there was a requirement for a Southern Lakes Wildlife Co-ordinating Committee, which has accomplished another collaborative process. There are more likely to come, as there are more embedded within each Agreement.

Those are all the 14 First Nations. Through the Gwich'in and the Inuvialuit areas there is a lot of overlap, so it creates for interesting times and challenges. Whether it's species or ranges, there's a lot to consider with overlaps.

The Yukon is different than Nunavut. It's different than the Northwest Territories. It's primarily, and has been, a centralized pan-territory government. It's a party structure, unlike the other two northern territories. Currently, it is the Yukon Party that is in power, but there are NDP and Liberal representatives. The demographics are quite a lot different. Some of the rights and agreements are different. Connectivity is different: we are connected by roads to most of our communities so, if you have a harvest issue and you close down an area, you still have a mobile hunting force that can move around, and you end up with

impacts in another area.

And we have had devolution of our lands. Earlier in the 90's we moved from a very central (Whitehorse) based structure to a regional structure. We have five regions within the Yukon. That was in light of the Umbrella Final Agreement, and of the fact that we need to be out there in the communities.

We also structured a planning section, with a formalized planning process. We realized that we had to sit down and talk about the issues and do it in a manner that was reasoned. Because we had time, we could sort a lot of the concerns at the front end. We focussed a lot on collaborative processes, plans and legislation, and are trying to support capacity both in the communities and within our own organization.

The IFA strength and foresight has been in targeted wildlife implementation funding, and we don't necessarily have that in Yukon First Nation Final Agreements. That is something that is pretty unique. In order to do a lot of the work, you need funds and resources. I think that's one major strength of the Inuvialuit Final Agreement.

Just a few of the plans folks might know about that have been done collaboratively with the communities, First Nations and the RRCs, are a bison management plan, a wolf conservation management plan, and some of the community management plans.

I just mentioned that a lot of our planning exercises are for particular species or herds, as well as area-specific plans. In this case, bison management was a little different. We had a bison technical team composed of at least two First Nation governments and a number of RRCs. Other people that were involved included the Yukon Fish and Game Association (as observers) and, of course, governments. We ended up with the final approved plan just a few months ago.

Another controversial one that had its origins in the 1990s was the wolf management plan. There was a need to review that. We were concerned about how this was going to roll out. It was done in collaboration with the RRCs, WMAC, and the Fish and Wildlife Management Board. At the end of the day, it was a very good plan. We had a lot of engagement and it wasn't nearly as controversial as we thought it was going to be.

Some of the examples of co-operative management beyond planning involve sitting down with First Nations or the communities and really focusing on priorities. We've done a lot of partnering lately on everything from survey work in Kluane and Selkirk, where funds are provided collectively, to field work analysis and results assessment that have been done in a collaborative setting. We also have done joint field monitoring, whether it's harvest or environmental assessment work. We are just breaking ground on coordinated harvest management. I think that's an area that will be of interest to a lot of folks for the future.

I'll talk about the challenges of co-management. It's hard to change how government does business, and it takes time and money. For government, as well as for Boards and Councils and First Nations, and the Inuvialuit it takes a lot of time. We've had huge turnover in our Fish and Wildlife Branch. We lost a lot of the corporate history that brings consistency and fairness to the organization. You also see this in some of the Boards and Councils as well.

Timeframes can be a challenge. In a political arena, generally you're looking at a four- or five-year window, and on hard, difficult issues, twice as long. And there is no end of the complexities of overlap of traditional territories. They are challenging and sometimes, legal interpretations are required.

There is also a need to deal directly with First Nation governments and Inuvialuit agencies, beyond the processes identified through the WMACs, the Renewable Resource Councils and Fish and Wildlife Management Board.

Opportunities are considerable. We are entering the age of self-government in which relationships and specific acts and legislation are being developed within Yukon First Nation governments. We're well into implementation of a few land use plans. For environmental assessments in areas that see a high level of industrial exploration, we often need to sit down and figure out where our priorities should be.

Just as a parting comment, if you look back 10 or 20 years, I think you will see that there has been a lot of change. There's lots of room for improvement, but I look back to the 80's and think where we are now in 2012, and there have been some really major accomplishments. Thank you.

John Cheechoo
Next to present is Marsha Branigan from the GNWT. Marsha has worked full time for the Government of the Northwest Territories in the Inuvik region since 1995, and currently is the Manager for the Wildlife Division for the ENR in the Inuvik region. Marsha has served as a member on the EISC and currently serves as the ENR member on the WMAC in NWT and the Porcupine Caribou Management Board. With many overlapping wildlife species, the work of ENR is closely linked with its counterparts on the North Slope. Recent work has been done with Porcupin e caribou, grizzly bears and polar bears, Dall sheep and muskox and moose.

Marsha Branigan
I'm humbled to be up here, having been asked to participate in this. I think it was a moment of weakness and, actually, we were on the North Slope when I was asked to do this, and I never really thought about how big this room was going to be. I agreed to do it, but I feel a lot more comfortable in the communities than I do up here, so we'll see how it goes.

I have lived in the North for 20 years now, in Inuvik, and I officially work for the Government of the Northwest Territories, but actually, for me, I consider myself that I work for the co-management processes in the region. There are two land claims in the region.

The Inuvik region includes the Inuvialuit Settlement Region and the Gwich'in area. In the NWT, we rearranged our regional boundaries quite a long time ago to match the land claim agreements. So Inuvik has two land claims that we have been working under.

Each claim is different, but they have created co-management systems that have been operating for 20 and 28 years in the region. Under the land claims, co-management boards are advisory to the appropriate Minister. This constitutes a legal obligation for the Inuvialuit to have meaningful involvement in wildlife management. The boards are set up to consider all the available information and make recommendations, but in the NWT, the advice that is provided is taken very seriously. It is a rare event, and I am not implying that it has never happened, but it is rare that the Minister does not accept the recommendations from these boards. I have heard it said many times—oh, they're just an advisory board. The "just" part of it has got to go away, in my view.

I feel that my role is to bring information to the table that will help others make management decisions. In order to reach those decisions, we all need to come to the table with a mind open to new, innovative ideas to try and reach a consensus on the recommendations. In many cases, these recommendations involve both the NWT and the Yukon, and discussions between the two Wildlife Management Councils is essential.

Marsha Branigan, Manager, Wildlife Management, Department of Environment and Natural Resources, Government of Nothwest Territories

Wildlife Division tries to hold public meetings in each community annually, presenting the results from the annual research and our plans for the next year, and to try to hear any concerns or questions at a community level. Community interests are integral to planning and management decisions, and inform the decisions about what fieldwork we conduct. The program in the Inuvik Region is committed to trying to work with the communities. Key for me is that I don't believe in "us and them." I believe the only way we can make co-management work is to think "we." Collaborative solutions are the only path to success and mutual respect, and fair-mindedness is key in that process.

I also sit on the Porcupine Caribou Management Board and we get into these kinds of discussions where we have to try to come together. We tend to put our hats on (we all wear our orange toques) and have to try to come up with a solution.

It's important to strive for solutions that work for all of us, but especially for the communities, and each community is different. Number one is the need to keep lines of communication open. Social media is the way of the future and we need to figure out a way to use this more effectively. The Aklavik Hunters and Trappers Committee has got a very active Facebook page that's always kept up to date. This isn't the whole solution, but these are the kinds of things that we really need to start using.

I don't believe that everything is perfect in our region; we are still working on issues. One that I believe that is critical, is putting more emphasis on local and traditional knowledge. I can think of many examples where science was presented with confidence, but in the end, local harvesters (who spend more time on the land) had a better picture of what was really happening.

Another point is that I really think projects need to be owned more at the community level. Working to build capacity at the community level will benefit everyone.

Some of the issues and areas that have proved especially challenging in my experience include capacity issues (both in our department and with all of our partners), and staff turnover is very high in the region, which adds to the challenge. A lot of this is due to the cost of living. Trying to keep close contacts and working relationships with six Hunters and Trappers Committees and four Renewable Resource Councils in the eight communities that the region serves is challenging. We don't have roads to all of our communities.

Prioritizing the projects and being able to produce timely information about questions and concerns raised at the community level is often challenging. The size and the remoteness of the region (this is the most northern part of the NWT), and the logistical challenges and costs of working in that environment are enormous, and are underestimated by the rest of the regions in the NWT. The region is large and includes a large number of very high profile species, polar bears, for example. And they tend to overshadow some of the other species that are important to the Inuvialuit.

The number of players involved in some of these matters can make achieving a goal challenging, but not impossible. An example is the development of the Porcupine Caribou Harvest Management Plan, which took a lot of effort by a lot of parties. There are also examples where the interest can be at a national or international level, as is the case for polar bears.

The Inuvialuit Region has the only land claim in the NWT and the Yukon with polar bears, except for those rare bears that will wander inland. But this high profile species has become the poster child for climate change and international issues. Interest in the species can be overwhelming at times.

This, however, is also an example of where strength in partnerships has emerged. Aboriginal organizations and governments have been working more closely in the last few years on polar bear issues than ever before. There has been a renewed commitment to exchange information, get advice and include the aboriginal perspective in Canada's responses.

The land claim agreements provide legally protected rights for aboriginal groups to have meaningful involvement in wildlife management. They have changed the way we do wildlife management in the NWT. This is no longer the government just coming

in and setting the rules: these land claims finally give aboriginal people a role in wildlife conservation. These agreements require all information to be considered in management decisions, not just science, but aboriginal traditional knowledge. This hasn't yet been done to everyone's satisfaction: it's something that those who are setting up new land claim agreements should take seriously right from the beginning.

The GNWT values its relationship with aboriginal governments and governments from the land claim and non-land claim areas. There are always bumps in the road, but in general, I believe the NWT is ahead of the other jurisdictions when it comes to recognizing and implementing land claim agreements.

Another key point is that everyone needs to understand the process. These land claims have been both in place for over 20 years in the Inuvik Region, but not everybody understands them. Information about the land claims should be part of the school curriculum. Everyone needs to be open to collaborating on innovative solutions and that means coming to the table without set positions. Open lines of communication build trust and understanding. In the end we are all working towards the same goal, whether it is the mandate of ENR or the goals of the IFA. In order to reach those goals, we all need to consider each other's information and views. There is a lot of baggage that we need to leave at the door so that we can move forward in this relatively new regime.

Co-management processes take time, depending on the issue and the number of land claims involved. In the long term, co-management gives community ownership to programs and the desire to create solutions for themselves and their children. In my experience, the Inuvialuit and Gwich'in are firm believers in sustainable use of wildlife and these land claims provide a mechanism for them to have meaningful input into the management of these resources. My job is to help facilitate that. This is a relationship that takes a lot of consistent hard work. In the end, it's worth it. Working together we can accomplish much more.

Questions and Comments

Don Toews
I am a member of the Carcross Tagish Renewable Resource Council and, formerly, the Chief of Fisheries in the Yukon for about 20 years. Having been involved in negotiation of land claims and the implementation of land claims, one of the things that was always near and dear to my heart was this whole notion of capacity building, and I notice it wasn't really mentioned in the first two talks that we had. For example, the Renewable Resource program was established at the College about 20 years ago and we have probably had almost a hundred individuals graduate from the program. In every First Nation, in (Yukon) government and in every agency, there are these Renewable Resource graduates. Some of them have gone on to get degrees, but they have kind of been the bridge between the community, the traditional knowledge source, and the science.

Within government too, for many of the graduates, there is greater capacity to adapt to implementing land claims and a different perspective. I just would like to know what other perspectives are on capacity building.

John Cheechoo
Thank you for that. I think it is a very important question because we are looking at bridging and having the new generation come in to work on these long term processes.

Dan Lindsey
Don should have mentioned that he was also the Director (of Yukon Fish and Wildlife Branch) for close to two or three years. I know that it's one that we struggle with in government, but we are also seeing gains within a lot of the First Nations and Inuvialuit. You have people that have been around and working for your organizations for quite some time and we are using people that have that cross-cultural background and that are becoming scientists as well. It boils down to how many positions you really have and how deep are your pockets in order to get the people in, but it is happening—just not at the pace it probably needs to.

Marsha Branigan
I agree we are making headway. We've got a lot more aboriginal people working for our government and in

our region in particular, but I do agree that there is more room for improvement. I think, at a community level, the Hunters and Trappers Committees struggle to keep resource people in their offices. We can't pay them enough. People won't stay there and work there if they can't make enough money to live in the community. We can try to get more money for the Hunters and Trappers Committees to have adequate funding to hire people.

John Cheechoo
I wanted to see where education strategies are occurring, not only from the communities but from within the region to be able to participate in the processes under land claims. Is there a particular area or strategy that has been looked at for that area?

Marsha Branigan
I'm not sure I'm the best one to answer that question for the Inuvialuit, but I know that there is a Renewable Resource training program or technician program in Inuvik, at Aurora College. That's been running for quite a number of years to train staff for the Wildlife Management Division.

Don Toews
We are going to talk about traditional knowledge and scientific knowledge, but they (students of renewable resource programs) really do bridge the gap because they are from the First Nation, they are from the communities.

John Cheechoo
Thank you very much for that question because it certainly raises the whole issue of the future and what to invest in young people coming out of educational institutions.

Lawrence Ruben
In terms of the training, within the NWT, the Natural Resources training program worked very well. It's been an inroad and a good opening for individuals to get into environment and natural resource management.

(To Dan). Just recently, in the NWT, they were talking about the process for informing the public on measures to counter declining herds. Has there been any progress, Dan, in the interim measure process that you have within Yukon?

(To Marsha). In your department, what is the Minister of Environment doing now to ensure the public get information when they request it as to what's happening with the caribou herds?

Lawrence Ruben, Chair, Paulatuk Community Corporation

Dan Lindsey
Interim measures on regulations respecting the caribou have been removed. There are no regulations that exist for that. In place of it is the harvest management plan, and that's the one we've certainly committed to following. We're fully behind the harvest management plan that was agreed to by all the parties.

Marsha Branigan
The question was, how is the Minister of Environment getting information back to people who ask about what's happening with the caribou herds. I can't really speak for the Minister directly, but we do have a lot of information on our website, and also, if people want current information about the caribou in our region, it's probably better to approach the local office. I'm not sure exactly what you are referring to but we are trying to keep the people informed. New surveys were conducted this summer and we brought the

results to the co-management bodies first and then it will be put out to the general public.

Lawrence Ruben
What is the process for the Bathurst caribou herd in terms of getting information out to the public (instead of just automatically putting regulations and quotas on communities that hunt the Bathurst caribou herd)? On the radio last week, they were talking about the Bathurst caribou herd either declining or being stable, but they said there would be a process in place instead of just the government automatically putting regulations on the herd.

Marsha Branigan
Yes, the Bathurst herd is actually, for those that don't know, a herd that winters outside Yellowknife, so it's outside the Inuvik region. I'm not directly involved in that herd management, but there has been a lot of controversy about the Bathurst herd when the numbers came in very low. The government took measures to protect the herd and, in the meantime, met with the leadership in the regions, and some of those regions are not settled land claims, so it makes it even more difficult. But my understanding is that they are working with leadership to come up with a plan to deal with the declines through harvest management.

John Cheechoo
Joe Tetlichi has been the Chair of the Porcupine Management Board since November, 1995. He was born and raised in Fort McPherson and was educated in residential schools for about 12 years. He spent 20 years out on the land, living the traditional subsistence way of life. He has served as Chair of the Tetlit Gwich'in Renewable Resources Council and Chief of the Tetlit Gwich'in First Nation in the Northwest Territories. Joe moved to Old Crow, Yukon, in 1995 and continues to reside there with his wife and two sons.

Joe Tetlichi
Thank you very much, John. I'd like to first thank the organizers for inviting me to this conference. I'm glad to be here.

I don't have a PowerPoint, however. My style is just to talk to the people. I will give you an idea of what is the PCMB, our function, our mandate, some of the best practices, and some of the positives and negatives that go along with co-management in regards to the Porcupine Caribou. I want to stress that I'm only talking about the Porcupine Caribou, no other herds.

The Porcupine Caribou is one of the most researched caribou herds across Canada, if not around the world. We have lots of research dating back from when the Board was first established. It was established under the Inuvialuit Final Agreement, which simply states to establish the Porcupine Caribou Management Board. After the Inuvialuit Final Agreement was signed, the governments got together to try to put the Board together.

At this time, I really want to pay tribute and acknowledge a lot of our traditional, local people who were part of this process to establish the Board.

Joe Tetlichi, Chair, Porcupine Caribou Management Board

Some of these people have passed on, and I will just note Andy Carpenter, who was one of the main forces for the Inuvialuit Game Council. Also we had Johnny Charlie, who was the Chief and Board member for the Gwich'in Tribal Council. Also, we have Percy Henry, who is still with us, from the Tr'ondëk Hwëch'in.

We also had the late Johnny Abel from the Vuntut Gwitchin. Stan Njootli is still with us. We have, over in Nacho Nyak Dun, Albert Peter, who was one of the main forces within the aboriginal groups.

Normally, when we talk about governments, we talk about the territorial and the federal government. But I'm going to be talking about the eight governments because the Board originally consisted of five aboriginal groups and three other governments. Since the PCMB was established back in 1985, all five aboriginal groups that are associated with the PCMB have settled their claims. There are now eight governments associated with the Porcupine Caribou Management Board. We have the Canadian government, the NWT and the Yukon territorial governments. On the aboriginal side, we have the Gwich'in Tribal Council, the Inuvialuit Game Council, the Vuntut Gwitchin, the Tr'ondëk and the Nacho Nyak Dun First Nations.

The Board was established back in 1985, but because the work had international implications, two years later there was an international board established. The function for the international board is mainly to update each country if there are any activities on the habitat and range.

One of the mandates of the Porcupine Caribou Management Board is to protect the health, habitat and the continuance of the herd—meaning that we always want that herd there for future generations. That's one of the rules that our local experts (original Board members) have really followed. Some of them have passed on, some are still with us, but without these people creating a strong foundation for the Porcupine Caribou Management Board, we wouldn't be where we are at today. It's really important for me to acknowledge these people, because these people were our local experts. We always talk about traditional knowledge, and that's where it comes from.

The Porcupine Caribou Management Board has had challenges. In 1985, they did the groundwork for us, but in 1988, there was really a challenge because the Arctic Refuge was being sought for industrial development. Most of our time with the Porcupine Caribou Management Board then was spent on education. Our people were going down to the States lobbying for the protection of the calving grounds. It's good to say now (it's been 28 years), there's still no development on the Arctic Refuge. So all the Inuvialuit and the Gwich'in, and the Vuntut Gwitchin, and the Tr'ondëk and the Nacho Nyak Dun people that actually went down there—your voices were heard and there is still no development. That's a positive thing.

Communication is really important to the Board. I always use this phrase, "we're taking the bull by the horns and running, or walking, forward." If we want to make it work, we have to really be direct, we have to have that trust within the communities. One of the things is getting the people to understand what we're doing. Once you get that trusting relationship with the communities, then things start flowing smoothly. We learned at an early stage that we would rather educate than regulate, and I think we learned that quite well when we started working on the Dempster Highway.

If you look outside the room here, we have a lot of promotional stuff. That's important to us because we take that out and people want it. We also have a school curriculum that we try to take, or send to the communities. Once again, educating people in regards to what we are doing is really important to the Porcupine Caribou Management Board.

The Board has been successful working with the communities and getting them to understand why we do things the way we do it. Back in the '80s, when the Technical Committee first wanted to put collars on the caribou, the communities were really upset. They were saying that it was very disrespectful to put anything on the caribou. But just going to the communities and explaining that it's a small, small percentage of the caribou that we are going to collar, and the information that we are going to get is so vital to the well-being of the caribou, they finally agreed. It has taken quite a few years to actually get people comfortable with collars on the caribou, but once they see it on the computer and they see the satellite collars, the movement of the caribou, then they have a totally different understanding.

I think voluntary cooperation is another success

story for us. We've been able to get the people to understand why they should take bulls versus cows. We look back to the late '90s and early 2000s, when we started working on the Dempster Highway (at that time – 2001) when the herd was declining (even before we made recommendations to the government). People on the NWT and Yukon sides, the governments were actually getting their local hunters and their local experts to voluntarily not hunt the cows. And that was a big plus for us because, once again, why regulate when you can educate?

I think one of the other successes we have is traditional knowledge. We always talk about how we are going to incorporate it with scientific knowledge. I remember, back in 1999, when we had a workshop here (Two Eyes, One Vision: incorporating traditional and scientific knowledge into co-management). But we're still struggling with the definition of traditional knowledge and how to incorporate it into a management process. If you look on our website, we did incorporate traditional knowledge on the Dempster, and it worked quite well. We let the leaders pass on the highway, because a lot of our elders were saying that we needed to do that, and I think we've done a pretty good job. One of the challenges is to decide when you actually have to close the road. Is it when you see the first caribou? Is it the first 100? The first 1,000?

One of the success stories is the harvest management plan. We started the process of a harvest workshop back in 2001, when the herd was 123,000. Ten years down the road, we didn't have a count and we were quite worried. During that 10-year period, the Cape Bathurst and the Bluenose herds were drastically going down. Also the George River herd, the Leaf River herd—10 major herds across Canada were going down, and we still didn't have a count for the Porcupine Caribou. Because of that, we initiated the harvest management plan to help us in case times got tough. If the herd got to a point where there was no return, at least we would have something in place when we got a count. We hired Lindsay Staples in 2004 to do a scoping document for us. What does a harvest management plan look like? How do we start trying to get a harvest management plan that's acceptable by all communities? In 2007, the herds started declining in the NWT (the Cape Bathurst and the Bluenose), and because of that we had more hunting pressure on the Dempster Highway. The Porcupine Caribou Management Board made a resolution for the protection and conservation of the herd, and we started doing the draft harvest management plan. But because the Porcupine Caribou Management Board is not a political organization, we had to bump it up to a political level. We got a working group set up that would actually make political management decisions on a harvest management plan. That draft harvest management plan was delivered to the communities about 2009, and in 2010 it was signed. We had to have an implementation plan too. Who is responsible for what when the herd declines to a certain level? So we bumped it up another level. We got political leaders to actually come together. Senior officials from all parties came together and they're the ones who actually put the substance into the implementation plan. That plan is on our website if you want to see it.

We still have a few more challenges to work on in regards to the overall harvest management plan, mainly the native user agreement. If the population gets to a point where First Nations have to start giving a certain amount of caribou to communities, then we have to have that native user agreement. And total allowable harvest is going to be in there. We definitely need the cooperation of the communities. It's taken 10 years since we first had the harvest management plan, to 2011 when the implementation plan was signed. Ten long years, but we did it right. We went to the communities and we got their cooperation. We got their understanding, and I think that's really important.

Another challenge associated for the Porcupine Caribou Management Board is the satellite collars. When we first started using satellite collars, people didn't understand, and they thought it was very disrespectful. But with a lot of information going to the communities, and explaining to them what we were going to get out of it, they finally came to the table with us.

Jurisdictional laws and powers have been a challenge for us. The Government of Northwest Territories have different laws in regards to harvesting caribou than, Yukon Government.

Roles and responsibilities of board members is something that we're challenged with. When we come into a board meeting, which hat do we wear? Do we wear the Porcupine Caribou Management Board hat, or do we wear our party's hat? This could cause a lot of problems, but I think we have done well. The PCMB is not a political organization, but there's a lot of political implications. It's nice to come into a meeting, take your government hat off (I mean all eight governments) and just talk with one another. We try to get consensus when we make decisions, but sometimes it's pretty hard. And sometimes we do have to go to a vote, but I would say very rarely.

I talked about education versus regulation. From our experience, it's a lot easier to educate the local community experts rather than to regulate something. If we can go around it and say, this is the rationale, or this is the justification behind what we're doing, we have more support.

Sale and barter has been a contentious issue with us because we are trying to conserve the caribou and, under the Agreement, there's no commercial sale of the Porcupine Caribou. However, sometimes, we have to sit down and talk about sale and barter. In the Agreement it states that people can go out and barter for caribou, so how can you do that? So we actually got a document about sale and barter, and we've taken it to the communities. One of the things that the Porcupine Caribou Management Board does is give a lot of responsibilities back to the communities, because it's better to get them to participate. They're the ones who are going to make or break it. We have to justify why we're doing it.

What is consultation and when do we consult? When do the governments consult? All eight parties to the Agreement have a consultation protocol that they have to follow and that could be a challenge for the Board, when and if governments make the decisions (they have the powers). That's one of the things they have to do when they want a buy-in from the communities. Does consultation mean going to the RRCs and saying 'we're going to do this'?

Sometimes media is a challenge too, as we all know. A few weeks ago there was big coverage of the Dempster Highway. When people start putting papers out there, it's pitting them against us. Then we're going to get into a lose/lose situation. If you see something that's happening on the highway, or if you have any unethical hunting going on around you, do the right thing. Take a license number or talk to the people. That way we wouldn't get into the situation of them against us. This is something that we've learned.

I've talked about the harvest management plan and the implementation plan, and one of the challenges we've had is the fact that this is an international herd. We've already set up our harvest management and implementation plan. Our next step is to take it over to Alaska to see if they can adopt it. We've already put it on the table, and they're quite open to discussing the possibility of starting it over there.

Another one of the challenges is climate change. How is it affecting the Porcupine Caribou? We are still working with our technical committee and our biologist and other herds' co-management boards to find out what is actually happening out there. Sometimes it hurts the caribou. Sometimes you have early green-up and that's good for the caribou. All these things we still have to work on in order to have a better understanding about whether it's positive or negative for the Porcupine Caribou.

I talked about eight governments to the Porcupine Caribou Management Board, but this Board was established before land claims were even settled, so we actually had three governments and five aboriginal groups on the Board. But now, since 1985, we have five aboriginal groups that have settled their land claims. So they have powers to regulate wildlife and their citizens. So that's another challenge we have, if we want to amend the Agreement. It's a sensitive issue for a lot of people, especially on the Board. If we open it, what's going to happen? So we're slowly working with some of the parties on the NWT and on the Yukon side to the possibility. I use the word possibility very lightly, because it's up to the parties, whether they want to try to amend the Agreement.

Working on the co-management board is extremely rewarding, especially when you see people cooperating. I think those are very gratifying moments, when you see the communities responding

voluntarily, helping each other out. The Board was established 28 years ago. I started a few years back and the comments that I always got were, "Well, it's my aboriginal right. I can hunt caribou wherever I want, whenever I want, how much I want."

People are now saying, "It's my aboriginal right, but with right comes a responsibility." So we've come a long way, even though there are a few bad apples sometimes in the basket, we're moving forward together. Massi – thank you.

John Cheechoo
Thank you, Joe. Our next speaker is from Alaska, from the North Slope Borough. Taqulik was born and raised in Barrow, Alaska. She grew up living a subsistence-based lifestyle and has great respect for her traditional and cultural way of life. Currently, she serves as the Director for the Department of Wildlife Management for the North Slope Borough. In this capacity she is in contact with many local people and outside agencies dealing with subsistence-related issues. She is a member of many boards and commissions including: Rural Alaska Community Action Program Incorporated; Gates of the Arctic National Park and Preserve Subsistence Resource Commission; Indigenous Peoples Council of Marine Mammals; Alaska Migratory Bird Co-management Council; Barrow Arctic Science Consortium; she also participates in many research activities in the Arctic.

Taqulik Hepa
Good afternoon. I am from Barrow, Alaska and I work for the North Slope Borough, Department of Wildlife Management. I have been working for the Department since 1991 and have had the honour and privilege to work with people like Frank Pokiak, Norm, Larry, Marsha, Lindsay and many others with the Inuvialuit- Inupiat Polar Bear and Beluga Agreements that we have in place today. I want to thank you for giving me this opportunity to speak at this very important conference and on this panel.

I just want to say a little bit about the slides. I wanted to bring with me some slides of our culture, of who we are as Inupiat people of the North Slope and of our subsistence hunting activities. I wanted to share that with you. And I am also proud to say that we had a successful hunt yesterday for the bowhead whale. We landed four whales in Barrow this fall.

Two statements about co-management that I think are important: co-management of wildlife resources is about protecting indigenous peoples' cultural identity and food security, while providing for the conservation of wildlife. And true co-management allows for native people to assert maximum control over cultural and physical well-being in response to attempts at governmental control. Today I'm going to provide some history, and talk about what has worked and why, and finally address some of the challenges that come with co-management opportunities in Alaska.

First, I will highlight the timeline of federal legislation governing co-management in Alaska. The Alaska Native Claim Settlement Act of 1971, or ANCSA, extinguished aboriginal rights in Alaska in exchange for about 44 million acres of land and almost a billion dollars. What it did was create 13 native regional corporations and more than 200 village corporations. Although Congress recognized the importance of subsistence to Alaska natives, ANCSA contained no protection for subsistence in its final form. The United States Marine Mammal Protection Act was enacted in 1972, in response to widespread concern that marine mammals were being hunted to extinction or killed without restraint in the course of commercial fishing operations. The primary objective of the MMPA is to maintain the health and stability of marine ecosystems. The Act prohibits the taking of marine mammals, or the importation of their parts into the United States. An exemption was included to permit coastal Alaska natives to take marine mammals for subsistence purposes, and for creating and selling of authentic native handicrafts and clothing, providing that the taking was not accomplished in a wasteful manner.

In 1984, amendments to the Act added Section 119 to enhance conservation and management of marine mammal population stocks that are taken by Alaska natives for subsistence purposes. It allowed the Secretary of Commerce and the Secretary of the Interior to enter into cooperative management agreements with Alaska native organizations to conserve marine mammals and provide co-management of subsistence use by Alaska natives.

Implicit in Section 119 is the conclusion that a cooperative effort to manage subsistence harvest, incorporating the knowledge, skills and perspectives of Alaska natives, is more likely to achieve the goals of the MMPA than management by the federal agencies alone.

The Alaska Native Interest Lands Conservation Act, or ANILCA, of 1980 created new national parks,

Taqulik Hepa, Director of Wildlife Management, North Slope Borough

preserves and wildlife refuges on 104 of Alaska's 375 million acres. Title 8 of ANILCA accords a subsistence priority for rural residents on federal public lands. It also says the State of Alaska can manage fish and wildlife on federal public lands if it enacts a law granting a subsistence priority to rural residents, in compliance with ANILCA. In the McDowell case decided by the Alaska Supreme Court in 1989, the court ruled that the Alaska subsistence law granting priority, based solely on residency, is inconsistent with the common use clause and other sections of the Alaska Constitution.

In 1990, this prompted the Federal Land Management Agencies to initiate a program to assume management for subsistence uses on federal public lands, including the creation of the Federal Subsistence Board, representing the Bureau of Indian Affairs, BLM (the Bureau of Land Management), National Parks Service, U.S. Forest Service, and the U.S. Fish and Wildlife Service. Also, there is one native member of the Federal Subsistence Board, which is Charles Dean Brower.

Now, I just want to go through a couple of examples of co-management. The first and most successful, of the Alaska native co-management organizations, is the Alaska Eskimo Whaling Commission, or the AEWC. The bowhead whale is the most culturally significant resource harvested by Inupiat and Yupik Eskimos living in northern Alaska. Subsistence whaling is a physical, emotional, and spiritual experience which gives our people self-confidence and unites our communities. Beginning in the early 1970s, as opposition to commercial whaling operations started to grow, some countries at the International Whaling Commission raised concerns about the status of the bowhead whale and the Eskimo subsistence harvest in Alaska. When it was suggested in 1977, that the subsistence harvest of bowhead whales was too high, along with the perception that the population of whales was too low, the IWC, for the first time, extended its regulation of commercial whaling to an aboriginal hunt. They banned the subsistence harvest of bowhead whales that year. The government scientists significantly undercounted the bowhead whales. They were actually up at Barrow counting the whales and they had no communications with the hunters. They just went out there, did what they did, and came back. Within weeks of the ban, the AEWC was formed in an effort to convince the government and IWC to take action to preserve the Eskimo subsistence hunt. The ban was lifted in an emergency meeting at the IWC, and the 1978 hunt was allowed under a small quota. Government scientists had undercounted the number of whales because of misperceptions about the relationship between bowheads and sea ice. Our hunters and elders would have given the scientists their in-depth knowledge about bowhead whales if they had asked. That quota has increased as the

scientific understanding of the whales grew. Initially, the IWC provided annual quotas, later giving way to longer quotas, and only this year were we able to secure a six-year block quota. AWC is represented by 11 whaling communities and is directed by a board of commissioners, including one from each whaling village. In 1981 they adopted their own bowhead whale management plan and signed a cooperative agreement with our federal government. It provided for cooperative enforcement of IWC quotas, and for hunters to assist in inspecting and reporting on the hunt. The AEWC allocates the IWC-established quota among its member villages, resolves disputes between whaling captains, and, when necessary, imposes sanctions on any whaler who violates the terms of the quota. The whale management plan that they have in existence is basically their traditional laws that they have used for centuries, and they just pass them on from year to year.

Polar bears are also an important subsistence resource, and the Alaska North Slope people are party to two bilateral agreements for the management of polar bears. One is between the United States and Russia, and the other is a native-to-native agreement between the Inuvialuit of Canada and the Inupiat of Alaska. The polar bears shared by the hunters in Canada and Alaska prompted development in 1988 of the Inuvialuit Inupiat Polar Bear Management Agreement for the southern Beaufort Sea. Under this Agreement, the harvest of polar bears is shared between hunters in both countries, based on the most recent scientific information and, more importantly, traditional knowledge.

A treaty involving native and government representatives of the United States and Russia was signed in 2000 to ensure coordinated management of polar bears. This Agreement identified goals to improve polar bear conservation and safeguard the cultural and traditional use of the species. For native people in Russia, this treaty has re-established their ability to legally hunt polar bears for subsistence purposes. This had not been the case since 1953. At a meeting in June 2010, the Commission established the upper limit on the harvest of the Alaska Chukotka population, to be split evenly between Alaska natives and Chukotka natives. The U.S. Fish and Wildlife Service will work with the Alaska Nanuuq Commission and local communities to determine how best to implement a harvest quota system in Alaska.

The AWC (this is going back to the success of the Alaska Eskimo Whaling Commission) has proven successful in achieving its primary mission of preserving our traditional right, as Alaska native peoples to harvest bowhead whales. Funding from the cooperative agreement between the AEWC and the ANOA, various grants from industry, the North Slope Borough, and, in particular, the Department of Wildlife Management has played a central part in the work and success of the AEWC. The North Slope Borough and AEWC realized early on that agency scientists weren't looking out for the best interests of our community. We decided we needed our own scientists who could listen carefully to our elders and hunters, and collaborate fully with the North Slope community. Science was an important ally. This has been especially important in developing credible data about the true population size of bowhead whales. Improved counting techniques were developed by working closely with our hunters to understand the natural history of bowhead whales. Scientists learned that the whales continue to migrate even when the leads were closed, and that bowheads broke through the ice to breathe. The North Slope Borough and its partners pioneered new acoustic techniques for counting bowheads in conjunction with visual techniques that have yielded good population estimates and show an increasing population. Even with the relatively small staff, our department has produced many scientific reports. Today the bowhead whale is among the best understood whales on this earth. This is mainly due to the input and collaboration from our elders and hunters. We also work with various other co-management groups, including the Alaska Beluga Whale Committee, the Ice Field Committee, Nanuuq and Walrus Commissions, and the Alaska Migratory Bird Co-Management Council.

Now, just briefly, I'll talk about some of the challenges. Federal agencies seem to be making a greater effort to listen to us, but we still have a great deal of room to reach true co-management. We are often given verbal support, but we do not feel that we have equal influence over the development of regulations. As stated before, budgets are shrinking,

sustained funding is harder to come by and spread across a greater workload. In some cases, co-management groups are competing for the same pots of money. Again, a significant challenge is presented by the overlapping and inconsistently implemented jurisdiction over wildlife by state and federal governments, and how they approach co-management through individual agreements. There is inconsistency in the makeup of a number of native agencies and with stakeholder membership in government bodies.

I just want to say that I do believe in co-management and in the spirit of collaboration. I think it is really important for the agencies and the local people to work together. We need to build true partnerships and mutual respect in order to be successful. And, as of today, co-management is a very hot topic in Alaska, and we will be discussing it at our annual AFN (Alaska Federation of Natives) meeting coming up here in October. There will be several sessions on that topic, and I am really glad to be here to listen to some of the experiences that you have had, so I can take them back with me. Quyanaq.

John Cheechoo
Thank you, Taqulik.

Larry Carpenter
You mentioned the agreement that you have, and I'm just wondering if you have worked out the quota system for both the Russian side and the American side. Has the Russian government accepted this and are they going to now make it legal to harvest polar bears?

Taqulik Hepa
Thank you for the question. This is a government-to-government bilateral agreement involving native users in both Chukotka and Alaska, and we have, as I stated, signed the agreement and we have come up with an upper limit for shared quota, which is 58. But both countries have to go back and develop domestic legislation on how we are going to implement this. I think that it could be a couple of years before they actually get an opportunity to hunt polar bears for subsistence. And in Alaska, the mission is travelling to the villages that will be affected, talking about the quota system. It is going to be a challenge because there are a lot more communities that hunt the Chukchi Sea (polar bears), so we need to figure out how we're going to do that. Again, that will be developed through domestic legislation.

John Cheechoo
Traditional knowledge helped in coming up with population counts that have more or less showed the reality of bowhead. The same thing happened in the eastern Arctic with bowhead numbers. I think people were talking a lot about the low numbers while the Inuit were saying there's a lot more (than 800) bowhead in the eastern Arctic. Actually there were between 1,400 and 42,000 that were actually counted in new surveys. So, even with issues such as the numbers of caribou or polar bears, I think part of the problem (at least with polar bears) at a national level, is people playing up the declining numbers in the western Hudson's Bay and using that as a part of their campaign. Media was a big issue that Joe Tetlichi highlighted as well. I am certain people take it in their own direction and their own interests. Others want to keep the facts on the ground as much as possible, but there's always going to be someone to twist information for their own purposes.

So it is very important that the (co-management) process brings in those numbers from the traditional knowledge holders —the ones who are there on the ground every day of the year. We had this One Life symposium in Nunavut, in Rankin Inlet, a couple of years ago, in which there was a roomful of Inuit hunters, and there was a couple of researchers who were trying to explain how estimations are made using collaring and so forth. No matter how much they tried to explain the estimation process (they were trying to use layman's terms for the hunters), the hunters were saying, "That's not estimating, that's guessing—you don't guess when it comes to the knowledge of the people." So there was still this tension between how they were using estimates and how the hunters were viewing what was being done. They were missing a lot of information just by using that method. It's important to agree on methods, to be able to agree on the numbers.

In that same symposium, they were talking about how they felt it was not a good thing to be collaring polar bears, chasing them down with helicopters and

tranquillizing them and so forth. In fact, the Nunavut Tunngavik passed a resolution during that same time period against the use of certain methods for handling wildlife in Nunavut. I think it's had some effect in other regions with how scientists are developing other ways of doing their research (such as the use of aerial counts and DNA sampling). There's certainly a need for more of that traditional knowledge to come together with science. Co-management creates that opportunity.

We'll have questions for the panellists this afternoon. On the next round we will have a few speakers getting into the real nitty-gritty of what they have faced in their own regions. I encourage you to ask more questions so that we have a lively discussion.

Larry Carpenter, Chair, Wildlife Management Advisory Council and Taqulik Hepa

Before we go into the discussions with the rest of the panel I'd introduce and welcome a number of members from the National Aboriginal Council for Species at Risk who have had their meetings over the weekend here and have managed to stick around to attend this conference. Here's Eric Morris, Jim Goudie (the second Nunatsiavut person to be here today), and Ray Laliberte. Welcome to the meeting. I'd also like to welcome Anne Kendrick, our policy and planning coordinator for the National Aboriginal Council on Species at Risk. I understand there is a conference at the University of Ottawa next week on Looking Back at 10 Years of Species at Risk. A few of us will be attending that. We have worked closely with Michael d'Eca and his legal work with the Council as well as the development of the Aboriginal Traditional Knowledge Sub-Committee.

Our next panelist is Larry Carpenter. He was one of the founding members of the National Aboriginal Council of Species at Risk as well as part of the ATK Sub-Committee. Larry was raised on Banks Island, part of the ISR. He is a hunter and enjoys being out on the land. For more than a decade, Larry served as Chair for the Wildlife Management Advisory Council for NWT, a co-management board established under the Inuvialuit Final Agreement. During his tenure on the Inuvialuit Game Council, Larry has served in numerous capacities on behalf of the Inuvialuit as well as becoming the Chair of the Game Council, a position he held until 1997. As Chair of the Game Council, and more recently with the WMAC(NWT), his portfolios include the official signing ceremony establishing the Tuktut Nogait National Park, the Convention on International Trade of Endangered Species, North Atlantic Marine Mammal Commission, and the International Union for the Conservation of Nature. Larry is also an active member on the Species at Risk Conference of Management Authorities (CMA), as well as the Advisory Committee for Cooperation on Wildlife Management, the ACCWM. Larry has represented the Inuvialuit regionally, nationally and internationally at numerous gatherings, and has presented papers on wildlife management in Canada and abroad.

Larry Carpenter

I'll get started with a bit of background about WMAC and the Inuvialuit Final Agreement. As everyone knows, it was signed in 1984 between Canada, Yukon, the Northwest Territories and the Committee for Original Peoples' Entitlement. The basic goals expressed by the Inuvialuit and recognized by Canada in concluding this Agreement were to preserve Inuvialuit cultural identity and values within a changing northern society, to enable Inuvialuit to be equal and meaningful participants in the northern

and national economy and society, and to protect and preserve Arctic wildlife, environment and biological productivity. Through the IFA, the requirement came to establish co-management boards with equal representation from government and the Inuvialuit in the western Arctic region. These boards are the WMAC(NWT), WMAC(North Slope), Fisheries Joint Management Committee, the Environmental Impact Screening Committee and the Environmental Impact Review Board. The Inuvialuit Game Council is also very vital to this process. The Inuvialuit Game Council is made up of Inuvialuit from each of the six Inuvialuit settlement regions' Hunters and Trappers Committees. One of their many duties is to appoint members to each of the co-management boards.

I'll talk a bit about the mandate of the WMAC(NWT). The Council shall, on request, provide advice to the appropriate Ministers on all matters relating to wildlife policy and the management, regulation and administration of wildlife habitat and harvesting for the western Arctic region. They provide advice on issues pertaining to the western Arctic region, to Wildlife Management Boards, Land Use Commissions, the Screening Committee and Review Board, and any other appropriate bodies, and they prepare wildlife conservation and management plans for the western Arctic region for recommendation to the appropriate authorities. They also determine and recommend appropriate quotas for Inuvialuit harvesting in the western Arctic region. There are more responsibilities, but these are some of the ones I am going to speak to.

In terms of wildlife conservation management plans for the western Arctic region, we have developed community conservation plans for each of the six Inuvialuit communities, with the community HTCs, community corporations and elders all being involved. They have been updated every four to five years, and they are used to identify important wildlife habitat and seasonal harvesting areas that are culturally important to the Inuvialuit, and to make recommendations for their management. They describe a community process for land use decisions and managing cumulative impacts, which will help protect community values and the resources on which they rely.

We have been working with other co-management bodies in the Northwest Territories and in Nunavut. The Advisory Committee for Cooperation on Wildlife Management, or ACCWM, was established to exchange information and to develop recommendations (by consensus) regarding wildlife and wildlife habitat issues crossing land claim and treaty boundaries. The members of the ACCWM are basically the chairs of the co-management bodies, but also include the Kitikmeot region. Because they do have management responsibilities for caribou, the Kitikmeot Regional Wildlife Board (KRWB) decided, as a matter of priority, to form the Bluenose Caribou Management Plan Working Group. This group would develop a plan for the Bluenose West caribou, the Cape Bathurst and the Bluenose East caribou herds. There is also another herd, the Tuk Peninsula, which is managed a bit differently. The plan is being developed through close consultations and strong involvement by the 15 communities in six land claim areas that harvest these caribou. This is a wide range of communities, and legal issues get complicated because each claim is a bit different.

Through the consultations we hope to share the best available information on the status of the herds, to identify key issues and concerns of the communities and discuss possible solutions.

The WMAC(NWT) has also worked on many other issues, including polar bear and beluga whale management, with other Inuit land claims organizations and with the Inupiat from Alaska. We've had user-to-user management agreements. We have worked closely with the governments, Inuvialuit and Inuit from the other land claim settlement regions through the Polar Bear Technical Committee, Polar Bear Advisory Committee, the International Union for Conservation and Nature's, Polar Bear Specialist Group, Polar Bear Range State Meetings, and ITK to ensure that Inuvialuit and Inuit in Canada can continue to sustainably harvest and trade polar bears.

Something we have been working on along with WMAC(North Slope) is the polar bear traditional knowledge gathering project. This project will give important information to the NWT Species at Risk Act and the federal Species at Risk Act. It will be a tool to help the WMACs make decisions regarding the three

polar bear sub-populations that we harvest, and will be used to support our position when we present it to organizations such as the Committee for International Trade and Endangered Species (CITES). We've had interviews done with hunters from each of the communities, and have been working on this for over two years now. The information that was compiled through those interviews will now be verified by Peter Armitage, who will be heading to the communities early next week.

Each year, we sit down with our co-management partners, the Government of the Northwest Territories, Canadian Wildlife Service, and the Inuvialuit and decide what research is needed in order to meet conservation issues and help decide harvest levels, if they are needed. We also make recommendations to the appropriate Minister and the Inuvialuit on total allowable harvest for certain species, when needed. The Minister will then develop regulations, when needed, to conserve the species.

An issue that frustrates me is the fact that, under the Inuvialuit Final Agreement, the co-management boards make recommendations to Ministers. Even though it is co-management's system and the Inuvialuit are at the table to help make important decisions such as establishing quotas, it still is the Minister who has the final say on whether or not a recommendation will be implemented. A Minister can (and in the past has done so) overturn a decision of the Council. It seems strange to me because government are already part of the co-management process and have helped formulate the decision. So why should a Minister have the ability to reject a decision by Council?

Another issue is the amount of obstacles that come up when trying to amend regulations, even with minor changes. I was really glad to hear what Marsha had to say. I agree with her. I know she is trying and does understand the co-management process, but does have certain restrictions in her position. At the moment, we are trying to change two regulations which we have wanted to change for quite a while. Peary caribou and Dalton Union caribou are considered to be Barren Ground caribou and are treated in regulation as such. When the government put zero or limited quotas into the regulations, Dalton Union caribou (which have no conservation concerns on them at the moment) fall into the same zone as other Barren Ground caribou. Under the Inuvialuit Final Agreement, restriction of harvesting rights can only apply if there is a conservation or public safety issue. What I am saying is, they should be looking at the caribou themselves instead of zones. Because it's a no-hunting zone in one, and there's a harvesting limit in another zone, Dalton Union end up being affected, and so the hunters from the communities can't legally go into those zones to harvest Dalton Union caribou, even though they should have the right to do it.

WMAC was involved in the original recommendations, but some members may not have realized that the zones would apply to Dalton Union caribou as Barren Ground caribou. Now we are trying to correct these errors, but we keep running into red tape. I'm sure we'll get it done soon; we're setting up a new process to get bylaws and regulations in place.

An emerging issue is the proposed Inuvik to Tuk highway. There are many residents, including Inuvialuit in the region, who want to see an all-weather road connecting Inuvik to Tuk. There are some important considerations that need to be taken into account. There are going to be benefits with a highway, such as jobs, easy access to the south, tourism, and even easy access to Husky Lakes and other hunting and fishing areas. There are also going to be negative impacts, such as disruption of cultural activities, impacts on harvesting, and cumulative effects that can lead to habitat loss. We are not opposed to development as long as it is done in the proper way from the start.

One implication for co-management is the fact that the Government of Northwest Territories is the proponent. The Government of Northwest Territories has two members on the WMAC(NWT) whom I believe want to represent the WMAC(NWT) in as fair a manner as they can. This would happen if they were allowed (by the Minister of Environment and Natural Resources) to be impartial members. The problem arises when they are given direction one way or the other by the government. There can then be an appearance of bias or conflict when the time comes for WMAC to intervene in the process. Government

members have had to vote on issues in a certain way, even when they do not agree with their government.

We have capacity issues that continue to come up. Funding always ends up being a major problem.

In spite of the issues I've raised, I think we are a lot better off than in the late '60s when my father would be on his trapline and come across seismic camps (some from foreign companies) with 30 or more persons working away as if they owned the land. My father (and others in the community) had no say as to whether these companies could operate there. We also had no say at all when government started putting restrictions on the harvesting of species which were abundant, such as geese and also polar bears and musk oxen. The land claims agreement gave Inuvialuit a voice on these important decisions and we must ensure that the hard work and dedication of the authors of the Western Arctic (Inuvialuit) Claim are not corroded by ongoing and upcoming pressures. Thank you.

John Cheechoo
It is very important to keep these issues in mind, including the roles and responsibilities of co-management board members and who they represent as they do their work. There might be conflict of interest. It is always a problem when we are asked to sit on a working group of a national or regional organization. People ask us to be there as an expert on our own. It is difficult to separate the bigger interests from our own knowledge or personal interests.

We have Tom Nesbitt next. Tom has been the Chair of the Tuktut Nogait National Park Management Board from 1998 until now and a Co-chair of the Sahtú Deh Cho Management Board since 2007. He is a professional mediator and land use planner as well as a lawyer with a private practice. He has worked in the negotiation, facilitation, and implementation of protected area agreements and land use plans in the NWT and Nunavut since 1986.

Tom Nesbitt
Thank you. I'll be speaking as the Chair of the Tuktut Nogait National Park Management Board and the Co-chair of the Sahtú Dehcho Board.

The main elements of my presentation are consensus decision making, and cooperative management as consensus decision making within existing authorities. I am hoping that we can discuss later whether what I am talking about here today is adaptable to other contexts. There are some basic considerations I would like to introduce, and the first is this very important principle that the Supreme Court has laid down in several cases recently. That is, the fundamental purpose of the recognition of treaty and land claim-type rights in our Constitution, and of land claim agreements themselves, is the reconciliation of the interests of aboriginal and non-aboriginal Canadians. Land claim agreements, as we know, are about rights to harvest and rights to land. They are also about rights to participate in resource management decision making. If we bring these two ideas together, we can say that cooperative management is a pathway to reconciliation and participation in resource management decision making.

Societies express their systems of law in various ways. Our system of law developed in Great Britain over many centuries and was brought to Canada to be developed by our courts and our legislatures. Another system of law is in part defined by this consensus decision making process and I am hoping that we can look at this as a path to reconciliation. Tomorrow I am hoping we can look at cooperative management as a process for real consultation as well.

So let's look at the concept and practice of consensus decision making. This is traditionally an aboriginal concept and practice. I was originally trained in consensus decision making by my boss, Billy Day, in 1986–87. I was initially trained as a mediator by Billy Day and just watched what he did. Consensus decision making is first of all about tradition, about adapting relationships within and among aboriginal collectives over time. Those cultures are oral cultures, so consensus is about how we act, how we make mutual decisions, and is not just about results or the written words in an agreement or on a page. It's about an ongoing relationship.

The decision making process is, first of all, basically sound group decision making. It includes things like eliciting interests, understanding the facts, identifying

and evaluating options, and weaving different perceptions of those elements together. It's about mutual respect, recognizing and accommodating the cultures at the table. There are many cultures in this room right now—not just two or three. And when we work at the cooperative management table, we must try to find common ground among those cultures and find a way of weaving them together. It's about listening and creating a space for participants to contribute. The cadence of the discussions is important. When I am facilitating meetings people will say, "Tom, are we on time? What's happening here?" I think they are sometimes assuming a straight-line curve on a graph showing the time. At Time 1 we should have progress started and at Time 2 we have marched straight to an agreement. In fact, consensus works when people have the time to listen to others, change their point of view, and then try to find a way of weaving those different things together into results. So the curve goes, not in a straight line, but actually goes as time moves along, progress may not always be apparent, but suddenly, we come together in consensus. Over time, it's about creating a culture of the table, such as the work of Larry's WMAC(NWT) and Lindsay's WMAC(North Slope), or the Tuktut Nogait Board and the Sahtú Dehcho Board gradually weaving their cultures together.

I want to turn to these words 'cooperative management.' I'm focusing here on agreements for protected areas, and my question is, is this adaptable to other contexts? I want to suggest, first of all, that cooperative management has a spectrum of meanings. It can mean government consults and ultimately decides (which is what Larry described). It can mean establishing a regulatory board that makes final decisions, and it can mean consensus decision making within existing legal and land claim authorities. I want to evaluate each of those meanings against two tests. First, is it consistent with existing legislation or land claim authorities and, second, does it advance reconciliation and cooperation.

So let's look at the first scenario: government consults and then decides. Government consults community representatives, one or more management bodies, and government decides unilaterally when and as it deems appropriate. Test 1: Is this consistent with existing legislation and land claim authorities? On the whole, I'd say yes, it's a strong consistency there. Does this advance cooperation and reconciliation? I'd have to say here that any advance is weak, neutral, or negative. So Alternative 1 is sometimes still the default assumptions of some practitioners, and I'm not criticizing those practitioners, but I want to give those practitioners an alternative.

Alternative 2 is the regulatory board at the other end of the spectrum, where the legislature could change legislation and authorize an independent co-management board. We have such boards in Canada, which have varying degrees of independence. Test 1: Is it consistent with legislation and existing authorities? Well, new legislation is necessary and, in my opinion, highly unlikely, at least with respect to protected areas. Does it advance cooperation and reconciliation? We might initially think yes, it's going to advance cooperation and reconciliation. But I would ask, is that truly the case? Would such a board, working by consensus, advance cooperation and reconciliation, or would it work by voting, which does not necessarily advance cooperation and reconciliation? My conclusion about Alternative 2 is that it's highly unlikely. There's potential for cooperation but it's unnecessary: we don't need to go there.

Here is my spectrum of meanings of cooperative management: Alternative 1, in which government consults and decides, and Alternative 2, the regulatory board consults and decides. The problem here is the reasoning. In my experience, some practitioners think that if this is not a regulatory board, then this must be just an advisory committee. Advisory committees do and must remain outside of management decision making. So these practitioners may not wish to adopt this consensus approach. Sometimes they may want to, but they are conflicted in their minds. How can we do this if this is an illegal fettering? What I want is a middle alternative of making decisions by consensus within existing legislation and land claim authorities.

The Tuktut Nogait, the Sahtú Dehcho, and the Gwaii Haanas Agreements (to name three) establish these kinds of boards for protected areas. Those boards are ultimately advisory (in a legal sense). Ministerial discretion is thus not illegally fettered: a Minister

cannot, without explicit legislative authority, pass off his or her responsibility to some other body. If a Minister did do that, third parties can challenge that decision, bring him before what is called judicial review, and the courts will then supervise those ministerial decisions and decide whether, indeed, the Minister has passed off his responsibilities to some other body. The courts consider these Ministers to be accountable for the legislature and if they are passing off their responsibilities to somebody else, that body isn't accountable unless there is an explicit legislative provision that makes it so. So these bodies must be ultimately advisory, but the consensus decision-making process in Alternative 3 can make final management decisions by consensus among authorized representatives of the parties.

Let's look a little more at Alternative 3. The agreements which establish this alternative require the parties to bring all management decisions to the management board forum. They've got to send authorized representatives (not mere messengers) to board meetings. And the parties agree to make all reasonable efforts to make management decisions by consensus at board meetings. Test 1: Is this consistent with legislation and other authorities? Yes. Test 2: Does it advance cooperation and reconciliation? In my opinion, yes. So these boards are again legally advisory. The decision-making process yields final management decisions by consensus among authorized representatives. So we can think of these boards as merely the place where parties bring issues, information, and interests. And they have agreed to make all reasonable efforts to work by consensus. So Alternative 2, the regulatory board, appears to me to be not only highly unlikely, but unnecessary.

Both tests are met here (in Alternative 3). There is consistency with legislation, and there is cooperation and reconciliation. They are met because ministerial discretion, so-called, is not fettered, or the Minister hasn't fobbed off his responsibilities to some other body. The Minister agrees to seek consensus, but he or she can say no. Nonetheless, in my experience we can, through the consensus process I described earlier, the aboriginal model, always come to consensus. We have not voted since 1998 at the Tuktut Nogait Board, and the Sahtú Deh Cho Board cannot vote.

Thus,I really want to emphasize, advisory boards, ministerial discretion, and final consensus-based decision making can coexist: they aren't this or that. You aren't bounced off regulatory bodies and the impossibility of that to just advisory boards. This method of working is institutionalized in various agreements, three of which are the Tuktut Nogait, the Sahtú Deh Cho, and the Gwaii Haanas Agreements.

Joe Tetlichi; Dan Lindsey, Director of Fish and Wildlife, Environment Yukon; and Tom Nesbitt, Lawyer and Mediator, Thomas Nesbitt Law Corporation

The parties are the aboriginal authorities; they establish cooperative management boards and they bring decisions to board tables. They agree to disclose all relevant information; they agree to send authorized representatives to make management decisions by consensus whenever possible; and they also make provision for emergency action on the part of any one party and for referrals to an inclusion of superiors of the parties, where necessary. For example, on the Tuktut Nogait Board, when we came to do a management plan in the early 2000s, we felt that it was important to not make that consensus decision at the level of the Board, but to cast our

consensus process wider and include more senior representatives of Parks Canada, the Game Council, WMAC, and the Screening Committee. All those bodies were invited to take part in this decision, in framing a draft management plan for Tuktut Nogait National Park. We did it and we came to consensus. We had to cast a net of consensus more widely to include officials within Ottawa and in the various co-management bodies.

Now I want to talk about a very interesting case in the federal court of Canada, in 2001. It's called Moresby Explorers versus Canada. As background, the Gwaii Haanas Agreement establishes something called the Archipelago Management Board. It consists of four members: two Parks Canada employees (including the Superintendent) and two representatives of the Council of the Haida Nation. The Archipelago Management Board refused an application on the part of Moresby Explorers for greater access to Gwaii Haanas National Park Reserve. Moresby challenged this refusal on exactly the kind of terms I was discussing earlier. Did the Minister illegally fetter himself in giving over decisions to the Archipelago Management Board? The case establishes that consensus-based management is consistent with ministerial authority, as set out in the legislation, and it also establishes consensus as a framework for consultation.

There are two issues in that case. Does this Archipelago Management Board (consensus decision making) process illegally fetter the Minister, or does the Board's making of final decisions through that Board constitute an illegal passing off of ministerial responsibilities without explicit legislative authorization? The decision is as follows. First, it underlines that the Minister cannot, without the very clearest of legislative authority, pass off his responsibilities to a Board. The decision also goes on to say that the Minister's participation in the consensus decision-making process in the Archipelago Management Board, through the Superintendent's being part of that Board, is not an illegal fettering or passing off. The Minister can say no, but the Minister can also say yes.

The second issue is whether the Minister considered matters beyond his or her jurisdiction. The answer here was yes, and so the Minister's decision was set aside by the federal court and returned to the Minister to make properly. The Gwaii Haanas Agreement is, I think, often misunderstood. It is considered to be a unique agreement, but in fact it's not. It's unique in its framing assumptions. It's unique in that the parties that counsel the Haida Nation and the Government of Canada over sovereignty, jurisdiction, and land ownership have a pretty profound disagreement. But those parties also agree to work by consensus, so the agreement is not unique in the form of the cooperative management it establishes.

Let me touch briefly on some conditions for consensus decision making. First, participants have to want to find consensus. Their interests must be engaged. As the Chair of these Boards (my role is basically that of a facilitator), my task is to help elicit the various interests to make sure that those are addressed in the agreement, which comes out of the process. The participants have got to get cooperative management, relatively thoroughly. (We sometimes believe that we agree with something, but another part of our minds or behaviour or habits negates that initial getting.) In my experience, many people say, they get it—that's exactly what they want. And others think that if this isn't a regulatory board, it must be an advisory body. My interest here is in freeing those people so they can see that it doesn't have to be just an advisory body. It's got to be the work of a number of parties and representatives of the parties at the table. There's got to be a long-term relationship here. There's got to be time to explore and weave interests together. Even though the cadence of the consensus process may appear to be slower, there's more listening, there's more allowing space for people to feel that there is a place for them. There's got to be time and space for those people to jump in, and there's got to be a weaving of interests together into one coherent whole. The parties and their representatives co-evolve. Our body has co-evolved and I'm guessing that WMAC(NWT) members have co-evolved as you have developed a new culture together. There really needs to be strong communication between board members and their appointing parties. The Tuktut Nogait Board and the Sahtú Deh Cho Board members are paid for an extra day to consult (and debrief) with their appointing

parties and to bring the interests of those appointing parties to the table. They do not represent those parties: their obligation, as members of this board, is to bring those interests to the table, but to make every effort to seek a consensus. There's got to be a reasonable budget for these people to carry out their work. The boards have to be sufficiently active and the representatives committed. The board members and the parties must keep up with each other. We can't have government representatives who are paid five days a week as regular jobs, leaving the co-management boards behind in the dust. We have to allow these boards to continue to work between meetings, to keep up on the issues that have been identified by consensus. There has got to be continuity in the representation. It is important and agreements have to provide for action in emergencies and for referrals to an inclusion of superiors.

I'd be happy to further discuss this with you throughout the conference. I'm hoping to have initiated a conversation here. My presentation is summarized in a paper, which is available. Thanks very much.

John Cheechoo
Thank you, Tom. Next we have Gregor Gilbert from Makivik Corporation in the Inuit region of Nunavik.

Gregor Gilbert
It's an honour to be here. I am a new kid on the block on this panel, with people who have far more experience than myself. Certainly there is a lot to be taken from what they've said. I'm quite happy to hear from the other jurisdictions and other co-management partners that there has been progress made over the course of the land claims agreements.

For those of you who aren't familiar with Nunavik or with Makivik, Nunavik is the northern portion of Quebec and it's home to about 10,000 Inuit. Makivik is the birthright organization for these Inuit. I'm kind of in the unique position that I'm the only member of the panel who has an expressed mandate to protect and promote the interests of Inuit in any of the regions (in this case, in northern Quebec), and also to protect the integrity of two land claims agreements, the James Bay and Northern Quebec Agreement, and the Northeastern Quebec Agreement (NEQA).

I've got a short time and I actually have an awful lot to say, so I'm going to try and condense as much as possible. I'd like to be the person up here to say that I think co-management is working well in terms of northern Quebec. Unfortunately, I don't think that's the case. Progress that has been made is certainly represented by the other members of the panel, but, unfortunately, there are a lot of issues and challenges that still face us. I'd like to draw on a few specific examples to try and illustrate these challenges.

As some of you might know, Makivik appoints members to both the Nunavik Marine Region Wildlife Board and the Hunting, Fishing, and Trapping Coordinating Committee. The Coordinating Committee (for short) is under the James Bay and Northern Quebec Agreement, while the Wildlife Board is under the Offshore Agreement, the NEQA Agreement.

We have an issue within the Coordinating Committee. Recently, Makivik, along with the Grand Council of the Crees and the Naskapi Nation, were involved in legal action against the Government of Quebec regarding decisions that were made by the government in terms of caribou management, specifically for the George River and Leaf River caribou herds. It was evident, especially to the Inuit of Nunavik, that (especially the George River herd) was in very, very deep trouble. We had been advocating for quite some time for far more restrictive measures on sports harvesting of the George River caribou herd. The Coordinating Committee eventually passed a contentious decision to limit sport hunting and to do away with it altogether for the George River caribou herd. Quebec did not agree with this decision and instead proposed alternative measures which allowed the sports harvest. For the Inuit of northern Quebec, this was a really big issue. You know caribou—and I'm sure it holds true for all the Inuit regions in northern Canada—is a matter of life and death. It represents food security; it's basic subsistence for the people, and the fact that the government decided that the sports harvest was as important as subsistence harvest contradicted the basic tenets of the James Bay and Northern Quebec Agreement (JBNQA). Sad to say, in the course of preparing for the legal action, I reviewed the minutes from the Coordinating

Committee over the last 35 years and I was dismayed to find that, in the early 1980s, a similar conversation had taken place within the Coordinating Committee regarding how best to manage the George River caribou herd. I literally could have taken the minutes from the early 1980s, and superimposed them upon the minutes of the Coordinating Committee meetings that have had happened in the last two years. The dialogue was the same. Where have we come in 35 years? The Coordinating Committee has been instrumental in maintaining a regime for outfitting licenses. It's been instrumental in the involvement of the native parties to the JBNQA with all sorts of wildlife management decisions, but, when the big test comes, in terms of subsistence harvesting taking priority over other issues, the government does not seem to listen.

I want to shift gears a little bit and speak to the offshore region, to highlight what I see as another failing of a co-management board. Once again, the Nunavik Marine Region Wildlife Board is a fairly young organization; it's only been around since 2009, and has taken some time to grow into what it now is. It's made good decisions along the way. Inuit now have a voice in terms of research that's conducted in the offshore region; there's more advocacy in terms of priorities for research for Inuit, but there is still a downfall for big issues. When it came time to establish a total allowable harvest for beluga for Nunavik Inuit, the Department of Fisheries and Oceans basically wrote down a number for the Management Board. They said, if you do not reach a management decision that reflects this number, the Minister will reject the decision. I ask you, is this co-management in the true sense of the word? I don't think so. To me, and to Makivik, co-management is a process that, by necessity, starts at the community level. It's a bottom-up approach. You have to have the buy-in on the community level, by the people who use the resource, in order to make co-management work. We can't ignore the shadow of the past. There are co-management decisions, or management decisions in the past, that have not taken into account the Inuit interests. That's going to take a long time to get over. I think co-management boards are a good start, but I think the processes can be improved. There has to be a willingness on the part of government to listen to what the users are saying within the confines of these co-management boards, or all of this is for naught. If the users don't buy into the concept, then we are no further ahead.

I'm going to try to bring a few positive experiences into this. Another core issue is polar bears. This is one of the more contentious issues that most northern co-management boards face. In the case of Nunavik, we've had two issues regarding the south Hudson's Bay and the Davis Strait polar bear sub-populations. It was decided that the best course of action to get community and user buy-in for management was to initiate user-to-user meetings. This was complicated somewhat by the fact that, as with most wildlife species, polar bears move around. This adds a multi-jurisdictional aspect that needs to be accounted for. For both of these sub-populations, we had multiple stakeholders for multiple jurisdictions and, by and large, the process worked. The communities, the users—the polar bear harvesters—felt that they had a legitimate say in the way that decisions were made. The information got passed up and government, which was also present at the user-to-user meetings (along with land claims organizations), acknowledged the importance of having the users present and involved. I am happy to say that, in both cases, there were positive results, and the management that is now in place for polar bears in both these regions is fair in the minds of the Inuit, and acceptable to government. This is the kind of dialogue that needs to take place in order to get acceptance at the community level, and at the policy and government level, and which can be defensible at an international level.

Funding is a major issue for all co-management boards right now. As an example, the Nunavik Marine Region Wildlife Board now has to implement a management plan for the south Hudson's Bay polar bear sub-population. As part of its mandate, it needs to hold public hearings on the issue. I'm not sure how many of you have experience with public hearings, but they can be prohibitively expensive, especially in the North, where travel and other costs are very high. I would say that, conservatively, you're looking at least $75,000 per public hearing. The operational budget for the Wildlife Board doesn't include public hearings, which means that, in order to fulfill its mandate, the Wildlife Board needs to ask DIAND

for $75,000. There's no certainty that that budget will be approved, which leaves the Wildlife Board in the unenviable position of having a mandate in a constitutionally entrenched land claim agreement that cannot be implemented because of lack of funding. There is a fiduciary responsibility on the part of government to make sure that the co-management boards can fulfill their mandates and, so far, the will within government has been lacking to ensure that that happens.

There are also increasing pressures on co-management boards that are coming from industrial development, especially mining for Nunavik. This is partly as a consequence of the Plan Nord. I know this is true for other regions as well. Coming with this increased development is going to be an increased responsibility for wildlife co-management boards to ensure that wildlife is protected, to ensure that mitigation measures are sufficient, and to ensure that the resource is there for future generations. It's going to be very, very difficult without adequate funding.

I know this has been negative and sobering. I am hopeful, but people need to be aware that this is a long-term process. This is not something that's going to happen in 5 or even 10 years. I think we're looking at 50 to 100 years. I feel it can be done, but there has to be willingness (especially by government) from all parties to ensure that co-management works the way that it was meant to work according to the land claims agreements. Thanks.

John Cheechoo
Thanks, Gregor. Those are real issues that face many boards. Different boards across the North have various histories. It's good to hear what happens in the other regions. Our last presenter is Aaron Dale from the Torngat Secretariat.

Aaron Dale
I'd also like to start by thanking the organizing committee for inviting me to be here and to thank the panel for their insights, except maybe for Tom, who is now making me question all my most basic assumptions. I had my head wrapped around this presentation, but now I'm thinking about third alternatives …

Reflecting is not something that I get to do very much; my days are usually consumed by the most pressing matter at hand, by immediate deadlines. It was nice to have an opportunity to think back over the past couple of years about what we've done, what's worked and what hasn't. And then I'd just like to think a little bit about what might work.

I'll just introduce the region and our boards. Nunatsiavut was established by the Labrador Inuit Land Claims Agreement in 2005. It was a comprehensive, modern treaty. But it is different in a couple of ways. It's tripartite, so the three government signatories are the Nunatsiavut Government, also established by the Agreement, the Newfoundland/Labrador Government, and the Government of Canada. And the Nunatsiavut Government is also the first, and I think still the only, ethnic government in Canada. Its origins are more similar to the Nunavut experience in terms of there being an internal drive for political autonomy rather than, as with the James Bay/ northern Quebec experience, a desire for resource certainty for the federal government. The land claims agreement establishes two boards: Wildlife and Plants Co-management Board and the Torngat Joint Fisheries Board. I work for a Secretariat that provides administrative and decision support to both. The functions of the two boards are varied. In some cases, the Wildlife Board does have decision-making authority, but that isn't binding. The Minister retains ultimate authority to reject, vary, or modify a Board decision. But the land claims agreement does distinguish in its language between decisions and recommendations, and I think it does so intentionally, with good reason.

Slide
At the end of 30 years, that's what we have wound up with: Labrador Inuit lands which are owned outright (in orange). The lighter orange represents the Labrador Inuit land claims area, where there is shared jurisdiction between the province, the federal government, and the Nunatsiavut government. And Torngat Mountains National Park (in green).

Our boards were established in 2005, but really only became operational around 2008 or 2009. Since then, the Torngat Wildlife and Plants Co-management

Board has submitted 10 recommendations. Two and a half of those have been accepted. Two out of 11 have been accepted for the Torngat Joint Fisheries Board. In terms of recommendations going to the Minister, are those recommendations being meaningfully considered? Are they being influential, or are they a bureaucratic burden? Our success rate is a little bit lower than what some of the other panellists have been speaking about. We have made three recommendations on moose, three on polar bear, three on George River caribou, and one on small game and fur. And the Fisheries Board has made three on crab, four on shrimp, three on burbot, and one on marine mammals. Those three moose recommendations were more or less the same, except with added analysis and rationalization, but they were made in three consecutive years and, ultimately accepted. In that case, the recommendations themselves are driving a process. That's what we've done officially—21 recommendations with 4 ½ successes.

I would like to spend a bit more time on what we have done unofficially. We've done caribou consultations throughout Nunatsiavut in two consecutive years. This is with the Wildlife and Plants Co-management Board. We held Board meetings in all communities over a year, community consultations throughout Nunatsiavut, interjurisdictional workshops for polar bear and George River caribou and collaborative research. And the Torngat Joint Fisheries Board has held two multi-stakeholder workshops for crab, one for Arctic char, and is developing one for burbot. We've held fisheries policy community consultations throughout Nunatsiavut, and have participated in DFO-led policy analysis and collaborative research.

I think we've learned that it's the unofficial stuff that works. Submitting recommendations directly to the Minister—in some cases they have been outstanding, with 10 to 30 pages of detailed scientific and traditional knowledge, and policy analysis complemented by detailed and thorough rationalization—but they're really nothing without a collaborative process to generate those. What has worked in terms of the unofficial stuff is agreeing on a process and on an interpretation of the Land Claims Agreement, and grounding recommendations and decisions in the Agreement. We've tried just one or the other of science and traditional knowledge. That doesn't work. Understanding partner processes and policies is important. The Department of Fisheries and Oceans has a schedule. They've developed it over a long time and have a huge bureaucracy. It's no good to come with a shrimp recommendation when they're thinking about crab. And, similarly, they have well-developed policies on allocation, and, in formulating your own recommendations, you need to understand that and to ground your recommendations in those policies.

Consultation and consensus building is intuitive. Social media is something we're trying to use better, but there's a learning curve. I think we appreciate that the old-style annual report paper copy just isn't doing what we hoped it would do.

What hasn't worked? We talked a little bit about corporate knowledge transfer or continuity. I think that's probably a common issue across the Arctic and sub-Arctic.

We've had a couple of interesting cases lately of singular knowledge, without validation, one for George River caribou and one for Torngat Mountain caribou. In one case, we had a very good scientific understanding of the status of that herd. We had a recent census, we had measured all the biological parameters to get an impression of trends, and we based our recommendation primarily on those. But we didn't validate or corroborate the scientific information with traditional knowledge, and it was rejected (varied). There was no buy-in from anyone, and the same thing happened for the Torngat Mountain caribou (but it was the reverse). We had systematically collected and analyzed very good traditional knowledge, but had very little scientific knowledge. It was the same problem; we didn't have the complete picture. Everyone was saying you don't have the complete picture; you're missing one or the other. I took that as an encouraging sign.

It's important to develop a common interpretation amongst organizations of the land claim.

The precautionary principle doesn't seem to be gaining any traction in my region. It is foundational to the entire Agreement; it's the first part in the wildlife

chapter. Land claim negotiators have demonstrated a real willingness to experiment with novel institutional arrangements. Co-management boards have been established, including advisory bodies and implementation bodies; the governance system and structure has changed fundamentally. This is a result of a fairly broad social, political experiment. But I don't see that willingness to experiment playing itself out now within those institutions at the management or the project level.

I'm talking basically about adaptive co-management, but we seem to be stuck with this old-style management mentality. My simplistic understanding of it is that you spend money on research and analysis, come up with a prediction as to what's going to happen if you manipulate some variable, and then try to act bashful when you get surprised. Or worse still, you defend your original prediction, based on the assumptions you made reasonably at the time.

I don't think it needs to be that way. I think that there are opportunities to experiment with all policy decisions. It's not a terribly profound idea, but it is one that I don't see in practice.

With respect to the precautionary approach, I only see willingness to act on what we know we should do. I don't see any willingness to act on what we think we should do. In some cases, we have a very good reason to think what we do. Using climate change as a ludicrous example, we're not doing anything about it because we don't know that greenhouse gas emissions are really causing climate change. But we have a very good reason to think it and there's no reason our actions can't line up with what we think. Instead, we're forced to pretend that we know, and if we can't convince people that we know what will happen, we have paralysis by analysis and can't take action.

Peter Armitage
This is a question for Gregor and Aaron. I guess it kind of relates to what Larry was talking about as well, but in those cases where your co-management recommendations were rejected by the Minister, and then in the case of the beluga whale, the Minister actually imposed a quota on you effectively. Did, in each of these cases, government clearly back up their position with science? Were the people on the government side who cooked up that science, participants to your co-management processes? And was the science made transparent to you?

Gregor Gilbert
In the case of beluga, the science is actually somewhat contentious. It is a complex issue, nuanced by the fact that there are two beluga populations. There's a western and an eastern Hudson's Bay population. There's a conservation concern for the eastern Hudson's Bay beluga population. Unfortunately, they both migrate together through the Hudson's Strait and are indistinguishable when doing so. The Inuit of Nunavik do not see a conservation concern with the beluga, either eastern or western. There has been genetic analysis done which shows some differentiation between the two populations, but then there is also mixing that goes on in the breeding grounds, which is off northern Labrador. DFO has its scientific opinion on what constitutes the endangered population, but that view is not shared by the Inuit. And that leads to the contention around the imposed quota. I think the science was relatively transparent, but it was not, at the most basic level, believed by the Inuit. It is a difficult issue and is going take a lot more research and a lot longer to sort out. I wish I could be optimistic about it, but once again we come down to funding cuts at DFO which hit their research hard. I'm not sure that the capacity is currently there within DFO to tease apart the populations.

Aaron Dale
I guess my short answer is no, I haven't been satisfied by the responses. Your specific question was whether or not they have backed up their variance or rejections with science, and I would say no. For just about every recommendation we had a common understanding of the science of the resource status, so I don't think the issue has been science. I don't feel disappointed that they haven't come back at us with more science.
I feel disappointed that they haven't come back at us with more rationalization for the actions that the science merits. I'd like to see more supporting rationalization and not more supporting science.

Vic Gillman

Throughout the panel discussion today, we've heard about a lot of considerations and challenges for our co-management boards. A few of them are development pressures, lack of sufficient funding, NGO interests, environmental considerations (like climate change), third party challenges; the list is pretty long. But one that I did not hear (and this comes from my experience of working 25 years ago at the initial state of the Fisheries Joint Management Board) is the escalating complexity of the issues that are facing cooperative management boards. I'm asking the panel members if this increasing workload for cooperative management boards is a threat to their future success?

Taqulik Hepa
The answer is yes. We do have a relatively small staff and, with all the interests within the Arctic, we are overwhelmed. It is definitely a challenge as we move forward. That will be part of the discussion when we come together with the Alaska Native Regions from around Alaska during AFN. There are talks about building coalitions among the co-management groups to deal with outside interest groups associated with fishing, tourism, and global climate change. We would build coalitions amongst our groups to minimize the impact to the people who we work for.

Larry Carpenter
Yes, Vic, I agree. The workload is getting so large. We have new legislation coming out, such as the federal Species at Risk Act. We have an NWT Species at Risk Act, and yet there are very few more dollars dedicated to the co-management groups to enable them to address a lot of the concerns. Peary caribou is listed as endangered, you have other species that are listed as special concern. We have to work with Canada and with NWT to put together management plans for certain species. So yes, we're already pretty much overloaded with what we are doing right now. There is a lot of the research that we have both CWS and ENR doing, and there's just enough money for the projects that the communities need to work on.

Joe Tetlichi
When we started the harvest management plan, we had good cooperation from all governments because what they did was actually financially supported. Their own board members came to the table, whether it was for the working group or the senior officials meeting. At the start, all governments gave us extra money for actually going through with it, and the implementation plan. We still have a work overload in regards to other projects, especially cumulative effects. I think it's going to be another big project that the Board's looking at, but the Porcupine Caribou herd has been thoroughly researched and I think it's on everybody's mind so we get full cooperation. Massi.

John Cheechoo
We might want to look at the issue of overload and how to prioritize what co-management boards should be doing. Is the mandate too broad or is there not enough funding to address issues? There is a chill in the air with the relatively new government. Bill C-38 is an example of how not to consult with anyone on changes in environmental legislation. This might affect the roles or capacities of co-management boards, including impact review boards. There is talk about fewer boards with smaller numbers. This changes the whole direction from 25 years ago.

Tom Nesbitt
We're talking about cooperative management and protected areas. We have not noticed an increase in complexity of issues. What we try to do is to overcome the gulf between government and the Board. The Superintendent is compelled to come to all of our meetings and, in fact, as the Chair, I open the door for anybody in the community or from Parks Canada to come and take part in the discussions. They all have valid perspectives; we just need to weave them together. There is an adversarial, inefficient use of resources when government is doing research over there and the boards are doing research over there. The solution is to try to work by consensus. Again, we don't vote. The moment you vote, you've shot yourself in the foot—you have compelled the Minister to retain his or her jurisdiction. You work by consensus and give the representatives of the parties time. We don't try to solve the world's problems; we go at the pace which the parties, both government and the Inuvialuit or the Sahtú Dene, are comfortable with. We have many irons in the fire and we try to make the most efficient use of our resources. Ours is a simple experiment, but that's part of the solution. The moment you make recommendations, you are

recognizing the final and separate decision-making authority of the Minister, and you are back in what I was calling Alternative 1.

Lindsay Staples
With respect to the time it takes to make a consensus-based decision, I would be curious to hear from a number of the panellists, particularly from Aaron and Gregor. Consensus-based decisions are much more attractive for a Minister than a vote of six to 3, because, essentially, the latter just gives the problem back to the Minister. My concern is the time that it takes to get to a consensus decision in the modern world. When you look at the pace, the scale and the pressures to make (development) decisions, does a consensus-based decision-making process even have a place anymore?

The planning exercises we're involved in take a long time. Joe gave the example of 10 years to produce a harvest management plan for the Porcupine Caribou herd. We look at some land use plans; after 10 and 15 years, they're still not complete. I think there is a certain point at which one can ask if we are relevant with respect to the way in which decisions are made about the disposition of resources. There's real political pressure and it's a concern.

Aaron Dale
I can probably speak to that very quickly. I reverse-engineered our successful recommendations and decisions. I looked at what worked and what didn't. What I was trying to say was that those are the ones that did work; those are the ones that did get accepted and, usually, there was a good process in which we developed a common interpretation and went through user workshops and multi-stakeholder discussions. All of that culminated in a recommendation that was actually co-developed by the stakeholders, the signatory governments and the Board. In some cases it took a lot longer, but those were the ones that did work. The ones that didn't work were the ones in which we didn't do that. A successful recommendation is a by-product of a successful process, and a successful process is one with an emphasis on consensus.

Gregor Gilbert
I think there are a couple of issues tied to consensus decision making. First of all, some issues are relatively easy and others are more difficult. Issues that have traditionally been divisive between government and Inuit, or government and other stakeholders, probably continue to be that way. The shadow of the past imposes itself upon consensus decision making. Also, you need to get to the point where there is mutual respect amongst co-management board members and enough shared history to be able to achieve that dialogue where consensus can happen. Unfortunately, for most land claim agreements, board members are limited in their term length. Quite often appointments are not renewed. We get personalities going through a revolving door and there isn't time to establish the necessary trust and the shared history amongst the board members.

Tom Nesbitt
In the field I work in, consensus decision making doesn't take any longer than other kinds of decision making. Last fall, Parks Canada was consulting on new regulations for the carrying of firearms (for guides) within national parks. The Tuktut Nogait Board sat down with the Superintendent and other officials, and we came to a consensus before the recommendation went forward to the Minister. One important point is that the Superintendent is a Minister. When the Superintendent makes a decision, the Minister has made a decision. There is no distinction, unless the Superintendent says "I have to refer this to higher authorities.". The kind of decisions we make don't take any longer.

Maybe for these more complex ones (like this Bluenose caribou management plan) it takes longer. But at the end of the day, the conclusion comes, as I said, exponentially and not in a straight line curve. That's my opinion and experience.

Pete Ewins
In the context of a world that's changing (especially in the Arctic) socially and with respect to communications and climate, and given the constraints around capacity, money, time and increasing complexity, how do you think uncertainty (which is inherent in both the best available science and traditional knowledge) guides the use of the precautionary principle? How has it worked or not worked? Only one of you mentioned the

precautionary principle. In reality, the world is moving to a situation where we're going to have to make much smarter, quicker decisions, with much less information. Because that principle depends, for good reason, on wildlife conservation legislation and policies and it's at the core of many of the settled land claims. I wonder how you see the next 10 years in the political and real climate ahead of us.

Gregor Gilbert
There is going to be an increased necessity to enact the precautionary principle when making management decisions. Uncertainty and unpredictability in terms of how wildlife resources are reacting to any number of variables is obvious to all the stakeholders. It's really difficult in the context of wildlife co-management boards (at least from an aboriginal or an Inuit point of view) to justify the sacrifice of subsistence harvesting, when they don't see the reciprocal happening on the part of government. It's an eventuality, if not a necessity, that it will be implemented to ensure that wildlife harvesting can continue for future generations. That's been a difficult process to implement because there still isn't the level of trust to make those tough decisions that involve sacrifices for all. There are exceptions to that; in the case of the south Hudson's Bay polar bear sub-populations, the people in the community recognized a need to curtail harvesting. But for every such example, there are a couple where that doesn't happen. It's going to take time; I think the core issue is trust. It needs to be established between aboriginal parties, Inuit parties and government.

Joe Tetlichi
One of the really important aspects is the traditional knowledge and scientific knowledge. I will give you an example of how those two should be incorporated. A couple of years ago, when the Porcupine Caribou herd was down to 123,000 and we didn't have a real count, we took the local experts' observations very seriously. When the herd was declining, and all the other herds were declining, the people in Old Crow were saying to us, when the herd was going back north, that there were a lot of cows and a lot of bulls. The following year, the same thing happened in Old Crow. They had never seen so many caribou on the mountain beside Old Crow for 40 years. The Arctic Borderlands project, which goes out to the communities to get information from the local experts, was reporting that there was no concern; there's really no decline in the population. All that information, the Porcupine Caribou Management Board had taken seriously. Suddenly, because we didn't have a count, through the use of a model, everybody thought the herd was below 100,000. A couple of years later, we finally got a count, and it was actually 160,000. So that gives you an example where parties have to work together to try and understand and trust one another. We have to trust the process, and we have to trust traditional knowledge. If the users are not being heard, then the trust is broken. Massi.

John Cheechoo
Where there is uncertainty and where people are panicking, the local users and the communities are very important in attenuating the issues. They use what they know and we need to listen to them. Community knowledge can reduce the panic. I think you need to put trust in users and their knowledge.

Billy Storr
I had the opportunity, during my time with our land claim, to work under some really special people, one being Billy Day and the other Alex Aviugana. I used to work for VGMC and those two individuals were frustrated trying to get the committee up and running. One thing that kept coming back to me was the comment that Alex Aviugana made to DFO about their concept of co-management, which was you cooperate, we manage. That was the time that we had the old boys' club. We have seen the change since we started our implementation. I had the opportunity to do a presentation in Halifax and to poke back at DFO. It was the time when DFO and the Coast Guard amalgamated. I said, "That's the new department of fish and ships." DFO folks didn't like it.

We had two management plans that never really panned out, one being the Bluenose caribou plan, and I keep asking what went wrong there. The other one was the Rat River fishing plan. The knowledge of the local people was really invaluable for that one. I asked why we stopped putting collars on animals and really never got a response. Those are the types of things that the elders don't like. They feel that is harassment.

With respect to research dollars, I was the mayor in the hamlet of Aklavik a couple of years back, and the MLA called at the beginning of March offering a whole pile of money because it needed to be spent by March 31st. That is not good management.

I've got an issue in terms of the government's fiduciary responsibilities. One of the big issues we're facing in the North is the threat to commercial fishing in the Beaufort Sea. There are implications for our livelihood. And we are trying to put the research responsibility on the Department of Fisheries and Oceans. Are we really trying to listen to communities? Because there's lots of knowledge in the communities. I'd like to ask: Where did we go wrong with those two plans?

Frank Pokiak
When they were applying population models to the Porcupine herd, a lot of people got worked up. It didn't really bother me because our elders always told us that caribou migrate from one area to another. With the Bluenose herd I think scientists have to listen more to the traditional knowledge. The Inuvialuit Game Council did agree to collect data on our harvest of the Porcupine herd; we pointed out more than once that the government would have to fund that. We're having difficulty now finding funding to continue collecting information from the communities; we're getting correspondence from the communities saying that they need funding. Aklavik is fortunate that they have a really good board that can find funding from other sources. But they put us in a very difficult situation as they're telling us this herd is at this stage, and we have to collect information from our people, but they don't actually give us funding to do that. If governments want information, they have to bring up the bucks.

John Cheechoo
Has the regime, or the people involved, changed or been renewed?

Tom Nesbitt
To overcome the old boys' network, we've got to get people working together and trusting each other. When the Tuktut Nogait National Park Management Board was first established, we held a priorities workshop and invited DFO and Game Council, WMAC and Parks Canada to this joint process to set research priorities for the park. First, they asked why we were asking them about that part. We thought they had some valid points, which surprised them. We were able to come to some consensus on research priorities and set priorities for several years. It's not a universal solution. The old boys' club is fuelled in part by fears among cultures and by people not working together. They sometimes need a context in which they are authorized to roll up their sleeves and start working together. It's part of a solution.

Gregor Gilbert
The days of the old boys' club are largely over, certainly for Makivik, and the Nunavik Research Centre in Kuujjuaq. We have any number of ongoing and collaborative projects with Fisheries and Oceans, CWS, the MRNF of Quebec, and at a working level we have very good relationships. But I think that breaks down a bit at the political level. You can have really good working relationships with researchers who are interested in adapting to local and traditional knowledge and who are willing to respond and change their research priorities. Somewhere along the chain, as that information gets passed up, its merit is lost and there is a breakdown between the researchers' political masters and the research that's being fed to them. At a working level, the old boys' club is gone; at a higher level, I think it still exists. It's going to take time, in the realm of government. And government is going to have to learn to trust and actually listen to their own researchers. Policy has to be formed around sound research that incorporates local and traditional knowledge. That power is solely within the auspices of government. It is my hope that, sooner or later, we'll see a more profitable relationship.

Day 2: October 3, 2012

Panel 2: The Practice of Implementation – A Legal Perspective

Bob Bell
Our first panel today will involve folks who represent those who are going to play an increasingly large role

in wildlife co-management. Generally, those are the folks in the legal community. I'm just going to turn this over to Lindsay, who will make an introduction. Thank you.

Lindsay Staples – Panel Chair
These three gentlemen that are with us this morning have a tremendous amount of knowledge and experience, both individually and collectively, in the law as it affects the implementation of land claim agreements. I'd first like to invite Nigel Banks, who has worked across the Circumpolar North, to speak. He has worked with governments, co-management bodies, and aboriginal authorities on a wide range of legal issues, many of which focus on resource and wildlife law. He's deeply familiar with the land claims in the various regions of the Canadian North. We are privileged to have Nigel with us this morning. Please welcome Nigel Banks.

Nigel Banks
Well, thanks Lindsay, and thanks for the invitation to be here this morning. It's an honour for me to be here and it's an opportunity for me to honour someone who was very important in my life, Andy Thompson. I did graduate work at UBC in the late 1970s. Andy was my teacher, my mentor and, subsequently, my friend. As Lindsay mentioned yesterday, Andy was the Chair of the first North Slope Conference, so it's pretty special for me to be able to speak here today.

I'm the academic on the panel. These guys are in the trenches every day, so we've decided that I will try to set some general framework for land claim agreements and then John and Michael will get into more detail about co-management.

I'm going to first of all talk about what a land claim agreement is as a matter of law, and I'll tell you it's three things. It's a contract, it's an agreement with statutory effect, and it's a constitutionally protected agreement. Second, I'll talk about the relationship between land claim agreements and general constitutional norms. This relates to the duty to consult and accommodate. Third, I'll talk about one very recent decision from the Nunavut Supreme Court involving NTI and Canada, and the obligation to put in place the general environmental monitoring program under the Nunavut Agreement. And then I'll say a few words about some choices we might make in terms of enforcing implementation (if that's the right word) using the courts, arbitration and conciliation mechanisms.

So, what is a land claim agreement? And I've said three things, but starting off, of course, it is a contract because it exhibits all the features of a contract—there's an offer, there's an acceptance, there's consideration and, perhaps most importantly, there is an intention to create legal relations. And what does that mean? It means that land claim agreements aren't just political accords; they're intended to be binding agreements, giving rise to rights and obligations on the part of the parties. And the implication of that is that breach of the terms of that contract exposes the non-performing party to all of the usual remedies provided by law, including damages. And I think that's what's particularly important about this NTI and Canada case that I'll talk about in a moment, because maybe nothing focuses attention quite so much as a significant award of damages.

But it's not an ordinary commercial contract. Much of the content of a land claim agreement is non-commercial. Your typical contract is concerned with profit-seeking activities by both parties, but there's clearly something different about a land claim agreement, because that's not its concern. And the other feature of it, of course, is that its implementation engages, we are told by the courts, the honour of the Crown. Not every contract that the Crown enters into engages the honour of the Crown.

Second, the land claim agreement is also a statute or is given statutory effect. And why is that? Well, land claim agreements enter into force when they're ratified. The agreements actually tell you how they are to be ratified. They tell you that the indigenous party will ratify by means of a vote, but they also tell us that the Crown has elected to ratify by means of a statute. Not an Order-in-Council from Cabinet, but by a statute. What do those statutes say? I've got two examples here. One is the IFA and the other, the Nunavut Agreement. They tell you that the agreement is given effect and declared valid, so

given effect as a statute. And Clause 4 tells you that it is the intention of Parliament that, in the event of a conflict between this statute and another statute, it is the agreement that shall prevail. The Nunavut Agreement is much the same, except that it also tells us that the underlying text for Sub 2 means the agreement is binding on all persons and bodies that are not parties to the agreement. That leads to three implications of statutory endorsement of these land claim agreements.

The first is that, while contracts bind just the parties to the contract, the consequence of giving statutory effect to this contract is that it binds the whole world. It gives the agreement an objective in fact that you wouldn't expect from a mere contract, and that is pretty important. Second, it has the potential, because it is a statute, to create new public duties for government officials. And third, it may modify the exercise of statutory discretionary powers. So the instruction here is that anyone implementing a statute must think about the relationship between the home statute, for example the Fisheries Act, and what the land claim agreement says. The best example that I know of, in terms of case law, is one early case that NTI brought against the Department of Fisheries and Oceans in what's known as the turbot litigation. The issue there was whether the Minister of DFO had fulfilled his obligations under the final agreement in setting and allocating the turbot quota in the Nunavut offshore. This is an area that's beyond the jurisdiction of the Wildlife Management Board, but is an area where the Nunavut Final Agreement still has some application. What the court said was that, if you just look at the Fisheries Act on its own, the Minister has huge powers under Section 7, the general licensing provision. But what the court says is that you, Minister, must read here Section 7 in light of the obligations imposed upon you by the Nunavut Final Agreement, in determining how to set and allocate quota. That tells you something about the relationship between the statutory effect of final agreements and existing statutory powers.

And the third element of the troika is land claims agreements and the Constitution, no doubt the most important legal aspect of the agreement. A land claim agreement is protected by both Section 35 of the Constitution and, ultimately, by Section 52 of the Constitution. Section 35 tells you that all existing aboriginal and treaty rights are hereby recognized and affirmed, and Sub 3 tells you that treaty rights include rights acquired by way of a land claim agreement. It analogizes land claim agreements to treaty rights. And then Section 52 also says that there is a hierarchy of laws and at the top of the hierarchy is the Constitution. But what does that mean? Are all constitutional rights absolute? The answer to that is no. The Constitution doesn't confer absolute protection on any rights, both as a matter of general constitutional law and the sub-area of aboriginal law. As a matter of general constitutional law, Section 1 of the Charter says: The rights in this Charter are guaranteed to everybody except to the extent those infringements may be justified in a free and democratic society (for example, safety rules). But the Supreme Court has also judicially created a doctrine of justifiable infringements of aboriginal rights and treaty rights, and it did that, most importantly, in the Sparrow case, which is still the most important authority on the point. And what that tells you is that it's up to the First Nation or other indigenous party to say: We believe that the Crown has prima facie infringed our aboriginal rights or our treaty rights, and then, having established that, it's up to the Crown to justify that infringement by showing that the impairment was a minimal impairment, by showing that any impairment was consistent with the honour of the Crown and priority be afforded to these constitutionally protected rights. It's a balancing exercise in which these protected rights are given large status.

One of the things that I'm not clear about is whether the same rules of justifiable infringement can, or should, apply to land claim agreements. I say that because land claim agreements are balancing documents in and of themselves. They provide for the possibilities of amendment and ministerial override, so why do we need another doctrine of justifiable unilateral infringement by the Crown? I think one might also say it's not clear that this doctrine applies where the First Nation or indigenous party is proceeding by way of contract and simply saying, you violated the terms of the contract. I'll say more about that in the context of the NTI decision.

The second thing I'll talk about is land claim

agreements and general constitutional norms. I think the question is: Are modern land claim agreements the sole source of legal obligations in the relationship between the indigenous party and the Crown? Is a land claim agreement a complete code? The answer that the Supreme Court has given in a case called Beckman (coming out of Yukon) is no. The general norms, including the duty to consult and accommodate with respect to the exercise of statutory powers that may affect land claim agreement rights, will still apply. And that's so even where a land claim agreement (like all Yukon land claim agreements) actually uses the term 'consult' in the terms of the agreements and says, here's when government has a duty to consult. What the court is saying is that these general norms, taken from general constitutional law, will supplement, but won't replace or contradict provisions of the land claim agreement. It's a gap-filling exercise.

The most important case is Beckman and the Little Salmon/Carmacks First Nation. I'm sure there are many people in the room who are very familiar with this case. It involved a grant of agricultural lands within a traditional territory, an application that was considered by a Yukon government committee, and a decision that was not one of the prescribed decisions in the agreement as having a duty to consult. And so the Yukon Government said the land claim agreement is a complete code, there is no duty to consult. The Supreme Court said no, there is a duty to consult. Then we get to the question of what the content is of the duty to consult. In this case, and I think it's fair to say, the court said the content was pretty thin. It involved obligations of procedural fairness and those obligations had been discharged through that governmental committee I mentioned. And the outcome, in terms of general administrative law, was reasonable.

There are some broader themes that come out of Beckman that are also useful. One is that the honour of the Crown is an important constitutional principle, which pervades all dealings with aboriginal people, including land claim implementation. The overall objective of land claim agreements is reconciliation between indigenous communities and the settler community. There is an important set of statements throughout the judgment that land claim agreements are about building a long-term relationship. At one point in time, at one point in history in 1993, we settled the Yukon claims, at least in terms of the Final Agreement.

But there are also some other ideas that come from Beckman which maybe aren't as helpful. And they are ideas like the default rules for measuring the Crown's behaviour, and the default rules of the settler society. Someone referred to the old boys' club. I think we actually mean the same thing. We're saying, here's a set of norms that have always governed the relationship. What are these default rules? They're always the default rules of the settler society and not the default rules of the First Nation. While land claim agreements help build a body of inter-societal law and inter-community law, they're not complete. There are gaps, and the problem is that when we start filling those gaps, we often resort (maybe to the duty to consult) but to norms of settler law. I wonder if co-management is a big enough idea to embrace what we're talking about here. I actually prefer to think about language like co-jurisdiction or co-determination. Determination, of course, is having resonances with the right of self-determination in international law.

The third thing I said I'd talk about is the recent decision between NTI and Canada. So here's NTI's big action against Canada. If the focus of these sessions is implementation, NTI is saying to Canada, you haven't implemented the terms of the land claim agreement. We're suing you for one billion dollars in damages. That action is set to go to trial in 2014 so there's lots of procedural stuff to be worked through, but NTI (or their lawyers) also hit upon this idea of carving this action up. Let's identify one particular issue where we think we've got a clear case, and let's apply for what's known as summary judgment on the basis of the paper record between the parties without having cross-examination of witnesses before the court and all of that. The obligation they hit upon was the one in Article 12 of the Nunavut Final Agreement, which was the Crown's obligation to establish a general environmental monitoring plan. This is the Impact Review Board provision of the NFA. What that tells you is monitoring was designed to inform decision making in Nunavut, to improve Impact Review Board decisions, the whole range of decisions made by

the co-management authorities under the Nunavut claim. And Canada was in breach of that, and had done nothing about it until after the lawsuit was commenced in 2006. And the court said that Canada was in breach of two sets of duties—breach of contract (the land claim agreement) and also breach of its fiduciary duty.

What form of remedy can we craft? The typical remedy for breach of contract is damages but, typically, the onus is on the innocent party, in this case NTI, to prove its damages, to prove the monetary nature of the loss. Obviously, it's difficult or impossible to put a realistic number on what the consequence was of Canada breaching this obligation. The default position of the courts in those situations is, typically, just to give nominal damages. You can't prove the damages, so we'll say they're a dollar. Well, what sort of a victory is that? But the court, in this case, said we will award disgorgement damages. In this case it meant looking at the savings that Canada has accrued as a result of failing to implement this agreement. That's going to be the assessment of damages. In other cases, it's the profit that someone has made as a result of a breach of a contract. And the damages were assessed here at over 14 million dollars. Why disgorgement damages, because it's pretty clearly an unusual remedy? I'm satisfied that Canada's failure to implement an important article of the land claim agreement for over 15 years undermined the confidence of aboriginal people, and Inuit in particular, in the important public value behind Canadian land claims agreements. That value is reconciliation. It would be manifestly unjust to allow the Crown to benefit from its failure to implement this clause of the agreement.

It's also important to ensure that the Crown properly respects and fulfills its obligations under land claims agreements, including obligations to provide benefits that are not capable of being quantified in financial terms. So what are the implications of that? They're potentially huge if this decision is upheld on appeal. I'm guessing that this one is going all the way to the Supreme Court of Canada. Why is it important? It's the first successful case of an alleged breach of a treaty or a land claim agreement. There have been no cases involving numbered treaties over the entire history of numbered treaties where someone has brought a breach of contract action resulting in damages for a treaty. That remedy of disgorgement is, obviously, pretty powerful. The court is saying the Crown can't hide behind the terms of its implementation contract. The Crown made a commitment. It must establish this monitoring program no matter what the cost. It's not an obligation to spend X dollars, it's an obligation to do the job.

The case does a very good job of matching the objectives of land claim agreements and the goal of conciliation with a real remedy. And it does a good job of matching the constitutional status of the agreement with a private law remedy—damages.

The last thing I said I'd talk about was dispute resolution. What choices are available to parties? Sometimes lawyers, of course, might emphasize hard forms of dispute resolution in preference to others. They might emphasize the role of court. Options certainly include use of the courts, but also, potentially, arbitration and conciliation. All of the northern land claim agreements provide for the possibility of arbitration in addition to access to the courts. And if you look at more modern land claim agreements (post-1993), some of them have very sophisticated dispute resolution provisions in them. Maybe a good example to look at would be the Nisga'a agreement. Many of the northern land claim agreements—the Inuvialuit, the Nunavut, and the Yukon agreements—have fairly simple dispute resolution clauses, but they all provide for the possibility of arbitration. In practice, arbitration has simply not been used under these northern land claim agreements except in relation to the Inuvialuit claim, where there have been at least three arbitrations. Why is that? It's because, while the Inuvialuit agreement allows the Inuvialuit, on its own, to send an issue to arbitration, in the other northern land claim agreements the usual rule is that both parties must agree to go to arbitration, and Canada has pretty consistently refused to do that.

What is conciliation? Conciliation is non-binding dispute resolution in which the parties agree—it must be both parties agreeing—to appoint someone to help them identify what the issues are and to suggest a number of solutions.

I'm guessing there are more examples out there than I know of, but one prominent example was NTI and Canada's agreement in 2005 to appoint Tom Berger as a conciliator to explore differences in relation to renewal of NTI's implementation contract. There were two main issues that Berger was asked to look at. One was the level of funding for IPGs—Institutions of Public Governance, or the co-management bodies established under the Nunavut claim, but also Article 23 of the Nunavut agreement. Berger issued an interim report and a final report. The interim report focused on the IPG issues and there was at least some level of success from that exercise. The implementation group under the Nunavut claim actually did identify a series of consensus positions in terms of funding of IPGs and some other issues. I'm not in a position to tell you how good that progress was. Maybe Michael will have some more observations on that from the Wildlife Management Board's perspective, but clearly there was some progress.

The final report, though, focused on Article 23 of the Nunavut land claim. This is the provision in the Nunavut claim which says that government has an obligation to establish representative employment of Inuit within the government service. So if Inuit are 83% of the population of Nunavut, 83% of the jobs should, in principle, be fulfilled by Inuit. Obviously a very far-reaching obligation and, at the time, pretty clear that the parties didn't really have a full understanding of how that was going to be implemented in practice. Berger looks at this and says, notwithstanding the fact that he was once a judge, we clearly have to look beyond the specific obligations of Article 23. We've got to think about what the overall objective is here, what the intentions of the parties were. The issue here isn't the government's failure to employ; it's the failure of the system, meaning the educational system, to produce qualified Inuit who could take all of these jobs in the Public Service. So Berger's response was to say, now let's not focus on the language of Article 23, what we really need is a fully funded, truly bilingual education system which equips the Inuit of Nunavut to function in both the traditional society and a modern society, and a globalized economy. And that means that they must be able to function in both languages. Of course, there's no mention of that in Article 23 so it's a very far-reaching interpretation. I don't think there's been much progress on that. And indeed, as we have already seen, the NTI filed its lawsuit in December 2006 and will be alleging, among other things, a non-fulfillment breach of Article 23.

Lindsay Staples
I'd like to move directly to John Donihee's presentation. John gave me one of my early starts many, many years ago when he was the Policy Director with the Government of the Northwest Territories for Environment and Renewable Resources. John was the Director of Policy for a number of years and then, basically, went back to school. In addition to having a Master's in Environmental Studies, he picked up several law degrees, one of which I gather involved Nigel. John has worked extensively for many bodies under the Inuvialuit Agreement. He's worked extensively with the MacKenzie Valley Environmental Impact Review Board. He is well-known up and down the Mackenzie Valley, and so please welcome John.

John Donihee
I'm delighted to be here. The very presentation of the North Slope Conference is a feature of the implementation of the Inuvialuit Final Agreement. The Agreement requires that this conference be provided on a three-year cycle. It's a very unique opportunity to bring scientists, government managers, co-managers, aboriginal people and the occasional lawyer together to take a look at how the North Slope is doing. We can explore how institutions and management efforts made to protect that area are functioning, and look forward in a way that will enable all of us to do that job better.

I'm going to give a slightly different perspective than Nigel's on land claims, but I do want to give you a full sense of the importance of these agreements. I am going to go on and talk about what I call the exchange because, as Nigel indicated earlier, there is a transaction involved and, consequently, there are still two sides that anticipate performance of the promises that were a part of the exchange.

I am going to say a few more things about consultation and the consultation process. Nigel spoke about Beckman and the Little Salmon/

Carmacks case and I think it's important to add a few comments about that. I'll talk about consultation from the standpoint of co-management tribunals and where they fit in the process.

I'm then going to talk about what I've entitled co-management or co-governance. The co-management framework that's established by the land claims is quite broad. It runs all the way from land use planning to environmental impact assessment in its various forms, and goes on to wildlife management. I think it's really important when we talk about co-management to look at some of the successes and some of the potential strengths of co-management.

I am also going to talk briefly about what I have labelled, for purposes of the talk, the efficiency assault, which is being mounted on some of the co-management institutions, particularly in the Mackenzie Valley. I know that this kind of pressure is being felt by co-managers in other jurisdictions as well.

And, last but not least, I am going to segue into co-management in relation to wildlife management because Michael's talk is going to focus almost exclusively on that.

So let's talk about this exchange. From the standpoint of my experience, these are negotiated products, and they vary from place to place. As Nigel indicated earlier, the Inuvialuit land claim arbitration provisions allow for a single party to kick off the arbitration process. Canada learned from experience in respect of the IFA, and the next time they initiated a land claim they required that there be mutual consent. So the reality of claims as they have evolved and been negotiated over the years, is that things that work and don't work are identified, so the contents vary. But there is, essentially, when you focus purely on what I call the land and resource provisions, a common model out there. Really, once things are settled, what the Crown gets out of this bargain is certainty in relation to the aboriginal rights. The Crown advances its sovereignty and economic development goals. The claims provide a framework for assisting claimant groups to achieve social, economic and cultural aspirations. Another good example Nigel spoke to is Article 23 of the Nunavut claim. Most of the claims include cooperation agreement provisions, impact benefit or access and benefit provisions. These sorts of arrangements are made in order to assist aboriginal people who may be affected by resource development, subsequent to the claim being settled, to participate in the benefits of that development.

On the other hand, what the claimant groups get are land claim-based rights. They're clearer and they get financial compensation; in some instances, very large amounts of money have been exchanged. As time went on and claims were negotiated, the amounts have grown. The claimants also get land; the Inuvialuit got 35,000 square miles of land. It's a very land-rich land claim. I do work, on occasion, for the Kitikmeot Inuit Association and I take pleasure in telling people that KIA, which owns surface lands in the Kitikmeot region, owns, in fee simple, over 100,000 square kilometres of land. That's actually an area larger than the province of Nova Scotia. These are large amounts of land that need to be administered subsequent to settlements. And, of course, claims result in participation in governance structures, co-management, and, in more recent claims, of course, self-government.

The claim model has evolved over time. In effect, what's happening is that the Crown, in right of Canada, accepts that there is a valid case made, usually by proof of land use and occupancy. They accept the claim for negotiation, and ultimately these broad, undefined aboriginal rights are exchanged for the rights that are in the land claim. I've called that model the "extinguishment/grant-back concept" in more recent claims. There has been a lot of concern about this idea of extinguishment, and more recent claims tend to extinguish only the land-based or land-associated rights and leave opportunities for self-government negotiations to take place later. The IFA is an example of that. and at some point self-government negotiations will be completed. Likewise for the Mackenzie Valley claims, self-government negotiations will happen later.

The reason for settling with respect to land and resources first, of course, is that when economic development pressures come and impinge on the lives and the livelihoods of the claimant groups, you need to settle the questions about who owns

the land where. And you want to get involved in these co-governance arrangements so that you can have some influence over the way that economic development is going to take place in your traditional lands. The courts have characterized this exchange and treaties in general with words like "an exchange of solemn promises." I think Nigel gave you some examples of situations where some promises are more solemn than others. That's unfortunately the case. The Auditor General reviewed the IFA and then, in 2002–2004, looked at another couple of other land claims and was quite critical of the way that Canada was meeting the letter, but not the spirit, of the land claim. That means really that the initial exchange— the money, land transfer for land ownership, establishment of institutions— took place. Then, subsequently, the other goals were not achieved through the mechanisms of these institutions and instruments. The Senate has looked at it. There's lots of literature on this, and I'm sure you are familiar with it.

Just to give you some background on the NTI lawsuit that Nigel mentioned, they are suing Canada for a billion dollars. They had a 10-year implementation contract. It expired, and things started to get rancorous. Eventually Canada removed its Chief Negotiator and then NTI made 17 formal requests to arbitrate specific matters under the NLCA. Canada refused every single time. Then they agreed to the Berger conciliation that Nigel mentioned. Essentially, once it was complete, even though it was undertaken by mutual agreement, Canada refused to accept Justice Berger's recommendations.

I do want to point out that these problems are systemic, not partisan. I heard some talk yesterday about C-38 and some of the changes in the environmental regime. Certainly those are matters of concern for many of us, but most of the problems that I am talking about in relation to the NTI lawsuit happened under Liberal administrations. So I don't really think this is something that is a partisan feature. This, in a sense, is a failure of the Crown.

Consultation: the Little Salmon/Carmacks case held that the source of the obligation is the more general Crown/aboriginal relationship and that it doesn't depend on the text of the land claim agreement itself. The Yukon First Nations Umbrella Final Agreement included what's called a "whole agreement clause." Essentially, what it says is that nothing that we talked about during the course of the negotiations can be called upon by way of evidence if we have a contract dispute. In other words, what's in the document is what you get, and you have to say that we've breached a provision of the document and not some collateral promise we made earlier on. Let's keep the dispute focused exactly on the words of the land claim. Then, of course, the UFA has a definition of consultation in it, and in certain places in the Agreement it says the government shall consult and, of course, in the Beckman case, that wasn't the situation. It didn't say that consultation was necessary there, so this set up that debate about whether the consultation exercise is purely dependent on what's in the land claim, or is it based on the relationship. The court went with the relationship.

There's a lot of case law related to consultation, and the courts have stopped short. Certainly, the Supreme Court has stopped short of calling it a "right," but in general terms people think of it that way. In other cases related to consultation, the courts have set out what they have called a spectrum. The issue is that, before a right can be infringed upon (and this goes right back to Sparrow), consultation is required. The Crown is supposed to look for the least intrusive way to conduct its activities in order to protect the rights. Here in Sparrow, it was harvesting rights, and in subsequent cases the court made it clear that the purpose of consultation is to find a way to reconcile what the Crown wants to do with the continued exercise of these aboriginal rights. So you have this spectrum idea because sometimes the infringements are more serious than others, and sometimes the rights are stronger than others. And so you've a flexible framework within which to determine how much consultation ought to happen.

Another Supreme Court of Canada decision, the case called Taku Tlingit, involved consultation over a road into a mine in northwestern B.C. I know Lindsay was involved. Ultimately, the court said yes, you do have to consult in this case, but in the end the work that was done to get the environmental impact assessment completed was judged to be sufficient to satisfy the consultation obligation. Pretty much like

Beckman, where Yukon government's meetings with the Little Salmon/Carmacks First Nation were judged to be sufficient in an administrative law fairness context, to satisfy the consultation obligation.

My view, for purposes of claim implementation and solving the kind of problems we're dealing with, is don't put all your eggs in the consultation basket; it's a procedural opportunity only. Even if the Crown is found by the courts not to have consulted in the way that they should have, the end result is that you just go back and it starts over again. If the Crown gets the consultation right the next time, they can go ahead and do what they wanted to do anyway. So I think it is an important way to get into the room and start the conversation, but I don't see it as an end point.

Co-management and co-governance: yesterday there was some angst being expressed about not being heard by the Minister. I've always considered co-management, particularly in the context of resource management, environmental impact assessment, wildlife management and land use planning, to be a compromise. The model, of course, for the land claim was to get certainty of rights, financial compensation, and land to own and manage entirely on your own. Then what do you do about the rest of the traditional area, where you exercise your harvesting rights, in particular, and where the First Nation or aboriginal organization is able to say, this really used to be our area, regardless? And the answer has been co-management for those areas. And we create the institutions (boards, tribunals, councils) which are all part of the government process and report to Ministers of the Crown. There are some aspects of the things that these tribunals do where they can actually make final decisions, but, generally, those final decisions tend to be procedural, and more often than not the final recommendation seems to go to the Minister of the Crown. So that's co-management. It's really not governance; you're not making final decisions. It's certainly not self-government. I think these institutions have to be recognized for what they are, and I have some examples up here as well.

The other interesting thing that land claims have done in the area of environmental management is to drive the legislative agenda. The Yukon Environmental and Socio-economic Assessment Act, the Mackenzie Valley Resource Management Act, the Nunavut Waters Surface Rights Tribunal Act, and soon the Nunavut Planning and Project Assessment Act—all of these statutes are required by land claims and are an important part of the milieu in which this kind of work is done.

Let me just give you an example to show you why I think the statutory framework is as important as it is. When Canada decided they wanted to make changes to the Fisheries Act and to the Canadian Environmental Assessment Act, there were a couple of speeches made by Ministers to alert everybody to the fact that these changes were coming. Not much in the way of consultation or anything. Bill C-38 came along and we have a wholly drafted brand-new environmental assessment framework called CEAA 2012, and the old CEAA was repealed. And the habitat provisions of the Fisheries Act were, essentially, eliminated. And that took all of about two or three months. In the Mackenzie Valley land claims, there is a provision for water boards and each of the regions has their board. That's been a source of criticism by industry because the boards don't coordinate as much as industry thinks they should, and consequently, they've said we really need to roll these boards up. And the land claims actually provide for that: the Gwich'in, Sahtú and Tlicho claims in the Mackenzie Valley say legislation can provide for a single board. They didn't set them up that way at the outset, but it's possible to simply change the legislation. The MVR wanted to do that and the end result will be one board, not the current four or five. The drive to do that has been underway since 2008, but the land claims and the MVR may say that consultation is necessary. In fact, there's been a lot of talking and there isn't even draft legislation in hand. Canada has been talking about this for two and a half to three years. My point is simply, don't knock the fact that the legislative frameworks that came out of the land claims may only provide you with co-management. Co-management is an important opportunity to influence what happens because half of the tribunal members are either nominees or appointees by aboriginal First Nations or Inuit, and the other half come from local communities and are appointed by the government. And the reality is that these tribunals give a palpably different product than you would get if you dragged a tribunal up from the

south or if you had southern managers appointed by government.

So that was the efficiency assault. And that's it. The push now is to say we've got to roll these statutes up and it's going to be much harder to do than it was with Bill C-38.

As far as wildlife management, I'm just going to leave that to Michael. Thank you.

Lindsay Staples
I can't believe you were telling about the assault on efficiency when I pulled the plug on you. I'd like to introduce now, our last speaker for the morning, Michael D'eca. I met Michael about 10 years ago when the federal Species at Risk Act had been passed and Michael was heavily involved in bringing recognition for the role of co-management boards, with respect to the assessment of the status of wildlife species in Canada, into the negotiations. So the role of the wildlife management boards in SARA is very much a function of the work that Michael and others did around the development of that bill. It was with regard to the implementation of that bill that we met in Whitehorse a number of years ago. All of the co-management boards, including the newly minted Nishga'a board, actually met here in Whitehorse with Environment Canada and, basically, looked at how to implement SARA. What came out of that meeting was a protocol with Environment Canada as to how the blue ribbon panel that does the status assessments, COSEWIC (the Committee for the Status of Endangered Wildlife in Canada), would incorporate traditional knowledge and involve the boards in their species' assessments. It was important work and, as Nigel said, achieving these inter-societal institutional modifications or arrangements is the ongoing work that we do.

As you know, Michael is legal counsel to the Nunavut Wildlife Management Board. They are doing some things that are really quite unique and interesting. Michael also has a special interest in respect to the legal underpinnings and the legal application of traditional knowledge in the work that we do. Please welcome Michael.

Michael D'eca
Thanks very much, Lindsay. I am going to have a number of photos during the presentation. I often do this, and I almost always use the excellent photography of Eric Loring, who is a biologist with Inuit Tapiriit Kanatami.

The NWMB was established when the Nunavut Land Claims Agreement came into force back in July of 1993, but didn't actually become operational until sometime in 1994 when all the members were appointed. At the time I was actually a few months away from becoming a lawyer, but I managed to get a small contract with the NWMB and we hit it off. By the spring of 2005, I was the NWMB's legal counsel. We were all brand new at our jobs, but we were loaded with enthusiasm and a sense of tremendous opportunity. Everyone on the Board recognized that this was the beginning of something historically significant, and we were determined to collectively put our best foot forward during the NWMB's initial watch. Not surprisingly, we have stumbled on occasion, but all in all it has been a pretty successful ride, and never a dull moment. I have collected a few scars along the way, but I remain as optimistic as ever about the value of what we collectively are doing, and have achieved, and will achieve in the future.

This presentation that I'm going to provide you is the NWMB's opportunity to share with its western and its eastern colleagues, the Board's changing approaches to some aspects of land claim implementation in the Nunavut context. I am sure you will find some portions of this presentation familiar to your own experience, and others not. Our hope is that at least a part of its experience may prove to be useful to its fellow land claim pioneers.

First, I am going to give you a brief description of the NWMB's jurisdiction. Secondly, I am going to talk about the integration of Inuit Tapiriit Kanatami and traditional ecological knowledge into the NWMB decision-making process. And third, I'll talk about consultation procedural fairness in the NWMB's hearing process, kind of a practical application of some of the things that my colleagues have been talking about.

The NWMB has found the combination of the Crown's duty to consult and accommodate, and the Board's

duty of procedural fairness, when they are carried out properly, to be a successful, powerful, coordinated, very effective, and well-respected means of engaging Inuit in wildlife management decision making.

The three other topics that I prepared for, but am not going to get into, include the idea of bias and independence of tribunals; we have to pay a lot of attention to this. Second, NWMB has had some experience going to court. And finally, I wanted to talk about looking ahead to the next 10 years. Our implementation planning period ends July of 2013, and we have to appear before the parties and make the case for what we want to do next. We have some exciting ideas, but I think that will have to be for another time.

So let's get on to the NWMB's jurisdiction, what the Board is required or permitted to do under law, and, in particular, pursuant to the terms of the Nunavut Land Claims Agreement, which I'm going to be referring to as the NLCA. The Board is an independent administrative tribunal, part of the overall structure of public government within Nunavut. As such, the Board is bound by the requirements of administrative law, which is the law that governs public officials and tribunals who make decisions that affect people's rights or interests. The Board is part of the overall structure of public government within Nunavut, but it doesn't take instructions from other branches of public government. It takes its instructions from that Land Claims Agreement and carries out its governing tasks as an independent and impartial regulatory agency. And the NWMB, under the terms of the Land Claims Agreement, is the main instrument of wildlife management and the main regulator of access to wildlife in the Nunavut settlement area.

A vision statement is intended to describe an organization's ideal future that is credible but not yet attainable. The NWMB's vision is the following: "Nunavut: a world class model for the cooperative management of healthy wildlife populations."
A mission statement sets out an organization's core purpose for existing, and the NWMB's is, "To conserve wildlife for the application of Inuit Tapiriit Kanatami and scientific knowledge". That term, 'Inuit Qapirangajug' or IQ, is the Inuit term for what is commonly referred to as aboriginal traditional knowledge.

The NWMB has many different duties and responsibilities and they are set out in a fairly complex Article 5 of the Land Claims Agreement, and we have a couple of other articles, 15 and 40, that talk about our authority. For the purposes of this presentation, they can be summarized as falling within three broad categories: decisions, advice and research. And what I am going to do is, very briefly, talk to you about each of them.

First is the highest set of duties, those that require the NWMB to be classified as an Executive Board by the Privy Council Office and the Governor-in-Council. And that is the NWMB's decision-making responsibilities. It makes decisions with respect to wildlife harvesting restrictions, the allocation of wildlife resources, and decisions on the plans for the management and protection of wildlife and habitat. The Board decides on the establishment of conservation areas and has a role with respect to the designation of species at risk. So that's all I'm going to say about decision making for this presentation, but I've really just provided you with the highlights. There's a lot more to NWMB decision making.

The Board also provides advice and recommendations. So, for instance, we provide advice with respect to potential decisions impacting the marine areas of the Nunavut settlement area that affect Inuit rights and opportunities. We have a very large coastline in Nunavut. As well, the NWMB provides advice on commercial offshore fisheries allocations and domestic inter-jurisdictional agreements, among a number of other matters.

And, finally, there is the NWMB's authority with respect to research. It guides, funds, and relies upon research. It provides guidance and advice on research priorities, provides funding assistance for research projects. Each fiscal year the Board provides around $700,000 (sometimes up to a million dollars) from its Nunavut Wildlife Research Trust to government research projects, and up to $100,000 to community-based research.

So it used to be approximately once every five years that the parties to the Nunavut Land Claim

would arrange for an independent review of the implementation of the claim. That schedule has fallen off in recent years; the most recent review was about six and a half years ago. But, nevertheless, there have been two and we've fared quite well in those reviews. The first one indicated that the NWMB is one of the best successes of the NLCA implementation effort, second only to the establishment of the Government of Nunavut. And the second one, not quite so effusive, but still pretty good, is the implementation of NLCA Article 5, which has been mostly effective, and the NWMB in particular.

So there are two main things I want to talk about today. The first is the NWMB's project to integrate IQ and traditional ecological knowledge into NWMB decision making. Perhaps, to start off, I'll tell you what the NWMB understands to be the meaning of the terms 'Inuit Qapirangajug' and 'traditional ecological knowledge.' We negotiated a Wildlife Act in 2003 and it contains a definition of IQ. It means "traditional Inuit values, knowledge, behaviour, perceptions and expectations." In developing its IQ program, the Board settled on the more expansive explanation promoted by George Wensell, whom some of you may know is a scientist and a McGill University professor. His formulations are the following: "IQ consists of traditional ecological knowledge as well as Inuit beliefs about how the world works and the values necessary to behave in an ethical manner in human interactions with animals and the environment. Traditional ecological knowledge, a part of IQ, concerns specific knowledge obtained through Inuit experience about various parts of the environment, including plants, animals, weather and other physical elements."

In the early years of the NWMB's formation, we had no formal structure or program to gather, consider, and apply IQ or TEK in decision making. We did attempt to do it, but it was somewhat ad hoc. Over the years, the Board was determined to be more systematic. So in 2009, the Board commenced development of a comprehensive Inuit Qapirangajug program. Before naming the elements of the program, I'd like to set out the five main reasons for establishing this program. First is to comply with the International Biodiversity Convention, the U.N. Declaration on the Rights of Indigenous Peoples, and Canada's own National Biodiversity Strategy; second is to fulfill applicable principles and objectives set out in the Nunavut Land Claims Agreement; third, to follow relevant principles and concepts in the Wildlife Act; fourth, to ensure the systematic and culturally appropriate inclusion of IQ in wildlife, research, and management within Nunavut; and, finally, to establish a strong, complementary relationship between science and IQ, resulting in more effective Nunavut wildlife management. So the program itself is composed of five elements. We are in the midst of developing an IQ database and library; we want to hire an IQ staff person; we are going to set up what we refer to as an IQ network (an IQN) and panels that are formed from that network; and the other two elements are an IQ research program and consideration of both IQ and science in NWMB decision making.

So we will look a little bit more closely at each of those elements. In terms of the database and library, its purpose is to assist the NWMB in achieving its vision and performing its mission, and, secondly, to contribute to an improved understanding of the Arctic and to developing solutions to environmental and wildlife management problems. Third is to develop a searchable information base of Inuit aboriginal knowledge to complement the current and, to date, primary information base of scientific knowledge relied upon by the NWMB; and, fourth, to provide an effective research tool for the NWMB and its co-management partners in fulfilling its wildlife management mandate under the Nunavut Land Claims Agreement.

In terms of the staff position, we are currently in the position of recruiting and hiring what we refer to as an IQ Coordinator. Hopefully, in the next month or so we will have that position filled. There are two purposes served by having an IQ coordinator: first, to undertake, coordinate, and/or supervise the many tasks associated with the various elements of the NWMB's IQ program, and, second, to undertake duties corresponding to a number of the functions carried out by science-trained staff with respect to the NWMB's science program.

The third element of that program is the IQ network and the panels. The purpose of the IQN is to provide a

broad base of distinguished elders and Qapirangajug who are persons recognized by their community or region as possessing in-depth IQ, to provide a broad base of those individuals willing to be appointed to one or more panels to assist the NWMB concerning specific wildlife research and management issues. The purpose of each panel is to deliver independent, impartial and timely information, advice and recommendations to the NWMB concerning wildlife issues referred to the panel by the Board.

I wanted to present to you the fairly new approach the NWMB has taken to decision making, particularly with respect to the limitation of Inuit harvesting rights. As I indicated in my introduction, the combination of the Crown's duty to consult and the NWMB's duty to procedural fairness produces a sum that is really greater than its parts. The Crown is subject, of course, to its constitutional common-law duty to consult, and the NWMB is subject to the administrative law duty of procedural fairness, and it is the combination of those two. The Crown, prior to finalizing a position, has to consult with Inuit and perhaps even, especially in the case of limitations on land claim rights, consider and engage in accommodation. Following that, the NWMB steps in and has its hearing process, and it is subject to that doctrine of fairness, being a tribunal subject to the administrative law requirements. And the doctrine of fairness dictates that the parties be provided timely notice, reasonable disclosure and adequate opportunity to respond before a decision is made affecting their rights or interests.

Prior to 2006, the NWMB did not hold hearings; today, hearings are integral to Board operations and practically all NWMB decision making. We have three kinds of hearings: in-person hearings for those matters of most interest to Inuit; we also have electronic hearings and written hearings, which are generally carried out when there is urgency to dealing with a matter and also when there is consensus among the proponents for a particular decision. In terms of the parties, any representative or agent of the federal or territorial government, any Inuk or any hunters' and trappers' organization or regional wildlife organization, is accorded the status of a full party at an NWMB public hearing. The Board can also allow other people, or even request/invite others to come, or compel others to attend its hearings. It has the same powers as Commissioners appointed under the Inquiries Act.

There are a number of procedural steps. We have a set of steps that we expect all parties to follow and, again, the results have been very encouraging over the last six or seven years. A proposal for decision is issued generally by government, what they propose the NWMB to decide. They have to provide all of the best available information with that. Following the receipt of that proposal, the NWMB issues a formal public hearing notice and disclosure of all the best available information. The NWMB issues an invitation to potential parties to file written submissions. It holds the hearing and then it holds its decision meeting. What we have found is that this process is deeply satisfying for all parties. It gets all of the issues on the table, a full consultation before it comes to the Board, and then a full consideration of all the points of view at the NWMB hearing, which has simultaneous translation and also has a court reporter transcribe everything. We commend it to others, to experiment with the hearing process.

Lindsay Staples
Well, you heard three very interesting presentations, one that quite nicely gave us the lay of the land and, in a sense, provided both a legal framework and a high-level sense of how that framework has been evolving. Then we heard the practical experience from a number of different regions in the North. Let's take questions or comments on the presentations.

Questions and Comments

John Streicker
My question is around how responsive the legal systems will be if we continue to see the change that we anticipate. For example, this year we had 40% loss of sea ice from a decade ago and the rough estimates are that 80% of the summer sea ice is gone now. As that ice changes, the North will change very rapidly. The last remaining ice may be along the Canadian Arctic archipelago, which has all sorts of implications. The change is coming faster than we anticipated and I'm wondering how you see the legal responsiveness in the co-management model, to things that happen quite rapidly.

Michael D'eca
For sure, with climate change, we see it happening most rapidly in the North. In the Nunavut claim, we have the tools to assist us. The NWMB certainly has the authority to address these kinds of matters and will, undoubtedly, have to turn more of its attention and resources to some of the issues you're talking about. I should mention that a later part of my presentation would have addressed our upcoming plans. We have provisions in our land claim for a Nunavut Marine Council, a council that provides advice on the marine waters and the implications for Inuit. We don't have any funding for that Council and that's one of the things we would be seeking in our next planning period: to convince the Crown that we need funding for it to become operational, and to be able to assist all of our land and resource management agencies in addressing the changing climate issues that are constantly arising.

John Donihee
I'd just make one comment. I think that you need to distinguish the role that co-managers and co-management institutions have in actually responding to changes in the resources over which they have authority. If climate change results in changes to wildlife populations, which then creates the need for a management response, then the wildlife management tribunals will respond. So I think the question you're asking is one that I am, maybe, less able to help you with. And that is, what are the limits to the existing legislative regime and does the current framework have the capacity to deal with these kinds of large-scale rapid changes in climate and, perhaps, other environmental factors? That's a question on a different level. Do we actually need to change the legislative regime within which co-management takes place in order to be able to effectively respond to these kinds of changes? I don't have the answer for you; that's actually not a legal question.

Lindsay Staples
It's an interesting question actually and, as we sit here, it is being addressed by one of the working groups under the Arctic Council. They actually are looking at the very question of changing sea ice and what effect that has on the roles and responsibilities and program of work of co-management boards in the Canadian Arctic. One can imagine that there are areas of concern such as hunter safety - this is a huge issue with respect to more extreme weather events, the uncertainties with navigation in waters. Invasive species reassessment is an issue as new species occur in areas; we hear of these random occurrences of sockeye salmon and narwhal in the western Arctic. These are some of the species management challenges the groups face. I don't doubt we could devote at least a day or two to looking at those issues.

Gord Zealand
In terms of the various agreements, some of us in this room were part of the negotiations of the actual claim agreements and, furthermore, we became involved in the actual implementation documents. But when these documents go to the higher powers, wording changes, especially the legal wording. The intent of the negotiators, and what is written are very different or, in some cases, close but not what was really intended. And when you then look to make a change, the various parties involved are very reluctant. If we open this up, it opens up the whole agreement. I guess my question is how can we make changes to the agreements that make sense on both sides, but, at the same time, don't open up the whole agreement to the various questions that may come with it? I've seen it in a number of different agreements. How do we deal with it, without getting into all the politics?

John Donihee
All of the agreements have amendment provisions in them, so there is a process established. The other part of your question relates, I suppose, to the scope of the issue that might drive an amendment and how broad that scope is. And, consequently, how much of the agreement might be affected by any proposed amendment. There's always a risk that, if you reopen something on too broad a front, you may get what you want in one spot, but you lose something somewhere else. So that's a strategic consideration that needs to be made by the land claims group before they decide to exercise their amendment provisions under the claim. The IFA, of course, was amended in 1987. It was primarily a clerical clean-up. The Nunavut Land Claim Agreement was amended just recently while there was work being done on the new environmental assessment legislation in Nunavut. There was a longstanding issue

about whether or not CEAA applied in Nunavut or not, and they solved the problem by amending the Nunavut Land Claims Agreement simply to say that it didn't apply in Nunavut. Sometimes it's a lot easier to amend a land claim than it is to amend the legislation that implements the land claim. In Nunavut there has been a longstanding problem in relation to the way that the security system for closure and reclamation (a requirement under the water legislation) works on Inuit-owned lands. The end result has been something that the mining industry has called double bonding and it does represent a financial barrier to mining development on aboriginal lands in Nunavut. We have been talking for years with the Government of Canada about how to resolve this and only recently the regional Inuit associations and NTI have said we can solve this more easily and quickly with a simple amendment to the land claim. There are a variety of tools that you can use. How broadly you attempt to make the amendment is a policy and strategy decision, but the actual amendment to the land claim really only takes a federal Order-in-Council. This is much easier to do than legislating.

Nigel Bankes
The question had to do with interpretation and whether agreements were being interpreted in the same way as they had been intended. One of the things to think about, and Berger drew attention to this in his conciliator's report, is really very much a purpose of approach to interpreting agreements. So ask the question, what did Article 23 intend in terms of the Nunavut Final Agreement, rather than looking at the particular commitments that were made. Whether his approach will have much purchase remains to be seen, but presumably one of the things that NTI will be arguing in its litigation with Canada is some very purposive interpretations of that Nunavut Final Agreement.

Vic Gilman
I'm not even sure if I know how to frame this. One of the difficulties we're dealing with is the identification of what the definition of obligation means. And there are, from what I heard today, two types of obligations within the agreements. Obligations that are specified in the language of the claim itself, and the obligations that you just mentioned, Nigel, the obligations of intent. Inside the IFA there is this principle of intent for meaningful participation. That means, to me, the ability to contribute in a meaningful way to the processes that all of these cooperative management boards engage in. Well, at the community level, the positioning and capacity of skill sets to do that has been limited by the arrangements in funding under the land claim. My question is: if that intent is there, how do we fix this within the negotiations that could occur around future implementation scenarios? Does that make sense?

John Donihee
Perfectly.

Nigel Bankes
Part of the question is, how do courts, how should courts. Ultimately, if the parties can't agree on what a purpose of interpretation means, and what meaningful participation means, that's the starting point. Can the parties agree on what meaningful participation means? Does it require funding from government to support meaningful participation and, if they can agree on that, you go on with implementation? The more likely scenario, in the current climate, is that parties won't agree on what that means and so one of the options the parties then have to consider is: are we going to litigate that question? Then I think the question is: what do the agreements say about the interpretative approach to the agreements and how are the courts actually going about that exercise? And I guess what I would say is that a purposive interpretation is part of the approach that courts take to both treaty interpretation and land claim agreement interpretation. There is no rule under land claim interpretation that all ambiguities be resolved in favour of the indigenous party. That's kind of a rule of interpretation for the numbered treaties; it's not a rule of interpretation for modern land claim agreements because the argument is that there's a better balance in terms of the resourcing of negotiations; the parties were represented in those negotiations. But I think you can still say that the purposive approach to interpretation is part of the court's approach.

Michael D'eca
I'll just add the experience in Nunavut during the last planning period, where we ran into this kind of problem. The purposive interpretation of the roles for

regional wildlife organizations (RWOs) and hunters' and trappers' organizations (HTOs) was applied, but the funding that was provided to them when the land claim was first started up was pitiful, really. They might have been able to hire a half-time secretary/ manager and that's about it. If they already had an office then, great, because there was no money to even pay for an office. So for the second planning period (1993 to 2003), it went badly, and the RWOs and HTOs didn't really have a chance to take their place in the wildlife management system. A big push was put on in the negotiations for budgets for 2003 to 2013. It went not all that well and then Thomas Berger came in and looked at that. He really pushed for higher funding of HTOs and RWOs, and it was increased significantly. Still, it was insufficient for them to really carry out their responsibilities, so now we come to 2013 and we are going to go through the same process again. Hopefully, the parties can come to an agreement that, if you take that purposive interpretation, you've got to back it up with sufficient funding. We'll see what happens.

Pete Ewins
My question is building on what John mentioned about the rates of change of climate which, essentially, is one of the biggest of the challenges for us here, certainly in the context of cumulative effects. Given what Michael says, one of the core roles of the co-management IPGs is to plan for the persistence of wildlife and habitat. This is obviously a core role. Then you naturally would expect this runaway change to the fundamental habitat conditions and the distribution of wildlife as we have been describing to be a top priority. However, while that's all running away from us, as are the opportunities, the litigation or just standard lobbying to try and get government to implement these things is remarkably slow. So the question is: is there any way to speed up these litigious interventions to make it more practical, while the opportunities to plan effectively still are intact?

John Donihee
Although you get presentations by lawyers, and we like to talk about cases and litigation and that kind of thing, I agree completely with Nigel that the NTI litigation that's ongoing, and the recent summary judgement that has been achieved, is a very important legal development. The point that I would make is that I don't think that the solution to a lot of these problems is going to court. The problem with choosing litigation is that you really do have to have a very clear legal breach of an agreement or something along those lines. And likely you want to make sure you can, as Nigel indicated in the NTI case, quantify damages and so on. The other thing about court is simply that it's pretty much winner take all. So you don't want to take a bad set of facts to the court, and you don't want to end up with an interpretation of your claim that really is inimical to your long-term goals and objectives in managing the circumstances of the beneficiaries. Yes, litigation, I suppose, is that ultimate threat.

Nigel spoke of conciliation and arbitration as well. Unfortunately, with the more recent claims, because of the language in the provisions for initiating arbitration, it's not really much of a tool at all if you can't get to use it. So my comment is that the co-management process itself gives you direct access to Ministers of the Crown. The problems that are resulting from climate change aren't just problems for aboriginal beneficiaries, they are problems for everybody. All Canadians have an interest in maintaining wildlife on Arctic landscapes and maintaining those landscapes themselves, if they can. I think there are a lot of ways to use co-management to get that message to the government in a collaborative way. You need to be persistent, you need to be determined, but in the long run, if you have the facts on your side and there really is a problem, I don't see why we would assume that government isn't going to want to respond to it.

Michael D'eca
Just to follow up a little bit on that, I think we all agree that litigation is a last step, it's an expensive one and it's risky and adversarial and so on. NWMB has had a certain amount of success (when there is good faith on all sides and at least some shared understanding of whatever the issue is) of finding alternatives to that kind of confrontational and adversarial approach. Establishing a memorandum of understanding on a particular issue with government and shared development of policies have been successful for us. There are alternatives, and they need to be explored before you turn to litigation.

Debra Simmons
I'm with the Sahtú Renewable Resources Board and I'm a new staff person trying to learn my job. I was trying to understand our role within the larger land claim agreement and the Board, generally. And partly due to changing circumstances in the region—a shale oil development boom that's on the go now—we're trying to re-orient ourselves and understand our role within what is named in the Sahtú Land Claim Agreement, as an integrated resource management system. We are also trying to understand what our role is as an institution of public governance that is mandated by a land claim agreement, and therefore responsible for positioning aboriginal beneficiaries in a special place in relation to our broader public responsibilities. So it's been kind of a challenging situation to interpret the land claim where there aren't clear mechanisms in place for understanding, for example, how we might fit into the larger resource management system in the Sahtú region, or with the other co-management boards, and also how we relate effectively to renewable resources councils while maintaining that public, supposed, neutrality. So I guess those are the questions for our Board.

John Donihee
The vision that came out of the Dene/Métis Agreement in Principle and then, ultimately, into the regional claims in the Mackenzie Valley is expressed in the terms that you have indicated, integrated resource management. If you look at the MVRMA and compare it to the legislation that's implementing other land claims here and there in the North, it's really quite unique. You've got essentially a single statute that requires land use planning, and then goes on to deal with land and water management, and the land management provisions apply not just on Crown lands, the way they do in Nunavut and in the ISR, but they apply on settlement lands as well. This is another major difference. Then you have environmental impact assessment, and ultimately you have Part 6 of the Act, which talks about periodic environmental audits. The land and water boards are not allowed to issue a land use permit or a water license if the approved land use plan says that kind of activity can't take place in that location. The land and water boards do the screening, and ultimately, if they refer, it goes to the MBEIRB. So it is very much integrated in a way that you don't see in the other areas.

Ultimately, of course, what is left out, and what might be your problem in a way, is that the participants in the Sahtú and Gwich'in areas decided that they wanted the wildlife management board provisions to come into force as soon as the claim was ratified, and so they didn't wait to enshrine them in the legislation with the MVRMA. Consequently, there have always been questions about the way that the renewable resources boards relate to the other tribunals that are created by the MVRMA. I have to say, in my experience over the years, I've never seen a renewable resource board up here in front of the EIRB in an impact assessment context. They haven't really taken advantage of the opportunities to influence the impact assessment process very much. We certainly hear from First Nations and claims organizations about wildlife matters, but when it comes down to questions about what's going to happen to wildlife in response to a certain development proposal or other, we don't seem to hear from those institutions (renewable resources councils and boards). I think there is room there for your organization to actually play a role, and I expect that you would be accorded quite a bit of attention if you took advantage of those opportunities.

Lindsay Staples
So, Michael, the obvious question for you is: is that the same case in Nunavut?

Michael D'eca
Yes, and I can relate to what you're talking about and what John just said. The NWMB again, for the first 20 years of its existence, was trying to get the core part of its wildlife management jurisdiction under control and make sure everything was running smoothly. At this point, we are looking to our other land and resource management agencies and our relationships with them, and having a say, appearing at hearings of the impact review board to address potential consequences for wildlife from development activities. Again, it's always tied to funding. For us, we think we need another staff person to help us to do this and that's what we will be seeking in our next set of negotiations, but generally we find that there's a lot of room for cooperation, for coordination with the other land and resource agencies. I think our land claims are set up for that to take place. There even is

an assumption that we haven't followed up on this so much up to this point, but we are planning to do it.

Ron Cruickshank
Does the definition of traditional territory change over the life of negotiating a land claim agreement, going from basically a numbered treaty through the negotiation of a land claim agreement, through the implementation of a land claim agreement? And if it does change, then how? If it doesn't really change, then that is the answer.

John Donihee
Well, I think what's important is that when a group of aboriginal people who share a common culture come to the Crown and say, we want to negotiate a land claim, they have to actually put a case forward to the Crown. There are tests that are applied to determine whether, in fact, they are a unique separate group. I've never been directly involved in this so I'm just telling you how I think it works. But ultimately the end result is that there is an area identified where that group resided, where they harvested, where they have their traditional spiritual and cultural areas. Ultimately, the Crown will say, okay, fine, we identify you as a group that, first of all, doesn't have a treaty or some other claim or agreement with us already, and therefore you are in the queue and at some point your number will come up and we'll negotiate with you. Then one of the first things that happens in that process is that you sit down and you actually identify the settlement area. And every one of the land claims will have a specific metes and bounds description of the settlement area.

And as you get closer to closure on the negotiations, what will happen is that other aboriginal groups who may or may not have claims already or who have claims and perhaps have a history of using that area will say, just a minute, you're trying to claim a whole bunch of our area. So there is a competition out there, and those situations are reflected in provisions in the land claims that deal with overlap agreements or make provisions for the aboriginal organizations themselves to negotiate overlap agreements to solve those problems. The IFA has those kinds of provisions. If you think of the Nunavut Land Claim Agreement, right at the last minute, the Dene, the Yellowknives and the Dogrib said, just a minute, even though the boundary of Treaty 11 is the south side of Lac du Gras, we actually harvested out into the Barren Lands on a regular basis, and that boundary should be further north. And quite a dispute emerged. It also affected the boundary of Nunavut because of the way the claims worked out, and Canada brought in Commissioner John Parker. He had retired at that point, but he was brought in to mediate this boundary dispute. And the end result, as you may know, is it shifted to the north side, actually a little bit farther north than Lac du Gras, and that's where the boundary of the Nunavut Land Claim Agreement is today. And, of course, that's why the diamond mines are in the Northwest Territories and not Nunavut.

Lindsay Staples
Nigel, in your presentation you did identify what many call the paramountcy provisions of the claims agreements whereby, to the extent that there is an inconsistency between the claim agreements and other legislation, the provisions of the land claim agreement trump the provisions of the other legislation. And so we know, based on that, the territorial governments have made some effort, when they bring in new legislation, to look at what the effect of that new legislation may be on the provision of the land claim agreements. We certainly know that was the case with the federal Species at Risk Act. When the first version of it came down, it was as if nobody had read the northern agreements, and so there was this quite dramatic overhaul of the Species at Risk Act to recognize formally the institutional arrangements set under the claim. So now we are in a circumstance where Bill C-38 has come down and we don't have to go very far on the internet to know that there are a lot of concerns with respect to the inconsistencies between C-38, or the amendments to the Fisheries Act for that matter, and the institutional arrangements and other provisions that are provided for in land claim agreements. So what are the options and what are the paths, that various organizations could go down to address that inconsistency? In other words, in the case of really dramatic and really widespread inconsistencies, what are the avenues available, and what are the merits of each to address that?

Nigel Bankes
If you're looking at new legislation coming in, then

clearly the one option that you've got typically is to make sure that the bill goes to an appropriate Standing Committee and you have the opportunity to make submissions to that Standing Committee. The problem with Bill C-38, of course, was that it was a bundled bill and it ended up in the Finance Committee, rather than a set of sub-committees that might have been capable of dealing with particular issues. So this clearly is a democracy problem when the government of the day chooses to proceed in that way. In relation to existing legislation and practices, one of the jobs might be to identify legislation that needs to be reconsidered because it hasn't been updated since the claim. And this is surprisingly an ongoing issue with respect to some of these older claims. I had the opportunity to work with Michael some years ago on what should have been a new set of fishery regulations for Nunavut. What happened with the creation of the new territory was simply the passing on of the NWT regs., which had never been revised in light of the Agreement. Well, that's still an ongoing project, I think, that Michael and DFO have in Nunavut. Another example is the polar bear management arrangements in Canada. The Polar Bear Administrative Committee and the Polar Bear Technical Committee operate under terms of reference that had never been revised in light of land claim agreements. So there are some opportunities to be more proactive in terms of examining some of those ways of doing business. The PBTC and the Polar Bear Administrative Committee are classic examples of the old boys' network doing things in a particular way, sanctioned by an old set of agreements that hasn't really been reconsidered in light of the new values of land claim agreements.

Michael D'eca

As long as there's good faith on both sides, you've always got the opportunity to negotiate, and changes can be made quite quickly to some of these pieces of legislation. Where that doesn't exist, and it's egregious enough, that's one of the instances where you're going to look to litigation because that's really your final option. So when it's not so egregious (as with the Species at Risk Act), NWMB was happy with some parts of that, but very unhappy with other parts that didn't properly recognize its jurisdiction. One of the consequences of the Species at Risk Act is that under the land claims agreement, once the NWMB makes a final decision and the Minister accepts or varies that decision, it has to be implemented forthwith. So let's say the NWMB makes a decision on the listing of polar bear, and the Minister accepts or varies that, that's it. That should be the end of the decision-making process from our perspective. But under SARA, the Minister then makes a recommendation to the Governor in Council, turning the land claim co-jurisdictional decision-making process into a recommendation only. That was very troubling for us, but not so much so that we were going to gamble and go to court. We negotiated a Memorandum of Understanding fairly quickly with the Department of Fisheries and Oceans and Environment Canada that addressed the concerns that we had in terms of the listing process described under the Act. (We hope that the Act will eventually be changed.) So there are other means to achieve your ends. Again, it depends on the seriousness of the conflict or inconsistency.

John Donihee

I don't want to sound as though I would never litigate, I just think you need to be very strategic in your choice of opportunities. But one example of a situation where litigation resulted in very quick changes post-1992 was in the cases that went up over the spring migratory waterfowl hunt and the resulting changes to the Migratory Birds Convention Act. So, confronted with the situation where that previous statute was clearly inconsistent with aboriginal rights negotiated in claims, and treaty rights as well, it just took a couple of cases hitting the Court of Appeal stage before Environment Canada folded the tent and amended the Act. And that situation had been around since 1917.

Lindsay Staples

Further to Michael's comment about the tool of MOUs or administrative agreements between parties being options, I note that Joe Tetlichi, in speaking about the Porcupine Caribou Management Agreement, indicated that there are certain dimensions of that Agreement that aren't fully reflective of the current realities under the land claim agreements that followed the signing of the PCMA. And so the question would be: does one need to open up the PCMA and risk possible backsliding, or are there ways, in fact, to achieve an administrative

agreement or understanding that would forego the need to open it back up? It speaks to Gord Zealand's concern earlier about the risk of opening agreements up. I believe, in the case of the PCMA, the parties could agree through an MOU that, with respect to opening up this Agreement, we will limit our attention and the scope of these revisions to the following matters, and we are agreed that we will not consider more beyond these particular amendments, as a way to reduce the risk that comes with opening up an important piece of legislation or (international or national) agreement.

John Streicker
Most of what you presented today was really about the relationship between the Crown and the final agreements, the IFA or the NFA. I'm wondering if you can speak about the international agreements, or international discussions and negotiations, and where these final agreements have an impact in terms of wildlife management, or in terms of international boundaries (we still have some disputes), or in terms of waterways and offshore.

Nigel Bankes
Well, I'll start by saying that international law is relevant in this area and its various bodies include international human rights law. Canada is a party to something called the International Covenant on Civil and Political Rights, which talks about the right of self-determination of peoples. It also has an article which talks about the right of minorities to practice their language and culture, which has been interpreted in terms of protecting rights of indigenous peoples as minorities, so there is some relevance there.
The other thing that we should bear in mind is that Canada is a member of the Organization of American States and, as a result, is bound by something called the Declaration on the Rights of Man, which gives the American Human Rights Commission authority to hear petitions from Canadian indigenous peoples. There is an important petition coming forward from one of the First Nations on Vancouver Island saying that Canada's entire process of negotiating modern land claim agreements is inconsistent with obligations under that Declaration. So you do need to think about where the domestic legal system fits in with the international legal system on a human rights context.

Then, of course, there are all the agreements dealing with international environmental law, and I guess the ones that really come to mind there are CITES (International Trade of Endangered Species) and the Polar Bear Agreement. And all of the modern land claim agreements do have provisions which say Canada must consult in relation to positions taken in relation to those agreements, whether they're uplisting proposals for polar bear under CITES or visitation species, which are some of the most contentious. On whales, I think everyone knows that Canada departed from the International Whaling Convention. We're not bound by the International Whaling Convention, and haven't been since about 1990, a long time.

You mentioned international watercourses, and I think I've exhausted my thoughts at this stage.

Michael D'eca
I'm not going to pick up on the watercourses, but the NWMB certainly pays attention and has had some success in relying upon international treaties and declarations to influence the development of legislation in Canada. So for the Species at Risk Act, I should mention that the Inuit Tapiriit Kanatami was very involved in the Aboriginal Working Group that helped to insert into SARA the Aboriginal Traditional Knowledge Subcommittee of COSEWIC, and the establishment of the National Aboriginal Council on Species at Risk. We relied heavily upon the Biodiversity Convention, and the strategy that Canada set up following that Convention, in making the arguments that those kinds of provisions needed to be included in SARA, and we got pretty good provisions there. My Board has a deep interest in the recognition of aboriginal traditional knowledge in Canadian law and in wildlife management practices. So again, we rely upon the Biodiversity Convention (to try to make some changes), the recent Declaration on the Rights of Indigenous Peoples, and, in terms of future battles, the legal recognition of the intellectual property rights associated with aboriginal traditional knowledge. That is not there in Canadian law, but the international law is building up and leading us towards that kind of development domestically.

Lindsay Staples
John, you may want to talk to, for instance, John

Pokiak, who at the last CITES conference in Qatar was a part of the Canadian delegation. Again, pursuant to the provisions that Nigel is speaking to under the IFA, the United States had a proposal for the uplisting of polar bear to Appendix 1 that would have restricted the international trade in polar bear, and had a detrimental effect on Inuvialuit polar bear guides, for instance. That was one reason for being there. Now it is a couple of years later, and there were several groups in Washington a couple of weeks ago lobbying various congressmen to oppose, again, another proposal for an uplisting for polar bear for the next meeting. Bob Bell, you've been to the International Whaling Commission meetings, and again, notwithstanding all of the good protections that you have heard cited earlier this morning, the court of international opinion and politics casts these protections and treats these protections in a very different way.

I think we often forget that, indeed, there is a really, really close relationship between local people and local knowledge, and what's happening in a very small community right up to these large international fora. Larry Carpenter, as well, was in South Korea just a couple of weeks ago for the International Union for the Convention of Nature. Again, the idea there was for the species specialist groups (that are largely composed of scientists) to see a resolution passed there that would get aboriginal people sitting on those species specialist groups because, of course, the recommendations and decisions that come out of those groups have a tremendous influence on the judgments that are then made at the international conferences. In the past it was hard to imagine that there would be a connection between, for instance, Tuktoyaktuk and a meeting in Qatar or South Korea, but in the world that we're in now, 30 and 40 years later, that connection is very close.

Kristen Callaghan
I'm a biologist with the Gwich'in Renewable Resources Board. My question is related to what Debra had talked a little bit about - how there is confusion with respect to how her Wildlife Management Board fits into the overall integration of co-management in her area. John responded with regards to increased opportunities for the board to participate in the review process by, for example, an environmental assessment review. My question is in regards to a development proposal that is underway in the Northwest Territories. Non-conformity wasn't reached with the Terms of Reference set out by the Board with regards to information supplied by the proponent. Yet the Board went ahead with technical hearings and public hearings. So what is the impact of such a precedent on future development proposals in the North, such as in the North Slope, and how would that relate to the participation of a Wildlife Management Board such as mine?

John Donihee
Am I clear, you are referring to a matter that's actually in front of one of the Boards right now? I mean, we're not naming any names here, but because I'm counsel to that tribunal, I don't want to drift into saying some things in public.

Kristen Callaghan
Okay, well, fair enough. I was referring to one specific, but we could be hypothetical, that's okay, if a precedent had been set.

John Donihee
In this whole thing about environmental impact assessment and conformity, there's lots of time and far too much focus placed on setting out terms of reference and then chasing the developers around over this conformity issue. I think it's critical simply to recognize that, at the end of the day, when a developer puts an EIS forward, the burden of proof rests on them and they are going to have to convince the tribunal, whichever one it is, that in fact they can mitigate all of the impacts that are predicted. Of course, impact prediction most often comes from the developer's side, but the other participants in the process have the opportunity to identify what they consider to be impacts as well and, if they disagree with the developer, they have a burden to put some information forward to assist the tribunal as well. The one thing about impact assessment is, as Michael talked earlier about, the fairness obligations that apply to administrative tribunals, co-management tribunals, and that impact assessment at the early stages is clearly an adjudicative function that's being exercised. The tribunal itself can't produce evidence and the parties have to make it work. I'm not a big fan of this pursuit of conformity. I think that the parties

would do better not to spend a lot of time on those issues, identify the things that are important and bring the information forward to the tribunal so that it can do what it needs to do, which is to actually decide whether the impacts are significant or not and to make recommendations to Ministers. I'm going to finish this by simply saying that old age and cynicism are probably closely related. If a developer hires consultants, and at the end of a great deal of time and effort and expenditure they identify significant impacts that need to be dealt with by the tribunal, you hired the wrong consultants.

Jane Vincent
I'm with the Alsek Renewable Resource Council. You talked about the spectrum of consultation. Something we are often frustrated by is that we realize we want to contribute to a conversation (and we are not), and that a department would have an obligation to consult. Is 'consult' defined somewhere? Could posting something on a website be considered consultation? We sit there and think, that didn't feel like we were consulted. And what about legal counsel for RRCs? We are all community people, we don't have the background to know where we stand, and it's really interesting to hear of all of your work, John, in Nunavut, because it sounds like the councils there could really tap into your expertise to help with wading through the legal language. So how can we hold the government accountable to consultation? Where does that definition lie?

Michael D'eca
The development of the law around duty to consult is ongoing, but one of the fairly recent judicial pronouncements is regarding tribunals who are making decisions and also advising on matters, such as the limitation of land claim harvesting rights. The government has its duty to consult and that is specific to what the issue is. It can be just putting up a notice or it can be deep consultation, which requires face-to-face meetings and may require accommodation and so on. But the point I want to make is that this is the government's job, it's a legal duty that they have to undertake. The NWMB will assess the level of consultation that has been undertaken, and the courts tell us that tribunals do have that role. They don't undertake consultation, they assess whether sufficient consultation has taken place. We assess this as a preliminary matter going into our hearings, where we then carry out our own legal duties of procedural fairness by providing notice, disclosure and opportunity to respond in a hearing setting. So consultation is specific to the issues that are being consulted on. It's an obligation of government. The tribunal can and ought to assess if it's sufficient or not and take appropriate steps if it isn't. But it also must carry out its role in this integrated picture of making sure that its processes are carried out in a procedurally fair manner.

John Donihee
I'd just like to make some observations. You need to distinguish between what we've talked about today in the context of aboriginal consultation and the special requirements that emerge when Crown action may infringe on the exercise of an aboriginal right. That's a constitutional common law developed by the Supreme Court of Canada that requires aboriginal consultation, for lack of better terminology. And Michael talks about running fair proceedings and, to be fair, a tribunal has to make sure, as you said, that notice is out there. You know the case you have to meet and the process is measured in some way, and that you have the opportunity to get ready and to put your best foot forward if you are trying to convince the tribunal to take one course of action or another. The courts have tended to sort of run these things together. I mentioned the Taku Tlingit case when I made my presentation. That's a case where the B.C. Environmental Impact Assessment Process was determined to have been sufficient to satisfy the aboriginal consultation obligation on the Crown. And yet I doubt, at the time, that the B.C. Environmental Assessment officials understood that they were doing that at all. I'd be very surprised if they thought they were doing that, and so the courts have run administrative fairness and aboriginal consultation together. The reason they've done that is because where you have co-management institutions or environmental assessment tribunals under provincial legislation, they are already taking care of these things where aboriginal parties are involved. It's efficient to say, we could probably take care of this in front of this tribunal. And the question of whether you can take care of all of it there or not is going to depend on that spectrum of consultation that I spoke about as well. How serious is the infringement and what is the

jurisdiction of the tribunal that we're talking about? That's a very important determinant of whether or not you can deal with aboriginal consultation in this administrative co-management context. There is a Supreme Court of Canada case called Carrier Sekani Tribal Council that's directly on point about this. Everybody accepts the fact that the administrative process contributes to the Crown's consultation. The question that the court dealt with in Carrier Sekani was whether the tribunal itself ruled that the Crown's consultation effort was not sufficient. Without going too much into the details, the answer that came from the Supreme Court was that it actually depends on the jurisdiction of the tribunal, because determining whether or not somebody has met a constitutional obligation is essentially making a determination of law, and the tribunal's jurisdiction has to include the authority for it to make a determination of law before it can answer that question.

Now, I know this is not helping you a lot, it's really complicated and the Court's decision is actually only now making its way down through the tribunals that I represent. We're wrestling with this issue of whether we really have the authority to determine a question of law or not. It's nice when the statute actually says you can, as it did in the Carrier Sekani case with the B.C. Utilities Commission. But lots of tribunals make legal determinations because they have implicit authority to make those kinds of decisions, and that's where it starts to get really hard to deal with. So I think the law is still evolving in this area. For you, my take-away message is the tribunal's process definitely contributes to the Crown consultation requirement, and depending on how serious the infringement issues may be, government may need to do more to ensure that aboriginal consultation is taken care of.

Lindsay Staples
With respect to the Northern Gateway Project, does the National Energy Board in fact fulfill the Crown obligation to consult?

Nigel Bankes
These are two very distinct issues. Does the Board have a duty to consult? The answer is, very, very, rarely, only if it is explicitly being given that obligation. And second, does the Board have a duty to assess if the Crown has fulfilled the Crown's duty to consult, and that's what Carrier Sekani is all about. But the question is, where do we find the definition of consultation? Well, some land claim agreements do define it. The Yukon agreements do have a definition of consultation, so you can look there. Once you are outside of that context then, it's evolving, it's messy and it's context-specific. And there's a spectrum, as John says.

There's one thing I would add, because I think it is a very powerful idea. There's a judge in B.C., Chief Justice Finch, who's given a couple of judgments in which he talks about the duty to consult as requiring demonstrable integration. And what he means by that is, show us, in terms of satisfying the duty to consult, that you had an exchange with the First Nation or indigenous people, you provided information, and here's how things changed as a result of the dialogue you had. So it's a very dialogic view of what's involved. There's been some pick-up of this idea of demonstrable integration, but I think it's a nice way of capturing something which is more than just procedural fairness.

You asked, if the World Wide Web can ever fill the duty to consult—well there's at least one decision of the Alberta Court of Appeal saying yes, the Crown consulted when it posted its disposition of oil sands leases on the Web. I refer to that as drive-by consultation; it doesn't seem to me to be very satisfactory at all.

Panel 3: Integrating Science, Traditional Knowledge and Communities in Research and Resource Management

Bob Bell – Conference Chair
The upcoming panel is perhaps one of the most interesting of the conference. I don't want to put things into hierarchy because I particularly did enjoy the legal discussions this morning. But now, this is where, as they say, the rubber hits the road, integrating traditional knowledge and communities in research and resource behaviour. We are really

fortunate to have, as a moderator for this panel, Evelyn Storr from Aklavik, who has of course a long history in renewable resource administration and a longer history in community living experience. She and my wife went on several ventures together. It gives me great pleasure to introduce Evelyn Storr.

Evelyn Storr – Panel Chair
Well, good afternoon, everybody. I have five speakers. Our panel is about integrating science, traditional knowledge and communities in research and resource management, and the evolving relationship between science-based knowledge and traditional knowledge in research and management decision making. The participation of communities in research programs has been heavily influenced by co-management arrangements established under the land claims agreements. During this session, we will explore best practices in the treatment and application of traditional knowledge and the involvement of communities in research. We will address the institutional prejudices, regionally, nationally and internationally, that continue to undercut the use of traditional knowledge in management decisions, and then explore measures that can contribute to overcoming these and other obstacles. We're going to start off with Lois Harwood.

Lois Harwood
I'd like to just start with a little background about myself; there are many people in the room I don't know. I'm a stock assessment biologist with the federal Department of Fisheries and Oceans, and I'm based out of Yellowknife at this time, but spent almost two decades working out of Inuvik in the Inuvialuit settlement region, and still do.

To start with, I have a lot of photographs of people from the communities who we worked with doing research over the last 25 years or so. I have a paper on much of this material that's coming out in Arctic in December. I'd also like to acknowledge Bob Bell's assistance with this paper and a lot of the material in the talk. I'm also going to treat you to a few of my own opinions which aren't in the paper because it's a talk versus the written word.

In the Inuvialuit settlement region and in the Gwich'in area as well, we've incorporated traditional knowledge or local knowledge, aboriginal knowledge, Inuvialuit knowledge (it's called a number of different things) through direct partnering in the planning, design, fieldwork and communication of the project and results. This is incorporating TEK through participation. This is a different approach than others (social scientists, for example) take. They may be doing workshops and meetings and things like that to gather TEK. We're in the field together doing things and the local knowledge and experience is brought to bear right there and then. It's a different approach; it's often referred to as participatory research.

The Department of Fisheries and Oceans, of course, is partners with the Inuvialuit within the Inuvialuit Settlement Region, and scientific research is performing a method study to prove a hypothesis or answer a specific question. That's what drives the scientific research approach. And this is a plan to organize a systematic series of steps according to a protocol to answer a scientific question. We've worked with hundreds of beneficiaries over the years who are very involved, very serious. You will see in my pictures, examples of innovation, of local skill and experience, of taking scientific measurements, and of being able to function and survive out on the land in a field camp and collect the data that are needed to address that scientific question.

This is Gerry Rogers on a beluga project. He's working with some of the younger folks in the whaling camp, and showing them what he's doing and what he's recording.

This is Pat Kasook at Shingle Point where he designed a harpoon, an innovation. He has designed a harpoon that is for tagging bowhead whales and it far surpassed the scientific equipment that was being used at that time. In fact, this was the gold standard for deploying satellite tags on bowhead whales.

These are the Pokiak brothers from Tuktoyaktuk, and this shows their approach and skill in handling a boat and getting up close to bowhead whales. In this case, this is a grey whale, but it's amazing the skill that's involved in this, as well as reading the weather and keeping a large camp going.

Danny C. Gordon is in the audience. He was involved in the bowhead whale tagging project in 2010 at Herschel. We had two sites; this was Atkinson Point. This is the team from Atkinson Point that I had the family photo of. You don't see me there because, if I were out there, I would be getting in the way of this operation. But you see everybody is doing what they do best, and I think our teams have been so successful in some of these difficult projects because we're not flooded with scientists with personal agendas or personal goals for the research. We have local skills; we have one fellow here who's a mechanic who kept the boats going; another who was the camp cook; another who was a specialist in tuning the satellite tags up and programming them and things like that. So everybody had a job to do, and I'd also note that, in the four years of this program, we more or less had the same people back every time. This is our crew from Ulukhaktok and Tuktoyaktuk as well as a couple people from Alaska. These fellows worked for four years tagging ring seals on the sea ice offshore of the Mackenzie. Over the years we had 19 Inuvialuit involved in the program. This was the core field team, and they came back every year, the same people. Once they were familiar with the project, the people and the process, the same people came back, and that worked out really, really well.

The mundane work of measuring whales and seals has to be done accurately and consistently, and by the same person. People take this very seriously; they are very dedicated and they are very willing to say I didn't get that one, or I didn't get a chance to check the stomach, or whatever. People will be very forthright in saying what the strengths and the weaknesses of the data are.

This is our flagship monitoring program. This is John Alikamik and his wife Emma, who have been measuring seals in Ulukhaktok for 21 years. It's probably the longest running ring seal monitoring program in the country, if not the world. He is here and I hope you might want to talk to him and get his opinion on how this works. Over the course of 21 years, he has measured almost 2,500 ring seals; the same person doing all these measurements allows us to have great consistency in the data. I am going to talk about the publication of these results in a bit. They have worked together; they have won two awards for this work. It has been recognized and we have three primary publications in the scientific literature from this.

We have also done some seal monitoring in some of the other communities. This is Jeffrey Kuptana out of Sachs Harbour. Sometimes when you are doing a monitoring program, if the number or the timing of the samples is somehow not enough to assure statistical rigour (which is what we are able to get from the Ulukhaktok samples), then you have to suspend the program or adapt it in some way. You have to be able to adjust.

Lois Harwood, Stock Assessment Biologist, Fisheries and Oceans, Government of Canada

There have also been a number of fish monitoring projects. This is John as well. He is sampling otoliths from Arctic char in about -30°C.

And then there is all the boring stuff, the aerial surveys. This is work we've done together for a number of years. This is Forest Day, who some of you may know. This is Billy Day's son. He did aerial surveys with us for about seven years.

This is the Arctic cisco project from Tuk Harbour in '97—John and Billy Joss. This is a bowhead whale

that washed up dead near the community, so they reported it. We were able to scramble the kits together and get the funds, and he and Allen went over to collect samples from it.

So the harvesters that we work with are our eyes and our ears, and they are able to take the scientific measurements, but also to make the unusual observations as well.

This is protecting scientists out on the ice from bears and probably from themselves sometimes. This is two of the wildlife monitors on the Louis St. Laurent; that's John and Joe Illasiak.

This is applying some tags to ring seals off Paktoa. You can't see Roger; he's quite engaged in the process. The fellow in the back is John Moran from Alaska. He's mixing the glue and I was operating the hairdryer.

Joseph and Roger with seals that they had caught and tagged—there's a great sense of pride for the job, and for the tagging and deploying and the release of the animals. That's a tagged seal ready to go back down.

A lot of the work that we're involved with is with industry as well as climate change related effects. Projects involving the stocks of marine mammals are not driven by conservation issues.

Unusual observations that the harvesters are able to report are often the basis of studies that we do. Even the process of taking a photograph and sending it in and letting us know: this is a polar bear at Cape Peary in July. People are able to recognize things and contact us to say, this is important. This is a photograph that I took, but John brought the seals to me. These are all seals of the same cohort. Some of them were starving that year. It was an early ice breakup year and that has become the foundation of one of our publications. Some of the seals were doing really well, but some of them were doing very poorly because the ice had broken up so early. That is some of the climate change work we're involved with.

Here is the Hornaday River near Paulatuk. Again, these are harvesters who have seen something unusual and have reported it. The top one is a fat char that's just had a good feed of capelin, I think in the Amazon Gulf area. The bottom one had just come out of the river, having spent 20 months up in the overwintering sites and not feeding. He had the presence of mind to take these photos and pass them along. This contributes a huge amount to our cooperative understanding.

Harvesters from Tuk and Inuvik that have come across trapped whales in Husky Lakes. We end up working together to deliver research programs based on these findings. Scientists would never come across these on their own.

What I think has made this work, has been long-term commitments and relationships. There are five commitments. From the community side, there is a requirement for a commitment to the project and the process from the HTC. There is also the long-term commitment required from the harvester that's actually involved in the work. We've seen that through retention of harvesters and the folks we work with such as John, and the fellows on the seal project, and the char monitors bringing knowledge to the project. I was talking earlier about the char monitors; one has been working in the Gwich'in area since 1989.

From the government side, there is a commitment required of individuals as well to see a project through. It is also really important that the department or the umbrella organization is committed to the on-going process. Things change and bargains change, so there are a lot of different aspects to that commitment.

And very important is funding. The seal monitoring program, for example, has been funded for 21 years by FJMC. That's huge, to have the vision to go forward on a long-term program such as that.

Everyone has to value and respect everyone else's contribution and role. I always say, John isn't sitting at the computer working on statistics, pulling his hair out like I often do, and I'm not out trying to shoot seals or drive a snow machine. So we both recognize that we all do what we do best.

The third critical thing is communication of results. If you don't work on it constantly for many years and

recognize the money, you end up, of course, with a shelf full of binders and data. It's really important to get that written up. It's not just the very last thing of the primary publications, but it includes working group meetings with the communities, where you actually have three days to sit down and discuss the local knowledge and discuss the scientific results. This can be followed by public meetings. The late Nelson Green was the chairman of our group (Paulatuk) and he'd present the results.

We went out to the schools and demonstrated equipment that we were using and had posters for the community meetings. It was a real process, but it got the word out and laid the groundwork for a lot of what we were able to accomplish together in the communities with these programs.

Last but not least, and at the very end of the list, are the scientific publications. This takes years, and a lot of money and effort, to get these published, but I contend that it's got to be done. I think it's a crime if data are left unpublished. The paper that we've got on the ring seal program took two years to get through peer review, published and available, and that is a sample size of 2,500. And there is a statistician involved and John is involved, and myself and an ice specialist, it's huge. The peer review process can be daunting, so when you are designing or delivering a program, it is so important to ensure that your end point is going to provide you with enough samples and clarity that you can answer the scientific question that you posed.

Evelyn Storr
Thank you, Lois. Our next speaker is Dougie Joe Esogak. Dougie is a well-known young Inuvialuit hunter from Inuvik. He is a member of the Inuvialuit Game Council and he has travelled widely in the Western Arctic, both for traditional activities and as an advisor and as an assistant to scientists. So welcome, Dougie Joe.

Dougie Joe Esogak
Thank you. My name is Douglas Esogak, but everybody knows me as Dougie Joe. Joe was my great-grandfather's first name, but I went back to my traditional last name which is Esogak, which means 'wings.'

First of all, I'm a harvester, a user of the land. I use a lot of the wildlife species that live in the Mackenzie Delta on the Yukon North Slope. In my free time, I get a lot of pleasure working with good researchers in the area, as well as the Mackenzie Delta and Yukon North Slope. Some of them were Chris Burn, whom I have worked with for 17 years, and Ross McKay, Steve Kokell. I've worked in a wide array of research with people from Environment all the way to Wildlife.

One of the first things I always notice is how research is done. A lot of times, people come in with ideas on how they want to do their research, and sometimes it doesn't work. So one of the things I have always said was to make sure the project is built with the community. The ideas for the research project should come from the community, based on local land users' observations and concerns. This means that the community is involved from the beginning. For example, the Fort Simpson community-based monitoring program has the Inuvialuit Steering Committee that makes decisions about what kind of monitoring they'd like to see done. Our knowledge is important in monitoring our lands. This approach will result in relationships with local community organizations as well as individuals. This takes time and effort. We all know that.

We also notice that science seems to split things up by topic. Traditional knowledge can help bring things together. I see that the science seems to focus on certain parts of the environment while TK considers everything. We should use local knowledge to look at change. Science turns off and on depending on temperatures or the mosquitoes. People seem to come only at certain times of the year when it's more comfortable for them, or whenever money is available. But traditional knowledge is continuous and the Inuvialuit are always seeing changes in the environment, and they are talking to one another about them.

Traditional knowledge can help point out research priorities and answer questions too. We need to create the right situations to share knowledge. On the land, camps are very good for sharing information. For instance, we took elders, youth and some scientists to a field camp just at the bottom end of the Delta there,

and we talked about climate change issues.

Our travel patterns are changing because some of the rivers are drying up. The slumping is creating a lot more sand bars. We also discuss a lot of that because of the changes and what they mean to myself, being a hunter, as well as other community members that use the land.

When I talk to my fellow researchers, I find it really good to have a map. These types of things are really helpful to have around, like a picture or a map, so people from different places and backgrounds know what is being talked about and where.

Doug Esagok, Harvester and Researcher

It is important to report using plain language and make sure that information is available to the communities. It is hard to understand what researchers are talking about sometimes, so go easy on the scientific lingo. People who understand traditional knowledge and science are needed to help bridge the gap between the two kinds of knowledge. Together they can help understand how the environment is changing. Elders, who we learn from every day, are like professors in their own right because they know a lot about the land and environment as a whole and not just certain aspects. You have to learn this to survive, to travel in a safe manner, knowing which animals to harvest at certain times of the year and where they are. These are all important things and this sort of knowledge is handed down from our elders to young hunters like myself.

Working with researchers like Ross McKay, Chris Burn, Steve Kokelj, you get to understand what they are looking at and why, and how what we know as Inuvialuit can help science. My fellow researchers have pointed out that getting there is half of the battle and doing the research is the other half. To me, Inuvialuit are important to both. Thank you very much.

Evelyn Storr

Our next speaker is Peter Armitage. Peter is originally from B.C. Peter has been working with aboriginal people for three decades in Labrador, northern Quebec and Ontario as a researcher and consultant on land claims negotiations, historic and cultural resources, environmental impact assessments, local environmental knowledge and forestry management plans. In December of 2011, he was retained by the WMACs to complete an Inuvialuit polar bear traditional knowledge study, and back at one of our WMAC(NWT) board meetings, Peter did a very interesting presentation with the Inuit people that he worked with. So, welcome, Peter.

Peter Armitage

They say that if you want to make an omelette you have to break eggs, so here we go. Back in 2010, I facilitated a book launch and workshops in three cities for Terry Tobias, a Vancouver-based use and occupancy research guru. He had just published "Living Proof," the essential data collection guide for indigenous use and occupancy map surveys. We shared a common concern about the abysmally bad quality of much of the use and occupancy research in Canada, enabled in large measure by the lack of standards, lack of peer review of research (stuck in the grey literature category) and lack of communication by practitioners. Terry told me about a recent conversation he'd had with Shane MacDonald, a Mi'kmaq lawyer of the Penelakut First

Nation. Shane had asked him if he would be willing to take on a second project, to prepare a guide for best practices regarding TK research, and Terry's response was: "You'd have to be stark raving mad to take on such a project." And I agreed with him wholeheartedly at the time. But since then I've thought about Shane's proposition on many occasions, and I concluded that I could at least identify a number of ingredients required for quality TK research.

So I am quickly going to run through what I think the essential ingredients are for the conduct of quality TK research. We can call these best practices or best practice ingredients, if you wish, and I have eight ingredient categories here: solid foundations, interdisciplinary teams, starting with a local perspective or world view, inclusion of intellectual infrastructure, quality spatial data methods, having active land users and elder groups, paying attention to scale, and an orientation of sceptical inquiry and rational scepticism.

So we will start with the first one. Avoid shotgun approaches that attempt to do too much, in too little time, with too few resources, with inadequate expertise. Protect community research cultures, that's the second point here. This means avoiding unimportant research, because there's a limit to how much research communities can take before the research culture is eroded in the community.

Appropriate definition of research objectives: define the research scope or objectives with linkages to their practical uses and objectives. What will the research results be used for (wildlife co-management, environmental assessment, project mitigation and monitoring, harvest quotas)? Methods must be carefully designed with objectives in mind. Objectives should be much more than mushy, feel-good propositions, like facilitating integration of TK and biological science. Related to the above is the proper definition of the knowledge domain. Focus must be on a particular domain: for example, informants' lifetime knowledge regarding grizzlies or ring seals or polar bears or wolverines or permafrost, recognizing that they know much more than any one of these domains. Knowledge of other domains is important; for example, the ice morphology domain is important to the domain of TK related to ring seals. But you have to decide what the priorities are, otherwise, shotgun—bang.

Systematic research designs and practices are required, with properly trained researchers using standard quality research methods. So all the basics are included: like peer review of proposed methods by properly qualified persons; manageable number of questions in questionnaires; manageable toolkit; manageable and meaningful temporal units for documenting change; appropriate samples; use of formal eliciting procedures when required; quality interpretation during interviews; quality base maps for map biographies; no leading questions; avoiding response burden; and so on. All basic stuff.

Commitment to data quality standards: there are a number of measures here by which we can measure qualities such as objectivity. This refers to information being independent of the personal feelings or opinions of researchers: reliability (and by that we mean a data collection method that is applied consistently from one interview to the next so that we will get similar results if the survey is repeated); validity (and by that I mean whether the findings and the data in the information reflect the proofs that are claimed) and attention to accuracy and precision regarding the spatial, temporal, and descriptive data; integrity (and this refers to the traceability of the data back to sources); auditability (this refers to research that is transparent and accountable); and representativeness (this speaks to the extent to which the research findings represent all of the knowledge in its diversity). So this is mostly from Tobias, but you'll find all of it in basic social science methods texts like Babby's The Practice of Social Research from 1992. Now, Davis and Ruddle advocate the same rigorous research orientation. I'm sure Tobias would agree with their proposition that the results of any field research must be robust enough to withstand severe criticism from the general public, as well as from such specialized sectors as financial backers, vested interests, disappointed people left out of a potential project by the results of the research, one's research peers and others, including elders and traditionally elite disciplinary teams.

TK research is social science research. The second we start talking with human beings about their

knowledge and practices and observing their social relationships and behaviours, it is social science research. And the branches of social science that are best suited for TK research include anthropology, sociology, cultural geography and linguistics. Nonetheless, social scientists by themselves cannot be expected to know enough about complex ecosystems and the life histories of population dynamics of the natural entities that are the subject of the research. And that's why I have long advocated interdisciplinary teams for the conduct of TK research. Inuktitut linguist Alana Johns takes the same position, informed by her collaboration with Inuit experts, anthropologists and geographers, on a research project related to Inuit ice knowledge. And an excellent example of an interdisciplinary approach to TK is another sea ice project, the Whales of Inupiak Sea Ice Dictionary, starring Winton Weyapuk Jr., a local Inupiak with B.A.s in land use planning and Inupiak language; Matthew Drukkenmiller, a geophysicist; Igor Krupnik, an anthropologist; Hajo Eicken, a geophysicist; Lawrence Kaplan, a linguist; and others. It's a good combination: indigenous local experts, community co-researchers, the social scientists, anthropologists, sociologist and a cultural geographer.

As you might expect, I have certain prejudices about the merits of engaging an anthropologist, given my training. What the anthropologist brings to the team, most importantly, is, firstly, the ethnographic method (in particular, participant observation and his sensitivity to the insider's perspective) and a way of classifying, interpreting and constructing reality. The anthropologist hangs out with people, gets to know them, how they think, how they talk and act. He or she gets to compare what people say with what they do. And, unfortunately, this all takes a lot of time, which makes orientation ill-suited to a world with tight budgets and an insatiable demand for quick answers. In contrast, a sociological and cultural geologist's survey approach is based on interviews and questionnaires, map biography surveys and other efficient methods. The social scientist is another, a linguist, and then of course you have your natural and physical scientist, the climatologist, the geomorphologists and so on. And then you need a good spatial data expert, who has to be a lot more than a GIS nerd.

So it helps if the researchers know a little bit about each other's disciplines so that they can talk with one another properly. Now I absolutely insist on a linguist, particularly when working with aboriginal peoples whose first language is not that of the researchers. Even when working in English, a sensitivity to all the nuances of language is extremely important because you are likely to be working with regional dialects of English, with their own vocabularies and meanings. You need to be absolutely sure that the concepts and entity communicated by the informants are what you think they are. So, for example, in Newfoundland, where my base camp was located, I can't do meaningful TK research with rural peoples unless I learn the vocabularies and habituate to their dialects. So how many of you understand this: "We got some frankn oppecheemer at han but we was after the merblaters on the snottyvar in the var jok on the brough." Does somebody want to translate that for me? I'll give you the complete translation in the corridor after the session.

So linguists help us with all of these details and, furthermore, if your TK research involves local classifications, taxonomies, species' lists, anatomical descriptors, proper names and so forth, you want to start with the insiders' view of the world, not one imposed from the outside. The linguist is absolutely indispensable to the team.

Starting with the local perspective or world view, the matter of the insiders' world view is crucial if we are to avoid the problems of forcing their square pegs of knowledge into scientific round holes. We want to start with how local people perceive the world. We want to get inside their heads to understand their categories, not impose our categories and distort their knowledge in the process. This is particularly important in respect to terms like habitat, morphology, population, even environment—all terms the meaning of which you take for granted, but which local folks may find confusing, unclear, or incomprehensible. Moreover, the understanding of what these terms mean may not be the same as yours. Here's an example from an Innu work in Labrador/northern Quebec, and just as there are no terms in the Innu language for environment, plants, or flora, so too are there no terms for

habitat, ecosystems, ecology, ecological landscape unit, and a wide range of other terms from western biological science. So asking unilingual Innu elders to describe and identify caribou habitat can lead to gross inaccuracy, lack of clarity and even confusion. The Innu language contains terms that reference landscape features in relation to concentrations of animals and plant species, but these terms do not translate neatly into western scientific terms such as habitat. The term ashkwee is a case in point. It refers to a clear water area, such as a type of polynya, and an area of open water surrounded by ice in the spring and in the fall. Innu use a number of other terms to refer to species abundance, all based on an initial us hack: for example, us hack mesh, us hack mishk, us hack ushk, us hack etchuk, which is where there are always seals or otter, us hack atik, where there are always caribou.

It is important to note that these terms only refer to abundance. They imply nothing about the habitat or ecological relationships at each place. However, the places they refer to can be mapped using the map biography method. So in wanting to get deep into the understandings held by local people concerning their land, animals and other living entities, I would want to pay close attention to the ways in which they conceptualize them and express them in whatever language they use. And this includes achieving a good understanding of what we call ontological differences. These are the profound differences in world view such as aboriginal beliefs in the ensoulment of animals, trees, rocks and other seemingly inanimate entities, their potentially great sentience, the value system that requires respect for animals and other beings, and the fact that aboriginal peoples may not parse the world and knowledge about it into distinct categories like environment, religion, nature, society and so on.

Good intellectual infrastructure. The conduct of quality TK is made a lot easier if pre-existing intellectual infrastructure is available, including dictionaries, techno-vocabulary lists related to anatomy, habitat and geography, taxonomies, place names or toponomy, and so on. Folks embarking on new TK research projects need to familiarize themselves with this infrastructure at the outset when planning their projects, and some aboriginal language proficiency is a giant asset.

Number five: quality spatial methods. There is often a spatial component to TK in that it is virtually impossible for local experts to talk about animals, the land and other living entities without geo-referencing their experiences with them. They use place names, they like to use maps and so on. The map biography method pioneered by people like Peter Usher on Banks Island, Milton Freeman's team, Carol Bryce Bennett's team and others is a good one for recording spatial aspects of TK. However, it must be done rigorously, and the methods described in Tobias' guidebook "Living Proof" can be tailored for various TK applications. Now I note certain scepticism in some biological circles about the capacity of the map biography method to accurately geo-reference TK features, implying that the geo-referencing serves no practical purpose for finding sites, buffering them for impact mitigation purposes and so on. And my response to that is yes, there are well-known sources

Peter Armitage, Consulting Anthropologist, Woverine & Associates

of inaccuracy and imprecision in the map biography method, and they include inherent inaccuracies of map scale, feature marking imprecision due to poor informant eyesight, base map reading problems, poor penmanship and data marking conventions, and then, at the end, sloppy digitizing. However, these sources of inaccuracy and imprecision can be greatly reduced by the use of quality maps, appropriate map scales, good data marking conventions, good informant and researcher cartographic literacy and quality digitizing. And so a 0.6 millimetre point on a map made with a fine nib pen will represent a 30-metre diameter site on the ground at a 1:50,000 scale mapping or 150 metres at 1:250,000 scale. And this should provide sufficient precision to enable one to locate a waterfowl staging area, caribou calving ground, fish spawning bed, heron rookery, osprey nest, or polar bear maternity den on the ground. Therefore, as long as we trust that with careful research we can reduce sources of error, and trust that a mark on the map represents something that is in all likelihood there within some distance, we can use it with as much confidence as scientific data. And if you want to argue that point, meet me outside in the corridor after the session.

One should be able to take the coordinates derived from a properly constructed map biography, plug them into a GPS and find a TK site on the ground, even something as small as a polar bear maternity den or an osprey nest. Map biography coordinates should permit groundtruthing with GPS that would provide coordinates for future research, land use planning management, or environmental assessment mitigation and monitoring purposes.

Number Six: Quality TK requires active, engaged land users: people hunting, trapping, fishing, gathering animals and plants, processing the products of the harvest, and talking and thinking about their interactions with animals, the land, the weather and other entities in the world around them. It doesn't matter who you are, if you don't spend time on the land, the water and the ice, the quality of your TK won't be very good. Claims to the contrary amount to empty rhetoric; they are not credible. Propositions based on scant experience and data are worthless for co-management and other practical applications. In this regard, Peter Usher notes that repeated observations of the environment over time are key to good quality TK. He says the circumstances that fostered TK are neither uniformly distributed nor permanent among aboriginal communities. In places where, for whatever reason, few if any members of the community have recent or current experience of a particular area or phenomenon, there may not be much TK that would be useful to environmental assessment.

Scale: it is dangerous to extrapolate or scale up observations and propositions regarding local conditions from a small area to larger regions. For example, if we are interested in Inuvialuit knowledge of ring seals, we can't assume that the TK document populated with Paulatuk informants alone represents the TK of Sachs Harbour folks and others in the Beaufort Sea region. It's kind of a no-brainer. But, similarly, propositions regarding local abundance distribution and health of a given species cannot necessarily be generalized to a larger geographical area. We'd certainly need input from experienced people from all over the corners of the area. So at one level, it's a simple problem of sampling. We need to sample knowledge across the geological extent of the TK. However, we must also remember that the animals of interest to our TK research are usually subject to complex ecological processes that operate at small to large scales. And it is useful to think about the spatial distribution of TK in relation to ecological scale issues. There is a reference there to Dave Schneider's work if you are interested in discussions of ecological scale issues. In any event, TK research design must address scale at the outset with the research objectives clearly in mind. The matter of scale also points to one limitation of TK, in that it is poorly equipped to provide knowledge regarding the behaviours of species that migrate large distances to places where the TK holders have no opportunity to interact with them. The TK of a goose hunter in northern Labrador does not include observations of what geese do when they are wintering on golf courses in North Carolina.

Eight, the final point: sceptical inquiry and rational scepticism. Here I take my leave from Peter Usher, Davis and Ruddle, and others by endorsing the proposition that rational scepticism should be the guiding philosophical research framework of TK

projects. "Rational scepticism mobilized through systematic research designs and methodologies is the essential intellectual orientation necessary for social research to provide useful and insightful understandings with potentials to actually inform and empower." Sceptical inquiry employs critical thinking and deductive reasoning to query claims and theories that lack empirical evidence. This approach does not automatically reject unusual claims. Rather it simply requires a firm evidentiary basis prior to accepting that an assertion is valid. And then, Peter Usher: "TK must be subject to verification and testing. To exempt any one person or group from sceptical inquiry is essentialism, leading potentially to incredible, unsupportable claims and serious political backlash."

In conclusion, I have described what I think are several ingredients for the conduct of quality TK research best practices. But the devil is in the details, if you don't pay attention to the details in this business, problems with them could well destroy the usefulness and credibility of your research and data. At the outset of my talk I told you about Terry Tobias' 2010 book launch and workshops. His key message then was, when it comes to applying cultural research in aboriginal communities, everybody involved has an obligation to bear in mind a single simple imperative: it must be done well because often much depends on the outcome. Research can make a difference, and the days of indigenous communities' maps being openly dismissed in negotiations and quietly ignored at planning tables have to be put behind us. Now, Tobias' focus is spatial knowledge of where people hunt, trap, fish, collect, travel, their cultural sites and so on, but this statement could easily be reworded to this: when it comes to applied culture research in aboriginal communities, everybody involved has an obligation to bear in mind a single simple imperative—it must be done well because often much depends on the outcome, research can make a difference, the days of indigenous communities' TK being openly dismissed in negotiations, quietly ignored at co-management tables, and marginalized during environmental assessment processes have to be put behind us.

Evelyn Storr
Our next presenter is Frank Pokiak. Frank was born in Sachs Harbour and he currently resides in Tuk where he has spent most of his life. He is a beneficiary of the Inuvialuit land claim and, since the signing of the IFA in 1984, Frank has made wildlife management a priority in his life. Frank is an acknowledged traditional knowledge holder and is an experienced harvester of many species. He has managed to find a balance between his commitments to wildlife management and still pursue and practise his traditional harvesting activities. He is proud to pass his experience, skills and knowledge on to his children. Welcome, Frank.

Frank Pokiak
Thanks, Evelyn. I'm glad to be here to present to you today. You know, some things that I'm going to say might be bothersome for some people. I've been involved in this since 1984 and I always took research


Frank Pokiak

as being very important in the Inuvialuit Settlement Region. But lately, I've been starting to question a lot of the research that's being done. I have to bring points out of why we think things are happening. I come from Tuktoyaktuk, which, if you translate, is a place where there's caribou. And the caribou

disappeared in the 1920s. The reindeer was brought into our region in the '30s because the government figured that the Inuvialuit were going to starve without the caribou being there. I'm glad to say that we're still here.

I was thinking last night about when they list animals. There's between 4,500 to 5,000 Inuvialuit people and I think, if we were classified as animals, we would be listed in Appendix 1, and maybe that would have been a good thing because if we were listed in Appendix 1, the government would have to start a breeding project on us. Sorry about that.

I'm going to talk about some caribou and polar bear issues, and some other issues. I'm first going to talk about the Beverley caribou herd. The Beverley herd at one time (1996 or 1997) was estimated at 276,000 strong. And all of a sudden, in 2009, they lost the herd. The whole herd disappeared. This is coming from research that I went through the other night. The reasons they vanished was because of, according to them, overhunting and climate change. And, all along, the traditional knowledge holders said the herd had moved farther north. Guess what, a biologist that was in our region for years and had worked on the Bluenose herd, John Wright, had found the herd in the Queen Maud Gulf area. In fact, he found two herds in that region. A tundra herd that just hung around that area, that didn't migrate anywhere, and a migrating herd, which calved on the western portion of the Queen Maud Gulf. Biologists had given that herd a new name, the Ahiak herd, and collared caribou showed it was actually the missing Beverley herd.

So when somebody mentioned that the population of these species are declining, it's really hard for me to agree with them, because look what happens. And maybe just with our own herd, the Bluenose herd. The historic range of the Bluenose herd is showing up there (map). This is just the range of the Bluenose East herd. So you can see, they expanded down to some areas where they never did get caribou before. What happened was that when the Cape Bathurst herd and the Bluenose West herd were in decline, the numbers were way up here and the numbers for the Bluenose East herd was way down here, when these two herds were healthy. The Bluenose herd was as low as 13,000, and these were over 100,000. And, all of a sudden, when the trends of these two herds started going down, guess what, the Bluenose herd shot up to 119,000. So what is that telling you? That the herd is moving to different areas. I just thought I would point that out. It's really important to take note of that because if you look at the range of the Bluenose East herd right now, there are about 11 communities that harvest from that herd. It didn't actually decline.

And growing up in Tuktoyaktuk—the place where there's caribou and the caribou disappeared in the '20s. The very first time I harvested was in 1970. I had my brother-in-law, Martin Kuksana, John Kuksana's dad David, and we went out hunting. And guess where we had to go? We had to go all the way to Mason River. And we were lucky to find a herd of about six or seven animals and we managed to harvest three. That's how far we had to go when we finally started having caribou around Tuk. And then the herd migrated closer and closer every year until they were right in our back yards. We were fortunate to have that herd for about 30 to 35 years. And, once again, our elders told us to respect the herd and take advantage and use it while it's here, because it's going to disappear. That's why I feel that the caribou are just moving and the same thing with the Porcupine herd. I hate to say this. I have nothing really against scientists and researchers, but when they are giving us information that's not correct—for instance, for the Porcupine herd they were using models for about 10, 11 years, and look what happened. There's no problem with that herd. It's healthy, it just sort of moved to different areas. So when people talk about declines, I really don't agree with them. It's important to listen to what our elders are saying. The next time the caribou come into Tuktoyaktuk, my grandson, who is eight years old right now, is going to be a grandfather.

I'd like to also talk about the polar bear issue. I started questioning them a few years ago when they were doing research, especially for the southern Beaufort sub-population. As you know, the population was about 1,800 for many, many years. They studied the southern Beaufort and the northern Beaufort populations for close to 40 years. And in 2001, when the researchers reported to us at the Inuvialuit

meetings in Anchorage, they had done a survey in the southern Beaufort and estimated the population was as high as 2,200. The Innu and Inuvialuit didn't raise our quotas. We had the chance and it would have been raised quite a bit. From 1,800 to 2,200 is a difference of 400 animals. We chose to stay with the status quo until we got further information. And guess what? In 2006 they told us that the population was down to 1,526. At the time, we were not filling our quotas. So where did 659 bears go if we're not filling our quotas? They just disappeared somewhere, if we went by the biologists. Bailey Island is a really good habitat for polar bears, and that's where they did that research. People that live in Bailey Island, they had some bad years for seals and polar bears. So some years, if the ice conditions are really solid, it means that no polar bears or seals are going to be there. And we tried to explain this to researchers, but they just ignored it.

Just recently I was trying to read the new book Ian Sterling came out with. That one year, in early March, Dennis Andruchuk was studying polar bears in our region. At that time, the weather was really calm and very cold and there were no leads of any kind because it was all solid. And he went out searching for polar bears. He covered an area of 2,500 kilometres of ice, and he saw only six polar bears. Then the wind came up and they had a big storm for three or four days. After a few days when the weather calmed down, he went flying, and guess what? In the next six days, he encountered 90 polar bears, within one kilometre either side of one lead that was only 150 kilometres long. I'm just trying to point out that when they got that estimate of 1,526, it might have been those years when it was bad ice conditions and the polar bears were in places where conditions were good. They have to start listening to what we're saying.

I saw in a newspaper that, according to the researchers, polar bears eat about 43 seals a year. By missing out on two or three of those meals, the female may lose enough fat that it doesn't bear any cubs or it has cubs that are very small and won't survive. In 40 years of research, the researchers may have disturbed them when they're feeding, while they're waiting for a seal, and have made their loss greater by scaring them away from a seal hole. I'm starting to think maybe that's what's happening. If the polar bear doesn't eat those two or three meals in that year, that means she's going to be in poor condition and won't give birth. They pointed out also that bears don't lie under a tree and starve to death like Arctic hare. The people that are speaking like that, I don't know if they know that the only place you can find Arctic hare is the high Arctic, and not under trees. Things like that really don't make sense to me. I know we get the snowshoe hare in our region where there's trees and that, but the only place I ever saw an Arctic hare was in the Arctic islands.

I'm talking about the southern Beaufort, for whoever's from Nunavut. These quotes are based on the southern Beaufort bears and, according to them, there's no place to move up the coast because it's already inhabited. That doesn't make any sense to me. Polar bears are going to move to where there's ice. They're not just going to hang around and disappear. According to them, the polar bears are doomed in the southern Hudson's Bay. It's too late to save the bears on the shores of the southern Hudson's Bay. It really doesn't make sense. One of our jobs is to support research and make sure we have these species in our region. All these years, I encourage them to do studies, have supported studies, but now with things coming out like this, I'm starting to question it more and more. The Game Council just had our meeting and I think they are starting to question them more.

We were concerned about the grizzly bears because, when we settled our claim, they weren't protected. So we started talking with the government and we came up with quotas for Inuvik, Aklavik, Tuktoyaktuk and Paulatuk. We abide by these quotas, but in the past, maybe 10 years, we increased our quotas two times based on traditional knowledge. It had nothing to do with science. People see more grizzly bears out on the land. You have to use both. Sometimes traditional knowledge is just sort of put on the back burner. Researchers and scientists have to start using our knowledge more than anything else.

Another one was the moose. There was a concern around the Delta about moose. Maybe we should start looking at the resident hunters? Maybe the moose populations are dropping because we're harvesting more moose, because there's hardly any

caribou. Anyway, ENR actually did a survey on moose in our region, and guess what? They found very little moose in the Inuvialuit settlement region. When they presented that to the Inuvialuit Game Council, everyone around the table just started giggling and said, according to us, there's a lot of moose. From our hunters going out, there's no problem with moose. I'm just pointing out that the surveys that were done didn't show any moose being there, but because of traditional knowledge we actually knew they were there. So we didn't have to do anything. We didn't have to restrict resident hunters. That's a positive thing coming from traditional knowledge.

There's one more example I'd like to use. I was just thinking about my wife the other night: DFO sent her to Ottawa to do a presentation. We have been doing beluga sampling for 13 years (her and I and my family). For the presentation, they asked her to get all our native foods, freeze them, and bring them to Ottawa. She was going to do this presentation for some elders from Nunavut. When she got to the place where she was supposed to make the presentation, they set out a table for her, so she put all the country food, all different kinds, cooked muktuk, raw muktuk, stigmuktuk, dry fish, everything, in containers so she could use that as her presentation. She stepped out of the conference room, and some elders happened to go in there when no one was there. Guess what happened? They ate all her samples. When she got back to the room, there was nothing left. So I don't know how she did her presentation.

Another example of traditional knowledge: about 15 years ago, the snow goose population in Anderson River was going down. The Canadian Wildlife Service came to us and said, why do you think the population of snow geese is dropping? We said it was because of grizzly bears. Prior to that, John Pomberry lived in Anderson River every summer and he would chase the grizzly bears away year after year. And then, after he left, all of a sudden the islands were full of grizzly bears just cleaning out the eggs. We told them that. Why don't you hire a monitor for the islands? But they couldn't do it until they did the survey. So they put a three-year study together in the Anderson River flats. And guess what they found out? Grizzly bears were the problem. If they'd listened to TK, they would have never had to spend that money.

We do have a lot of good researchers that we work with. They're great, but I think somebody mentioned the old boys' club. That's how I think about some of the polar bear researchers. Larry and I notice that those people are starting to take advantage of what they collect in our region. Now they are writing books and getting paid good money to go and make presentations on their findings, taking cruise ship tours and making presentations to the tourists. They are taking advantage of what they've found in our region. That's quite bothersome, using our people. I know they don't like me to say that, but that's how we start seeing it.

Anyway, I'd just like to thank you for taking time to listen to me and I hope you understand where we're coming from. Thank you very much.

Evelyn Storr
Chris Burn is a professor who has been studying permafrost in the Yukon and western Arctic for 30 years and has published over 120 articles about this research. Frank just talked about that, but I don't think Chris is getting rich on it. Chris has been very fortunate to have worked with several Inuvialuit, especially Dougie. Dougie and Chris have studied permafrost together for 15 years. Dougie has been travelling almost every year since 2002 to Herschel and to places in the Mackenzie Delta area and Paulatuk. Chris has been working for EIRB and its review of the proposed Inuvik to Tuk road. He met his wife in Mayo 29 years ago and they have a son, Andrew. Andrew has had the opportunity to go with Chris and Dougie to Herschel about five times and see where his dad is working. So, welcome Chris.

Chris Burn
Thank you very much, Evelyn. This talk will be a little bit different from what you have heard so far. At any point in this talk, I would invite you to close your eyes and to think about what I'm saying. I will not try and load you with information, but I will try to illustrate to you how I feel there is a friendship between traditional knowledge and science. Not a battle, a friendship. Much of my thinking about science and the reasons why we do science is really associated with the quest for truth. Now science quite clearly tries to find out what is true, but so does religion also

try to find out what is true.

I have benefited a great deal in the last five or six years from reading the work of John Polkinghorne, who used to be the professor of applied physics at Cambridge University. He is one of this last century's last great quantum physicists, but he is also an Anglican priest. He has been able to cross the world of metaphysics with the world of repeatable observations, which is what science is all about. I've learned from him about the search for truth. Some of the things that I will tell you today are a result of his influence, but through his writing. He's not somebody I've had the fortune to meet personally. The reason that I introduce this idea to you now is that we are at the Wildlife Management Advisory Council's conference. And wildlife management is all about how we want the world to be. It's not about how the world is; it's about how we want it to be. It's about decision making. And decision making is not something that we do scientifically. Science may support decision making, but decision making is something that we use judgment for. And judgment comes from what we call wisdom. So today I will talk a little bit about science, about wisdom and then also about error.

My working definition of science is that science is the construction of well-motivated belief. Science is the construction—science is something that people do. It's not something that the trees do, and it doesn't seem to be something that the caribou do; it's something that people do. We make science. Ultimately, science is about trying to understand the world and our understanding is something that we share. So science is a community activity. It's not an activity of individuals, but it's an activity of many people together. And when the people together can agree on something, it's because they believe it. They may not all have seen it, they may not all have read about it, they may not all have felt it, they may not all have touched it, but they believe it. The reason they believe it is because they have very good reason to believe it. Good reasons that are well motivated lead to well-motivated belief. So science is about the construction, or the manufacturing, of things that we believe in, but we believe in them for very good reasons. So science is a community affair; it's concerned with explanation, but because it's made by people, it is a provisional event, a provisional affair. It's not something that does not change. Our understanding of the world constantly changes. Now the way that we understand the world in science, or the way that we present understandings of the world, is to create what we call models. And both Joe and Frank, you have heard about the problems with models.

So what are models? Models are formal representations. This means they are things that we

Dr. Chris Burn, Professor, Carleton University

can look at, understand and appreciate. But models only contain the essential elements of a problem. They don't contain lots of decoration; they only contain what is really important. And those elements are expressed in physical or mathematical terms. So, when Frank or Joe talked about the models for the Porcupine Caribou herd, they weren't talking about little plastic caribou that somebody was moving around on a map on the table, they were talking about a series of equations and mathematical expressions that people had put together into a computer. And they had decided that those equations

represented how the caribou herd behaved. And they used that understanding to inform the PCMB about what it should do. The PCMB had to make a decision. The PCMB didn't do the science or create the models; the scientists were using those models to suggest to the PCMB what decisions it should make. This is the difference between science and management. The difficulty is that a very good model stands up to tests.

What tests a model? What makes us think that science is useful? The answer is, in my thinking (and I think this is shared by many people in the room), that a good model is one that can produce evidence, observations and incidents, which are consistent with what the model says should happen. I've heard people have seen things that the model should say will happen. We often think that models are good if they are reasonable. Reasonable means there is some other set of criteria, some other set of statements which make us believe that the model is good. In the reasonable case, we are arguing from the top down. We say we have an understanding of the world and the understanding then leads us to accept this model. In my case, I'm arguing from the bottom up. I've seen things, I've heard of things, I've felt things which enable me to support that model. Usually, when there is a problem between whether I support a model from the bottom up or not, it's because, in the model, the essential elements of the problem are not correct. I may not have all of the essential elements. I may have made some of them more important than they really are, or some of them less important than they really are. Construction of models is the way we go about that.

This leads us to a series of ideas about how the world really is. Science has four aspects of how the world really works. The first is that the world is ordered, that there is a regularity about how things happen, that if things happen again and again and again, then in science we can understand that and we can use that to predict what will happen. The reason science is interesting is that commonly there are surprises. The way the world works is not exactly the way we think it works. And so we are led to new things.

The second thing that scientists believe is that the world can be understood. In other words, it's rational. But also everybody can understand it, it's transparent. It's not just that a person who is born in Zimbabwe can understand the world, but anyone born anywhere can understand the way the world works.

The third thing about the way the world is that science thinks about, is that the world is intelligible. It's something that we can get our heads around.

And the fourth thing, which I think, for management terms, is probably the most important, is that the world is fine-tuned. This means, if there are things about the world that change a little bit, then the world can change a lot. The simplest example that I know of this is what happened about 13.7 billion years ago when the universe began. There was a huge explosion. Now we all believe that gravity works in a certain way. If there was just a little less gravity than we have, at that big bang everything would have exploded, everything would have flown far apart and we wouldn't exist. If gravity was a little stronger than it is, at that big explosion everything would have collapsed back onto itself and we wouldn't exist. The fine-tuning of the world allows life to exist. And when we look at the operation of environmental systems, we see again and again that environmental systems are fine-tuned. Small changes in environmental systems make them radically different.

That's science. So what is wisdom? Wisdom is really about discernment. Wisdom is our ability to make decisions that are in the interest of the community. I was struck yesterday, at the very beginning of this conference, when Evelyn opened the conference with an invocation. That invocation was infused with concern for other people. Wisdom is about making decisions that are in the best interests of our world and of the people who we live with.

It's of great interest to me that the word for wisdom in Latin, sapientia, is a feminine word. Wisdom has been portrayed in ancient religions, and in the religions of the present day, always as a woman. For me, that is both wonderful but also mysterious. And, certainly, there is an element of wisdom that is infused with mystery, because none of us at the university have yet figured out how to teach the students wisdom. Wisdom seems to be something that grows. About 2,500 years ago, the psalmist wrote: "The fear of the Lord is the beginning of

wisdom." What he wrote is that wisdom isn't something you're born with, it isn't something that you can walk into a store and buy. It's something that grows. It grows in an individual and it grows in a community. There are people in this room who you and I know are wise. We also believe that WMAC is charged with being wise. It's asked to make decisions for us. It's not asked to make silly decisions, it's asked to make good decisions. The goddess of wisdom that the Greeks worshipped was Minerva. But notice that humans are called "homo sapiens." We are wise "homos"—wise men. That's the name of us; we are able to discern things; we are able to think about ourselves.

So how do we acquire wisdom? We acquire it, often, through experience. We acquire it through observations. We acquire it through studying history—not just the history of books, but the history of our communities, our families, our parents, our grandparents and our children. We can develop wisdom by learning things from people around us. There are people in this room from whom I've absorbed things which I hope help me make wiser choices in the future. But, most fundamentally, I believe that we obtain wisdom from long-term relationships. Many times in this conference you've heard about the importance of long-term relationships. Now, that list of items that are on the board, everybody here who holds traditional knowledge will recognize. They will recognize examples of how those things have contributed to their knowledge. And every scientist will also recognize what is on the board as things that have contributed to their ability to do science.

So we may do a lot of science and we may be wise, but because we are humans, we make errors. President Kennedy said: "An error is not a mistake until you refuse to correct it." I think he was right. I think most errors occur because of ignorance, because we just don't know things. There are wilful errors, deliberate mistakes, but I'm not really dealing with that category. But if we know we've made an error, the only reason we would not correct it is because we are complacent, or because we're arrogant and we don't believe that we should make that change. I met my wife 29 years ago, and I'm sure this is the case of many married men in the audience, that things sometimes seem to be going along absolutely great, marvellously, and we don't always pay enough attention to the little things. And then, all of a sudden, you find at dinner time one day that the bottom of your leg is hurting, or that something happens in which you are told you should "smarten up." That's because of complacency; we've got to the point where we don't pay attention to the details.

Here are two examples about complacency. The first one comes from Paulatuk. This, unfortunately, is a tragic example, but it happened because scientists did not pay any attention to the knowledge of people who live in Paulatuk. You can see there is an aerial photograph of Paulatuk on the board. Paulatuk now has about 300 people; in 1972 it had about 90 people. Paulatuk has two airstrips. It's remarkable to have two airports for a community of 300 people, but many people in this room know why that is the case. In 1972, the Department of Transportation decided that they were going to build an airstrip in Paulatuk, and the only place in the region where weather information was collected was the DEW Line stations: Pearce Point, Horton River, Nicholson and Cape Peary. In those locations the strongest winds always come from the east or come from the west, so DOT began to construct a runway that ran east/west. But the people in Paulatuk know that the strongest winds come from the south. Very strong outflow winds come out of the Melville Hills. In the wintertime, these winds may be 130 km/hour. At the time, there was no weather station in Paulatuk, but there were 90 people who lived there, and many of these people told the Department of Transportation the strongest winds come from the south. There are the wind roses, where you can see at the DEW Line stations along the coast, the strong winds come from the east and from the west. But in Paulatuk, the wind roses show the strongest winds come from the south.

In the early '80s, a Twin Otter left Inuvik, after Christmas shopping, to fly to Paulatuk. A strong outflow wind was blowing at the time and, after the aircraft tried to touch down, it was blown by the south wind and its wing hit a snowbank. As a result, the aircraft somersaulted, the pilot was killed straight away, his girlfriend who was in the co-pilot seat died later. Fortunately, none of the people from Paulatuk were killed, but they were seriously injured. That

accident wouldn't have happened if the Department of Transportation had listened to the people in Paulatuk. If you go to the dump in Paulatuk, you can see the Twin Otter. I only found out about this because I was curious about why a Twin Otter was in the dump. I heard the story, and I have heard it from people who were in the aircraft. Hopefully, today, we wouldn't make the same mistake. It wasn't an error; it was a mistake because they refused to correct it.

They then wanted to build a new airstrip in a north/south direction, which is a great improvement. They let a contract for it that called for the airstrip to be made out of gravel. There's lots of gravel around Paulatuk, so no problem. It turns out, though, because of these very strong winds that come from the south, the land is blown away. And so, it's true that the land is covered with stones, but the stones are in a layer of one stone thick. Underneath the stones, there is sand. Again, they were told, but they let the contract based on being able to get the gravel very close to the runway. It turned out that they had to go a long distance to get the gravel, because they didn't listen to what local people were saying. That error was corrected, but at significant cost.

I was hoping to end with a happy story, and I do have half of a happy story. In September 1999, there was a big storm in the Mackenzie Delta. The result of that storm was a flooding of the Delta with sea water. The outer Delta then began to freeze back and the sea water was trapped between the frost and the permafrost and the soil became very, very salty. And as the soil became very salty, the vegetation died. So there are areas of the outer Delta that are black called the Dead Zone. Now this happened in 1999, and became apparent to observers in the region soon after that. In 2006, one of the observers, who is a fine young man (Dougie Joe Esogak) who is sitting not more than 15 metres from me, mentioned this to some scientists. In September this year, a paper was published in the journal Arctic. There is a blending of Inuvialuit traditional knowledge about that event and scientific investigation. And in the paper there are quotations from Sam Lenny, Sr., from Andrew Archie, from Danny Gordon, from Ned Kyuktuk, from Billy Storr, from Charles Pokiak and David Nazagaluak, and also the fine young man. That fine young man is an author of this paper. I find that this paper, which I recommend to you, in the journal Arctic from the last issue on page 257, is to me an incredible example of how to blend local observations with the experience and understanding that scientists can bring. That's the happy story.

The difficulty is that the same group also published a paper in a senior journal about impacts of a recent storm surge on an Arctic delta ecosystem, examined in the context of the last millennium. The same problem, the same people informed people about the Dead Zone, the same fine young man took them to where this takes place. But when this paper was published, there wasn't a single mention of Inuvialuit participation. I was steamed. I was furious. But then I realized that anger doesn't actually get you anywhere, so all I can say is that I was just really disappointed. Thank you.

Evelyn Storr
Thank you, Chris. During the last discussion we heard comments about how it is important to have TK as part of research. I think we always think about what the elders have taught us. I've been taught that people should be allowed to speak when what is being said is important.

I'd like to touch on a research project, and I think the members from Aklavik would be supportive of that. It was a success because it involved the HTC from the first step right to the end, and that was the grizzly bear project with Ramona. Ramona met and was always communicating with the HTC and with the community members. The project went along well and, any time there were problems or delays, the community was informed in a timely manner and the project continued to have the support. Research projects are successful because the researchers worked with the community and took the information from community residents. With some of the polar bear research projects, the people have been doing the projects for years and yet some of the communities involved have never even met the researchers. So when you have people that present their work, have a passion about it, but also understand the importance of including community people, everything works better and you get results that people can live and work with. We've seen a lot of projects that are successful.

Questions and Comments

Lawrence Ruben
I'm Lawrence, and I'm from Paulatuk. This is for Chris Burn. What you stated in your presentation is mostly accurate. I guess this would just be a comment in terms of science and especially the government. As you stated in your presentation about government not listening to community members as to what prevailing winds were at the time, it still goes with the government in the NWT. We deal with the NWT Housing Corporation on a regular basis in terms of getting units built in our community. When we ask them to replace our units, they said: We're going to build you houses down where we think they will be most accessible. They didn't listen to us in terms of the prevailing winds and what would be the best situation for building the units. The Government of the Northwest Territories still has a problem getting in their heads that traditional knowledge does work.

Chris Burn
Thank you, Lawrence. All I can say is that we've done our best. We tried to point out not just what people were saying, but what now is recorded at the airport. It's very difficult to deal with somebody if they simply don't want to believe what you're saying. I can't give you a magic bullet, but what I can say is that if there is an accumulation of evidence that the world is one way and people would like to believe that it's a different way, ultimately, they will find that they are spending more and more money on the project. Ultimately, you may be able to convince them that they can spend less money on their project if they listen to you. Usually, when that kind of argument is made, people smarten up.

John Streicker
Hi, I'm here representing a research group at the college called Northern Climate Exchange. It seems to me that we've been working on the issue of how to respectfully integrate traditional knowledge and science for some time now, and I have a couple of questions. Because it still seems like a work in progress, I'm wondering what the speakers think about how we can improve this? Secondly, sometimes when I'm asked to speak outside of the North, people ask about how traditional knowledge is being used here, and it seems to me that, generally, we're a little further ahead than many other parts of the world. I'm just wondering if the panel has any experience, like Frank when you were in Qatar, whether people are listening to traditional knowledge in other places, and how that's being received from the northern experience?

Frank Pokiak
In Qatar, we spread the word about the polar bear issues and people would listen to us. Some of them were kind of shocked that what they were hearing about the polar bear populations wasn't correct. But our land claim has been there since 1984 and a lot of the researchers do listen to traditional knowledge. Those are the ones that work. For seal projects, fishing projects, whaling, they listen to what the communities have to say, and those ones really do work well. It's just that some other researchers, for instance, those working on polar bear, they just sort of put traditional knowledge on the back burner. I won't go into that because I know Nunavut has to deal with those issues quite often, but we could improve it by listening to what the communities have to say and working with them. The communities are there to help you, not to go against what you are doing. It's just the little handful of them that don't really listen to what the communities have to say, that's the ones we have a problem with.

Peter Armitage
It would be great if all it took was for these outside, arrogant, so-called experts to simply come and talk to the average person in a community so that they would put a runway in the right direction. But there are too many occasions when people have to resort to bringing in some expensive consultant to help them document and repackage their knowledge as social science or ethno-botany and make it more digestible or credible to the scientific community and the bureaucrats. In this day and age, the resources to do that are far and few between. And the communities themselves are suffering from research fatigue; the research culture in many communities has been eroded by too many research projects where the results are not seen to be of personal or collective benefit to people. I'm mostly interested in situations where the TK has a credibility problem, but it's not because of the TK itself. It's where the

TK has not been properly documented or packaged for the consumption of these bureaucratic or scientific audiences that are playing important roles in decision making related to wildlife management, environmental impact assessment, and so many other things.

Chris Burn
I think one of the key differences between the way scientists report the world and the way that is actually of great interest to communities, is that the scientists, characteristically, are interested in the general, repeatable, regular behaviour. This stuff, because it happens all the time, isn't really of any great interest to a community member because they know that's what happens. What's of interest to a community member is when something is different, new, or strange. They are actually two different parts of the behaviour of the whole system. I see the interests and the evidence that the scientist and the community member would look for as being quite complementary to each other. They are not necessarily adversarial, but they describe different parts of the whole system.

Lois Harwood
One aspect I have found that's made it very workable and productive and a positive experience for the communities and for myself and my agency, is the very simple fact that I live in the North. I've lived there for 20 years, and so the people I work with share the same environment as me, our children go to the same schools. It's different than just flying up and working in an area for a few weeks. Geography has a lot to do with it. Some agencies are now tending towards centralizing offices and staff in the south because they see it saving costs. But the tendency to have federal employees moving north and being integrated is best.

Bob Bell
The community portion of your scientific team is almost making a career choice when they become involved in a project, certainly one that lasts 20 years or thereabouts. And by making that career choice, they're sacrificing other opportunities such as pensions, leave, or other things that go along with "a good government job." Do you see any way of bridging that, so that those folks from the communities who cooperate can be compensated with something other than a one-year contract?

Lois Harwood
It's true. The way the government is structured now, it's the scientists that have the permanent full-time positions, usually, and the community folks we work with are in a contract situation. When you have a government that supports community involvement, it needs to be valued on par with the scientific staff involvement. I imagine you were referring to Doug, who's been working at this since he was in his teens, and Roger, who's been working on ring seals with scientists since he was 12. While he does have some formal education, because of life in the communities, he did not have the minimum education required to apply for a government job. Doug, while he is able to operate a skidoo, a boat, a GPS, a computer, a camera, catch seals and all those things, would not qualify for a traditional technician's job in the government. The whole hiring framework has not caught up yet to this involvement of communities. That's a huge problem, but it's a real one, and the government needs to be fair.

Peter Armitage
Back in the 1990s, when the Voisey Bay nickel mine project got underway, both the Labrador and Inuit Association and the Innu Nation started to muscle up in various ways and insisted that their members be heavily involved in all the historic resource assessment work—the archaeology that needed to be done for the environmental impact assessment for that proposed nickel mine. There was a lot of capacity building for years. The Innu, who are otherwise known as Montagne and Naskapi Indians, were able to continue a certain level of capacity building because of additional resource developments, like the lower Churchill hydroelectric project. But once these deals are over, there is no money for these folks. Of the 40 or so Innu people who have been through a certain amount of training and have worked on these archaeological surveys, there's one person who has continued and gone on to university. In terms of the dream teams, the interdisciplinary teams for doing TK research, the superhero of the team needs to be a sort of growler—a hybrid grizzly and polar bear—the local person who already has the inside perspective and then has got some social science training as well. But the challenge is how to keep this

person employed and engaged. If you have a land claim agreement, there are always implementation funding problems and so on. I don't know how the Nunatsiavut government is doing with this, but I know for the Innu Nation, it is going to be a major challenge to have the financial resources to retain people, their own members, with that kind of expertise.

Chris Burn
It seems that there are two dream jobs on the North Slope. Well, there are more than two of them, but two classifications of dream job. The first of them is if you can become a park ranger at Herschel Island, because you go for two weeks, and then you come home, and then you go back for two weeks. You could stay there if you wanted to, but you have somebody I respect as your boss and, when you're on the island, you can more or less organize your own life so long as you do a few things to keep everybody happy. But the rangers on Herschel Island collect an awful lot of scientific information. It's also traditional information.

The other dream job would be to be Mervin Joe because he, at all times of the year, travels in Ivvavik National Park. And Parks Canada has the flexibility to let him do that. And he can look and observe things and tell Parks Canada about what's going on in the Park.

Other positions would have to work for an agency usually, and then you're not actually working for a boss who will let you do the things you've been asking people to do. You might have to recover costs. You might have to be in your particular work station for 37.5 hours a week, and so on; there are constraints. There are very few jobs in this country where people have the flexibility. I have identified the two jobs where you have the flexibility to combine the opportunity to observe and think and monitor the environment, with the ability to have a deposit in your bank account.

Ernest Pokiak
TK has been mentioned in most meetings I attend and I think it's good that we keep pushing it. TK is given to us by the elders and most of them are no longer with us today. I think that TK has been tested all the time, and I'm going to make reference to one of the slides I've seen, in regards to the comment that was taken from Peter Usher in 2000. I think he was saying that TK has to be tested just like anything else that we want to learn about. I interpret that differently, but I think the older generation have a pretty good understanding where TK is coming from. Maybe the younger researchers from universities are fairly new. When they pick up information from research that somebody else has done, if they're really not doing their job properly they might just take that one and use it instead of testing it and looking for other research to support it. Maybe Peter could put a little bit of light on this for me about testing TK. Thank you.

Peter Armitage
I think many of you know Peter Usher because you trained him back in the '60s when he was a young lad working at Sachs Harbour for the first time. He did his Ph.D. research at Banks Island and started his career with you folks. But you've got to read between the lines when you read that Arctic 2000 piece, because it was written just after he sat on an environmental assessment panel for the Voisey Bay project. I know for a fact that he was quite concerned about the quality of, we'll say, the evidence that was being provided by the Innu Nation to the assessment panel concerning their knowledge of the Voisey Bay area. And being an insider, and on the staff of the Innu Nation at that time, I was asked to vet a draft report on their TK of the area that was submitted by a consultant. My conclusion was, basically, that the data were pretty thin and, when I raised this concern with the consultant, I said: "You can reach two conclusions here. Either the Innu have no knowledge of this area, or you didn't do a very good job of documenting it." If you knew the researcher in question, you'd understand why he's never spoken to me ever since that time. But I think it was very apparent to everybody, including Peter Usher, that there was a serious issue with the quality of the documentation, the evidence that was provided by the Innu to that panel, and that what was presented should be subject to verification and testing. So when you read between the lines of that Arctic article, I see Peter Usher having problems with the TK and other evidence provided by that particular First Nation. I believe that's the context for that comment. And whether that can be applied elsewhere in the country, I leave it up to you.

Joe Tetlichi

I just want to comment on a few things that the presenters talked about. When I speak in regards to some of the caribou concerns that we have, it's all on the views and opinions of the Board; it's not my opinion. I just want to make that clear.

Yesterday I talked about the Porcupine Caribou Management Board, the mandate for which is for the health, habitat and continuance of the herd. I think that's really important, making sure that the caribou's always there for future generations. In order to do that, we have to have information, because we're a body that makes recommendations to the government. If we're going to make really good recommendations, we have got to have really good information. We get that information from the communities and the local experts. I talked a lot about local experts yesterday, how that information gets from the community RRCs, or our meetings in the communities, to us. We also have to have knowledge about caribou health, about where their sensitive habitats are, their winter habitats, their calving areas. All that information is good so that we can make concrete decisions and recommendations to the governments. Not all the time the government takes our recommendations; sometimes they can refuse it, or send it back to us to revise. In order to have sustainability for the caribou, I think we all have to work together and collaborate and cooperate. Sometimes when we don't get information such as the count (we talked about that yesterday, how we didn't get a count for 10 years) and we don't know how to make decisions? How do we know how many caribou there are? We definitely have to have that number. We have to have good information.

The model that I talked about yesterday takes in all that information and gives us a general idea of where the caribou are. In the event that we don't have a count on the Arctic Refuge, we can use that model. But I want to be clear; the model was not made to make management decisions. We cannot use it to make management decisions because it's just a guess. That's fair because, once again, we're all trying to work together. We definitely need a count. If we went on the Dempster today and there's not many caribou there, are we going to say that the caribou are in really drastic decline, and we're in the red zone because we don't see any caribou? Because of good information that we get, we know that the caribou is not on the winter range, it's in Alaska. We get that information from our technical committee, from Alaska Fish and Game, all the partners to the Management Board.

We need to walk together in order to get to a place where we're all comfortable. We all agree that we always want those caribou there for future generations. Massi.

Fred Wolki

I'm Fred Wolki from Tuktoyaktuk. I'm an elder and I just want to speak out on traditional knowledge. Sometimes when we start talking about caribous, we try to give all our knowledge, try to convince them that the caribous were always there for a long, long time. But lately, there were caribou along in the Kitikmeot area (the people there are called Kitikmeot), but after that they declined. They just left trails of their presence at one time and they all left. And then, after that, Tuktoyaktuk formed up after the Bailey Island people started moving to Tuktoyaktuk because Bailey Island had a store long ago, but then again, a flood took it away. They all moved to Stanton area and some of them moved to Tuk, but earlier than that there were only about three or four log cabins in Tuktoyaktuk. And all the caribous were not around; I just wanted to give you an example of how they were. They were not around anymore for at least 50 years, but the people with dog teams used to hunt around Anderson River area, and they were always there.

In Anderson River area there's quite a distance with dog team to hunt, and in the 1930s they were around there and people used to get a load from going up all the way to Anderson River, where what they call is something like a dawn hide up there in those hills. Once you reach that place there, it's just moving with caribous, they say. And there was nothing moving in Tuk all that time for 50 years or so. And lately, we were living at Bailey Island at that time, they started to come close to us. We were the first to experience the caribous start coming back, slowly. There was nothing in Tuk yet. And then, after that, we started getting more and more, slowly. And every time we talk about caribous nowadays, it seems like the traditional knowledge is not being used. It's just like it is being put aside and it really hurts me when I

think of that. We should always use it. In the planning process, we should trust in the knowledge. That was the time that the caribous were coming back, and they were here for a while, for maybe 30 years or something like that. But you have to take into a fact that the animals, the elders follow their grazing area. They might be eating up a bit for a while around that area where they come every summer and, as they feed, they overgraze. If you have cattle, you know that they overgraze and things like that, but caribous are so numerous—168,000 caribous will graze a lot in a little area like that, so they can't just stay in one place, they have to move to another area and people never take that into account. They think they declined because they're dying off; me, I don't think they're dying off. But, anyways, that's what I thought they were thinking anyhow.

I believe, though, they're going to start coming back again, but one thing, you know there was no regulation before when there was hunting. And how they start to put it on the cows that are getting pregnant in the springtime, in March. But it's good to save them because when you kill a pregnant caribou with two inside it, it's like you're killing three animals. And that's a good start. I think, if you just follow that one, you'll be okay, now they are just going to keep on growing. We never did that before, but it should be okay.

And the polar bears that Frank mentioned: I was living in Bailey Island in those days and I started hunting bear early when I was 16 years old. From then on I kept hunting and I know that they were pretty good. There's always some decline in bears; some years there's nothing at all. You could travel all day, all year long, right to spring and no bears. The reason for that, I think, they don't die off, I know that for a fact, they just move to another area where there's plenty of seals. Some years there's hardly any seals because they migrate to some areas and the polar bears know that, so they have to follow their game just like the wolves go after caribou, same thing. They do the same thing, they just move and you'll never know where they go because nobody goes out and sees where they are. So there could be no bears one year, but next year you'd be surprised at seeing eight living bears in a day. Things like that happen that way. I just wanted to mention about that because I think traditional knowledge should be used at all times when you are planning for the future, I would say. That's all I wanted to say. Thank you.

Joey Carpenter

I guess I'm an example of co-management—German, Irish and Inuvialuit—and, like science and TK, it's been kind of a rough road. But in recent years, I've seen things improving with science and TK. Years ago, one of my uncles was taking a researcher out on the ice. In those days the Inuvialuit, for some reason, always deferred to white people or government people in pretty well everything. But at the same time, they're very proud of their abilities to live off the land, so there was some confusion as to who has a stronger voice. After a few days on the ice, the researcher was putting a little bit too much unnecessary pressure on my uncle, but he really didn't want to say anything negative, so he went in his sled and he got his snow knife (what you guys would call a machete) and he brought it in this tent. The researcher was sitting beside him and he starts sharpening his snow knife and looking really mean. After that, the researcher started respecting him more because he was a little intimidated, but nowadays we don't have to do that. I think we're starting to respect each other more and I see good signs of positive stuff coming out of TK and science. Ultimately, we have been asking researchers, when they have finished their final report (I know it takes them months and months to finish their report and present it to the appropriate Minister) to be able to read the final report just in case we want to amend it or add to it. So far, it hasn't come to that. Hopefully, with some cooperation we will reach that stage soon.

Evelyn Storr

What Joey is saying is really important—we've come a long way, and there's a way to go yet. I know when applications come before the HTC, or any local body, that is the one thing that we always put in the comment box: We support the project, but we want to have the final reports presented back to the HTCs in person, don't just send it in the mail. That way you can have that open discussion and, like Joey said, if there are any draft reports, the comments can be addressed and you get a good report with the support of the community.

Burton Ayles

That was a good comment. My name is Burton Ayles with the Fisheries Joint Management Committee, and I'd like to follow up a little bit on what Ernest asked. I'm going to direct my questions to Frank and Dougie first. You talked about verification and it's not just Peter Usher that's raised that issue. About a decade or so ago, I read a federal government policy that talked about using traditional knowledge in government environmental assessments. I haven't been able to find it since, but maybe somebody from DIAND or EEC knows something about that, or if it ever became policy or it was just a draft. But they did talk about verification and, in the scientific community, one usually thinks about peer review, but that's not the only way to verify science. There's lots of other ways, including workshops and discussions. Frank, when you and I were in New Zealand at the World Wildlife Conference, that was one of the issues that was raised there by the aboriginal groups. I wonder if you guys would like to comment, or maybe if you've thought about how one would go about verifying traditional knowledge to make sure that it's not just one individual's opinion that somebody else might disagree with. And how do we make sure that it represents the community?

Frank Pokiak
Boy, I never even thought about that, but now you mention it, I don't really know how we could verify traditional knowledge because it's just passed down from one person to another. And when we talk about traditional knowledge with our elders, they're starting to record it. Hopefully, some people are recording it. With the polar bear issue right now, we're collecting TK from elders. That's been happening for a while, and it's still not complete. Hopefully, traditional knowledge will be recorded about other species. Fred Wilkie said exactly what I was told. When you mention caribou or polar bear issues, it's coming from people and we don't really record that, it just sticks in our head. I think we could do a better job to try and educate, especially when you travel to other countries, about traditional knowledge. That's why at the last CITES meeting in Qatar on polar bear issues, we took some of that information on polar bears with us to try and educate the people. And I think we really influenced a number of countries to support what we are doing, but I don't know how else we can do it. I think we can continue to collect that and get it written down.

Dougie Joe Esogak
To me, traditional knowledge depends where you come from. It varies from each community, even between Inuvik, where I'm from, and Tuk, where Frank is from. Their traditional knowledge over caribou migration movements is different from the people from the Delta. So I don't know if I'd want to speak for other communities because the traditional knowledge that I gather from my elders is different.

Evelyn Storr
Burton, maybe I can add to that. A few years back, Barney Smith did a project in the community of Aklavik along the North Slope. He based it on traditional knowledge; he gathered information from the elders in the community and his approach was really successful. He gave people in the community the opportunity to look at and verify the information that was gathered. After he got his information, he put the information on posters and invited the people that he had interviewed about the animals along the North Slope, and we had a community gathering. People came in and they were welcome to comment and support. It kind of wrapped up that project, saying okay, we've got all the information we need, and people are supportive of it. So that's something that I've seen work. There are ways that it can be done and, like Dougie said, it's dependent upon the community and the users and the people that give you the information.

Jodi Gustafson
I'm still doing my undergraduate degree at UBC. I'm in my fourth year, and I'm from Whitehorse. I'm here because this summer I had the opportunity to go up to Herschel alongside my dad to collect some climate change footage for a documentary I'm making. I was able to interview Richard and Chris, so that was pretty neat. But I have a comment and a question. Earlier, when you were discussing how to connect traditional knowledge to researchers, I thought of a story from Emma Stewart, who's a researcher that I met at the International Polar Year Conference earlier this year in Montreal. She does a lot of research with Arctic cruise tourism. When she was doing her Ph.D., she happened to get pregnant before she went to interview all of these locals in the

communities, like Cambridge Bay, so she had a baby along with her. She initially thought it would be a huge hindrance to her research, but it ended up that the people of the community were able to relate to her a lot better because they were able to see her not just as a researcher, but a mother. I thought that was interesting that she was able to create a better relationship, with the women especially, because she was seen as a mother. I think long-term relationships are pretty important, and being able to see past the researcher and to the person, that's something that I will keep in mind just as I'm starting my career.

The question I have is for Dougie Joe Esogak. I actually met you quickly on Herschel this summer. You dropped Chris off and you were rushing back in the boat to Shingle Point to pick up the rest of the crew. I was thinking, man, that guy knows how to drive a boat. There were huge waves. But I was just wondering how you initially got involved as a teenager, working with researchers. Was it through school or something? Maybe that's something that other people can learn from, to get more local young people involved.

Dougie Joe Esogak
It was my reputation. No, I'm just joking. I was approached by a friend of mine who was a friend of Chris's also. He asked me if I wanted to make some money, and I asked how. He said, well, you go out on the land for 10 days. And I say, well, I could do that, I guess. Back then, I was 6'2"; packing around all that heavy drilling equipment shrunk me down to about 5'7". No, but I was approached by a mutual friend and it just went from there.

Walter Bayha
Mahsi chosahtu sade—just a taste of my own language. I'm from Sahtú—K'sasho Go'tine—not Sahtú Dene, but K'sasho Go'tine. I think it's important when Frank says I really don't know how to verify this information. I spend a lot of time in school as well, many, many years, and I'm still trying to figure out and understand my own grandfather. I'm glad that Frank mentioned they're starting to verify information and write it down. It's a huge challenge.

From the legal perspective, I think John mentioned something about our Board getting involved in the 'A' processes. Well, there's the challenge. How do I take my grandfather's stuff and put it on paper so that people can understand it? You look at the science, you look at our history. I'll give you some of my interpretations. My mother is 83 years old and she always told me that, if I hit a caribou with a stick, it's not going to come back. Well, ever since I was 6 years old (and by the time I was 12 years old, I'm sure) I was capable of killing a caribou with a stick, if I had to. Those are the kind of things that I remember. But my mother truly believes that, and you heard Fred over here talk about caribou not coming back for 50 years. My interpretation when I wrote stuff down has a lot to do with conservation education. I'm not going to tell my grandfather that, because that's not the way he looks at things. So I don't do that anymore. I'll say, this is what I think they mean, this is what I think the world would understand—but that's all we can do.

And the other thing is, I've been trying to integrate information from my area with information from the science world. And it hasn't worked very well because, in many cases, we deal—especially with environmental assessment processes—with the legal system. It really has nothing to do with the world of my grandfather. My grandfather doesn't have a legal system that we have to deal with today, so we do a lot of compromising. Every time we take a piece of information and put it into English, we compromise. It's a huge challenge. So lately what I've been doing is trying to put things in my own language. You know, maybe we can translate a lot of these things in the future, and maybe we'll have better translations, a better understanding. One of the things that made me realize there are big relationships is terms like ecological integrity. We spent a long time building and putting in land use plans around Bear Lake. Over the years, there was a person called Tom Nesbitt who talked about it all the time. Then eventually I said yes, that's what the elders are talking about. But it takes a long time. It took me 30 years to understand some of the concepts my grandfather talked about. So we use terms and we get brainwashed into thinking in a certain way; we have to learn to be open to other information. But I guess because of my background, I try to work in both worlds, but it is a challenge. I think, these days, I'd rather just speak my own language, tape the elders the way they are talking, and get someone else to translate it at the

EA processes. This is a huge challenge again because you're talking about the costs of translation, of transcription, of trying to get people to understand it.

I think these are incredible things that could come out of this conference. I think these challenges are bigger today than they were at the times that the land claims were being negotiated. So massi.

Certainly, there are challenges in trying to bridge information, or even speak the language. That's a huge issue: the language I speak. I think there are only about 400 of us that speak the language. I'd hate to guess what that number is for the Gwich'in or even the Inuvialuit right now. Once you lose the language, the knowledge would probably go with it. So I just wanted to add that what I hope for is a bit of a contribution from the Sahtú. Massi.

Evelyn Storr
Thank you, Walter, that wraps up our session, I just wanted to make one closing comment. During the month of August, back home in Aklavik (and I believe they went to Tuk), there was a lady that worked with the Berger inquiry. She was a CBC reporter. I work at the hamlet office as the SAO, and she called up one day and said they had all this information, the posters and everything from the inquiry that she found. She wanted to travel and do community sessions and play the audio recordings and show the stuff that was presented before the judge at that time. I just caught the end of it, as I had just returned, and she decided to play for me a portion of it as my grandfather was a part of the inquiry, Jim Edwards. He was speaking to the judge and there was Lazuras Sittichinli and Mary Kendi. We listened to him talk, and it was like he was present in a hearing today, saying the same thing that was said years ago. It's totally amazing; those concerns that we had years ago are still there, those issues that he talked about based on his knowledge. He talked about the whales, about how they wanted to go into Shallow Bay area and all those areas. That's what traditional knowledge is, and for her to have that recorded and be willing to come and present that back to the communities was so interesting. Nothing has changed; the land is still the same. We are still in the same area. There's different things that are happening regarding climate change, but when you look at the food and everything that we get from the land, the concerns are still the same. The impact of research is so important and we just need to continue to work together. You guys have to listen to us when we provide comments, and we work with you to give you the information and then things will work out for the betterment of all the users and for the future generations. I'd like to thank the panel, really thank you, Chris, Dougie, Frank, Peter, and Lois.

Bob Bell
Thank you, Evelyn.

Day 3: October 4, 2012

Panel 4: Managing the Extremes: innovation in Areas Requiring Special Management

Bob Bell – Conference Chair
This morning's panel is devoted to managing the extremes and innovation in areas requiring special management. We have a stellar cast to take on the topic. It's going to be moderated by Kirstie Simpson, who has 30 years of northern experience and is now a senior advisor for sustainable and integrated resource management with the Government of Yukon, Energy, Mines, and Resources.

Kirstie Simpson – Panel Chair
Good morning, everybody. It's awfully nice to see so many old familiar faces in this room and colleagues from many years ago. What's almost nicer than that is the new colleagues in the room. There are a lot of people in this room with the same last name as people we have worked with over the last 30 years. It's pretty exciting to see this next generation up here. Norm Snow is with the Joint Secretariat and I had the pleasure of traipsing around after Norm about 30 years ago as a young diver with Environment Canada. It was on an underwater oil spill experiment called the BIOS Project, on northern Baffin Island.

Lindsay Staples is going to start us off by talking about fear factors: how to address barriers in managing and planning in high conservation areas. Then we are going to go on and have Pete Ewins come and talk

to us about prescribed pathways to sustainability in the role of risk assessment and economics. Bruce Downie is going to join us after that. He is going

Kirstie Simpson, Senior Advisor, Sustainable & Integrated Resource Management, Energy, Mines & Resources, Government of Yukon

to talk about innovation and provide us with some examples. Barry Worbets is going to give us a private-sector perspective on good environmental decision making and talk a little bit about the Canada West Foundation, a think tank for improving natural capital decision making. Bert Gillman is going to talk about marine protected areas, the history of how they came about, and some of the challenges with potential hydrocarbon development. And I am going to finish it off, if there is time, with a look at some historical oil and gas disturbances in the north Yukon. Why or why not they have yet recovered and the role of innovation in driving new practices across the North in industrial development.

Lindsay is going to come up first. Lindsay Chairs the Wildlife Management Advisory Council and he has a special interest in sustainability-based effects assessment and cumulative effects management. He says he's got three slides and he's going to be quick.

Lindsay Staples
I've got a few points or ideas here that I'd just like to seed the room with. There are a lot of people in this room who've got experience in a number of these areas. I think it's fair to say that we are trying to get through our material quite quickly to really have a conversation that opens up the room for your views.

This is an interesting and challenging area, and I'm sure that there is a lot of experience in the room here that people can apply to this topic. In coming up with a name for the presentation, I was struck by a television show that I watched years ago called Fear Factor, where they'd send people down in shark cages and they tested how you feel about a white shark being six inches away from your face. It struck me that, when it comes to managing environment and development interests in areas of both high conservation value and high resource potential (proven or unproven), there is tremendous anxiety for all parties. There are a lot of fears with respect to how people's information will be challenged, and how solid their views are with respect to the fears that they are expressing. One of the big questions is whether these fears are grounded in evidence and fact-based, or whether they are just based on general anxiety without any deep appreciation of reality. I'd like to talk a little bit about fears, and then about ideas to address them.

One of the fears is over the pace and scale of development. I see this as a concern right across the country. The pace and scale of development, obviously in northeast Alberta, is something that the nation knows about. We've read comments from the late and highly respected Peter Lougheed, who was the Premier of Alberta when oil sands development began. He was expressing his concerns about the pace and scale of development in the oil sands, and the capacity of governments and regulators to manage that pace and scale. It's something that speaks volumes about the challenge of managing pace and scale.

I'm going to Terrace, B.C., next week to meet with most of the aboriginal First Nations in that part of the province. It will be three days largely looking at pace and scale with respect to the plans for the Northwest Transmission Line, the Northern Gateway Pipeline, Liquid Natural Gas processing plants and ports, and mining and oil and gas exploration. These territories don't have any formal protection, and the concern is how to get ahead of the curve before a juggernaut of development rolls across the landscape and people are left with the unplanned and unmanaged residual effects – good and bad. With respect to controlling the pace, what do those mechanisms actually look like? Some of you know I was involved in the review of the Mackenzie gas project for five years over in the Northwest Territories. Pace and scale was one of the number one issues that the Joint Review Panel had to address. You put a pipeline in and it gives rise to boom-induced developments of all sorts. As soon as you start suggesting some mechanism for regulation, a governor on pace, right away the bogey man that comes up is kind of Stalinist or Krushchev-era five-year Soviet plans. These basically say, here's the rate of production over these five years and here's the supply that's required to meet those production requirements. The whole role of the state when it comes to pace and scale is a really divisive one. It brings with it political fears about Communist-era strategies for dealing with pace and scale. We need to talk more about what tools would be available for us in this area.

Uncertainty and surprise can be another huge question in this area. People come to the table looking at how to manage in these high conservation value areas and areas of high resource potential when, in fact, the values generally are well known. But they're not all that well documented or supported by a body of research. So the people who are involved in these processes, trying to generate some kind of management approach, are basically assaulted by a whole series of quite legitimate questions. This is very much a part of the fear factor. Even if there is some relative security with regard to how events might unfold, there is always the element of surprise. This takes us into the area of a low probability but highly catastrophic event. The likelihood of it occurring is remote but, if it did, the consequence would be catastrophic.

More and more often, the parties that do come to the table are quite savvy, but in many conversations people come with their positions nailed down and are completely inflexible. Breaking that positional gridlock is a formidable challenge. I think we need to be thinking about ways in which we can start to generate a real conversation amongst both proponents and affected parties, as well as between the stakeholders themselves. Others have referred to this as interest-based negotiation as opposition to position-based negotiation. Much has been written about the techniques to foster interest-based discussion, but our progress appears to be slow.

When it comes to studies and assessments in these high conservation value and high resource potential areas, we need to be much, much more efficient with the time it takes. In some ways, this relates to landscape-level planning as well. We need to be much more flexible and more adaptive with respect to what kind of a product we need to get the job done. Political decision makers are taking a dim view of the time and the money that it takes to do this work. We know that often the pressure of development to move decisions and approvals along creates a pace that is far, far faster than what these processes can realistically accommodate. There's got to be some give somewhere. We need ideas with respect to expediting these processes, not with the view of coming up with a perfect product, but of coming up with something that will fit the bill at least in the near term. If there's the ability to continue doing this work on an evolving and progressive basis and bring in more information, good data, maybe that's one way to produce a higher level of comfort and confidence amongst the parties at the outset and over time.

Scenario building and assessment— This is simply a matter of pulling together people to look at an area that has significant potential for resource development, conservation protection or management measures, and identifying four or five or six probable development scenarios in advance of concrete development proposals. And then assessing what the consequences or the implications of those scenarios would be. And if we did more scenario-based assessment, I believe it would expedite the regulatory processes that follow from a development

proposal. The problem is that we always tend to wait until there is a development proposal on the table, and then we act. There is a significant body of literature on scenario-based assessments.

I think you will probably hear a bit more about this from Pete Ewins. And with regard to best practices as they relate to industry, Kirstie has had a lot actually to say about that in the past. But within many industries, including the mining industry, the oil and gas industry, best practices are constantly evolving. It is hard to imagine in a high conservation value area that there isn't going to be some demand for best practices of some form. We've always got to be encouraging innovation with respect to best practices, not just with respect to how industry performs, but with respect to how we do our resource and environmental studies, our resource planning and our assessments. This speaks to best practices as they relate to landscape-level planning.

Risk assessment in management—The concern that many parties have is with the risk associated with impacts from development in high conservation value areas. What is the level of risk associated with a "go" decision and how is risk perceived and understood. Simply, there is this notion of risk runners and risk takers. These are different parties and it is a case of how risk is perceived and how it is shared - how parties can do a better job of sharing the risk between them. Mark Fleming (another of the panellists) is a psychologist who specializes in risk assessment and risk management. He has looked at risk culture in the oil and gas industry; again, we could consider this to be a best practice as well. I know Mark is listening in right now (by telephone) and, over the noon hour, we're going to run his 30-minute presentation in this room. He will then be online to take questions.

And, finally, monitoring and adaptive management. I think, quite frankly, we're doing an awful job in this area. We have a lot of good data, but we're doing a terrible job of looking at it, analyzing it and applying it to inform our decisions. There is a lot of good work to be done in this area. Frequently in environmental reviews, monitoring is applied as a "get out of jail free card" - a way to simply say, if we don't understand or cannot agree on the impacts in the assessment process, don't worry, we'll put in place a monitoring program, the design and application of which we'll address in the future. And that seems to be kind of the hollow promise. The design of good monitoring programs is going to take a lot of careful thought. But again, it's an area for innovation; there are some excellent models out there.

Kirstie Simpson
Thanks, Lindsay. Pete Ewins started his academic career by completing a doctorate degree at Oxford on the effect of oil and gas development in the North Sea. He is currently with World Wildlife Canada, he was the director of Canada's Endangered Species Program in 1996, and directed World Wildlife's Arctic conservation work from 2000 to 2006. He headed the interventions to the Mackenzie gas project EA Joint Review hearings and now leads WWF's conservation work on Arctic species.

Peter Ewins
I've really got two presentations here. One is one slide and the other has eighteen slides. I'll start with the one slide and then I think I'll probably race through the other, just to seed a few ideas that might help with this call for creative, innovative ideas and mechanisms in what are very challenging times. Through the discussion afterwards and even with the poster that I'll be presenting, we can discuss ideas and details.

We share one planet, of course, and we are on one fantastic part of this planet. At the current rate of resource consumption, we need one and a half planets to sustain everybody, and it is trending towards two planets. Just bear that big-scale thought in mind. Many of you know that, but it's very real when you come to decisions about how to balance further economic growth and conservation of what Mother Nature provided.

There are six key points: I'll just list them here and we'll come back at the end. One is, right now in this part of the planet we have unprecedented rapid change going on. People don't like rapid change with big risks and high uncertainty, so we're uncomfortable. Secondly, governments who are supposed to be taking care of the long-term, broad, social, economic and environmental aspects of our society for the benefit of future generations are

clearly extremely poorly prepared. The third point is about social and ecological system resilience—resilience being the ability of us and a system to rebound within comfortable, normal limits, without tipping into another crazy unpredictable state. That's an essential thing, to have a new approach rooted in the concept of resilience. The fourth point is that a lot of the innovation and creativity has been reviewed very thoroughly in the past; it's in the literature from the past 10 to 15 years in Canada, and pertains to this part of Canada; it's just that, as a society, we have conveniently ignored some of the best recommendations that are out there. Many of you know that and contributed to those reviews and recommendations. The fifth point is that scenarios for the future and assessment of the inherent risks, costs and benefits are essential to apply at appropriate scales to planning. Finally, the industry and market forces and bottom-up grassroots pressure can actually, in some cases, apply the pressure to trigger rapid change. That's counter to what governments seem able to do at this time, so it is one of the most creative avenues for further work.

Dr. Peter Ewins, Senior Officer, Species Conservation, World Wildlife Fund

Basically, we have extremes in terms of these unprecedented rates of change, whether it's with infrastructure, communications or permafrost changes. We have, of course, major changes in climate down here that most of you are familiar with. We have values and things that we regard as special: char, caribou habitat, many other species for harvesting, bowheads. Those things are familiar and we value them, so we are concerned when they seem to be at risk from different things such as climate change, unpredictability, industrial activity and, of course, invasive species, which is one of the wild cards. This year, in Arctic Bay, char were there, but there were also a large number of sockeye salmon for the first time in Inuit recorded history. Suddenly they appeared, and they were catching sockeye salmon from the Pacific in their nets.

Clearly we are after long-term security, managing these risks through what is a sustainable pathway. We all know that. Justice Berger spoke to most northerners in the 1970s, and concluded that a number of things needed to be in place to achieve net sustainability; manage the risks so we can actually sustain those values that we have. It was pretty much the same outcome in the form of the Joint Review Panel report that Lindsay referred to, just a few years ago. Those prescriptions are there. They are very sensible and almost as valid today as they were then, but many of those recommendations are yet to be implemented.

Many of the provisions in the Inuvialuit Final Agreement, as with many of the other settled land claim agreements in Canada, are essentially long-term sustainability conservation prescriptions. As we are seeing, many of those are not being implemented fully. Of course, this has to be corrected to achieve sustainability. But the rest of the world is driven by fear these days, much as we are at an individual level—fear for safety, security. This is a book that I brought to Lindsay's attention. Cass Sundstein was a University of Chicago professor and is now still President Obama's senior advisor on fear. It relates to what drives public perception and policy in the United States, but of course, we are talking about fear from environmental change, climate change and so on.

I am going to focus just on one little bit of this, but it does relate to the ISR and the marine realm.

It's something that I know well because my entire career has been looking at how to balance marine conservation measures with marine risks. While I was doing my Ph.D., despite the assurances from a large number of oil companies and governments that these risks were manageable, they opened the North Sea Oil Terminal. Within two and a half days of opening the oil terminal, there was a massive oil spill—the Esso Benecia incident, a precursor to the Exxon Valdez. Basically, that forced industry and governments to rethink, and they put in place many of the measures that Lindsay referred to, but only after their promise of balance had been shattered. That's pretty much the same story for the Exxon Valdez, whether you're looking at wildlife or people's livelihoods. Those costs are enormous and often they are not borne by the current generation, but by tomorrow's generation. Those are unacceptable, particularly at the moment in the Arctic, where there is no proven method to recover oil spilled in ice waters. The ice sandwich, of course, will freeze in and travel around a large portion of the Arctic before it's liberated again in the spring.

Interestingly, this is moving to economic angles. The CEO, Christophe de Margerie, of Total, one of the world's biggest oil and gas companies, concluded just a week ago that Arctic oil spill risks are too high now and they're not going to venture into this field. Shell, obviously, holds a different viewpoint. But at a really basic level, you know, young kids will understand this—if you can't clear up the oil why would you take on the risk of a spill? Through history, we have found that those [risk takers] exist. This is the wrong time to take those risks in my view, in my organization's view. A lot of people regard these risks as just too large to bear, as yet.

All of this risk stuff actually has been attended to in the last 15 years by the National Round Table in Canada. This was created as one of the best fora for synthesizing, and reviewing the ideas around informing better decision making policy in our country. We are a very educated, advanced country. We have this Round Table which has representatives from industry, from academia, from community groups, government people, advisors and some international specialists, and they have produced a whole series of reports. These are just a couple: Securing Canada's Natural Capital, and Looking at the Climate and the Carbon Fixation (all those natural things that aren't factored into our current economy). This one is about a dimension of climate change, and these reports actually contain many of these recommendations and new ideas. However, in the last budget, the announcement was made that the federal government is going to eliminate the National Round Tables; one of Canada's best sources of advice is going to be nuked on March 31st.

Here are some of the reports that have been done by the National Round Table, but also others relating to our ability to plan and respond to risk and change. The Arctic Climate Impact Assessment, a fantastic, thorough exercise, which took about five years to do. Nicholas Stern's Review on the Economics of Climate Change, a former World Bank senior economist (he's not an environmental guy or an aboriginal lawyer). His major concern is the conditions that are not in place right now that should be factored in to allow us to manage risk and to achieve proper balance. Still, we find Canada using a nineteenth-century approach to economic development and balancing it with social and cultural values. Here's another example: this is a tool called Invest, which is starting to be deployed in the Beaufort region. The World Wildlife Fund is a partner in this with the Nature Conservancy and Stanford University and other great experts. It's really looking at the internalization of some of these natural capital values in conservation decisions—factor the economics in and you end up with different conclusions and plans.

This is something I learned about through the National Round Table. This tool, Acclimatize, is an online rapid climate risk screening tool designed to help industry in particular, and the financiers of industry, understand the potential risks from climate change in the long term, not just a three or four year political cycle, but for the lifespan of projects. It helps them look at the real internalized costs of climatic change based on all these good models.

This one, I want you to remember. This company Munich Re—WWF has worked with them globally; they're what's called a reinsurance company. They insure the primary insurance companies and industry; they insure the insurers. In Canada, Munich Re

actually has annual operating revenue of 64 billion dollars. They have some of the world's smartest risk assessors in their teams plugging in everything that they need to, to make sure that their premiums for these big industry projects and the insurance company are set at the right level. To do that, they factor in risk management and climate change. They do primary research, and take all the results from the things I put on the previous slide, all those reports, and factor them in to the economic costs and balances, showing what underpins the whole case for business development. They say the business challenges are 'short term-ism' in insurance pricing and the absence of regulation. Right on! Those are the impediments to the sensible balance and sustainability that won't leave a ridiculous cost for future generations.

We will shift to spatial things now. Probably one of the best examples of multi-zoned planning for increased certainty—a good balance of economics, development, and conservation—is in the Great Barrier Reef. It's the only living thing that you can see from space. They have a very big area, like here, through which they have zoned plans that prescribe access for ports, some fishing, but, of course, a lot of tourism, because that's one of the major revenues. This idea of a zoned plan provides greater certainty for the different users, recognizing the conflicts and the risks that may be unacceptable to society. This enjoys the support of communities right through to industry and the governments. It's one of the world's best examples of that kind of plan, and they have sustained the resourcing.

The RACER Project, Rapid Assessment of Circumarctic Ecosystem Resilience, is what WWF's been doing for two or three years. It's not so rapid in the end, and we've left it with the Arctic Council because of this conundrum of social, ecological resilience for the future in times of rapid change. I'll explain it at lunch time, but it's factoring climatic changes into identifying the key features or drivers (not the key places) for different species, like currents, underwater topography and surface temperature—the things that actually create life in particularly important places. Those are co-linear, of course. Then we try to assess how they're going to do later this century under some of these big climate change variables. That's the sort of approach we need to make good investments today. We need to know where it is important to exercise particular precaution, as opposed to other areas that probably can be more safely developed for economic gain.

Finishing up with the Beaufort (and obviously there are a number of examples), these are in biologically significant areas in the Arctic marine environment. The Arctic Council is doing a lot of that collation, but many of these are off here in the Beaufort Marine System. Of course these are the current oil and gas wells and, in yellow, the significant hydrocarbon provinces in the circumarctic. This is the clash in values and we have to work out when some of these areas are simply too important and sensitive to be opened for economic development. And, conversely, we need to identify areas where economic development can be safely pursued without compromising too many of these significant natural values.

I have a suggestion which is probably still timely. There is a thing called the National Conservation Plan. I sit on the Environment Minister's Advisory Committee on Species at Risk. When John Baird was that minister, he held a Christmas Round Table thing and I and Ducks Unlimited and a number of others went there and hatched this idea of a National Conservation Plan. It took about four years to germinate, but now, in the next federal budget, there will be an announcement about it. Of course, this is a repackaging, but that's the game. It's really centered on Canada's 150th birthday (2017). The opportunity for conservation, including for you guys on the North Slope, would be to put something in there that everyone agrees is concrete enough to be worth trying, i.e., implementing all the things that we have already heard said, particularly at a time when Canada is assuming the Chair of the Arctic Council and Minister Aglukkaq is probably going to be looking for something credible and concrete to say Canada is offering. That gives you four years, through to Canada's 150th birthday. It might be something you could bundle in there with conservation, balance, sustainability measures, and so on. The current three pillars in this draft Conservation Plan, which is going to be rolled out in February in the budget, are restoration, research and engagement. The

restoration clearly is more of a southern thing, but research and engagement—well, you could fit a lot of what we've been talking about in there. There's an opportunity.

In conclusion, we've got rapid change going on, we don't like risks and we have lots of values. We're feeling a bit nervous; the old approach makes most people very nervous, because it was designed for a different kind of system, a different time. We've got a poor fit to the current situation. Our new approaches need to maximize certainty for industry and for the values that we have, and achieve resilient social and ecological systems. Those things have already been recommended; we just need to get on with implementing them. Right now, with our government ideology, many of the decisions and priorities are completely out of step with the facts available. Resilience of social and ecological systems is vital. Scenarios in risk assessment are also a vital thing to explore in order to make this sort of credible plan happen for the benefit of our descendants. Cumulative effects and the full internalization of costs are critical to coming up with a plan that allows us to actually manage these risks, given that some of them are going to be unpleasant. But we have to temper those and manage them. And finally (this is where my work, and my colleagues too, at WWF has been most productive), we've worked with some progressive companies out there who, when they set some targets, can achieve it in two or three years. They are particularly successful when the people who have got purchasing power can actually favour those companies, so that competitive market-based change is happening in orders of magnitude faster than governments seem to be able to do it. I like the idea of industry [driving change], and I know Barry is going to tell us all sorts of reasons why that can happen too. Thank you very much.

Kirstie Simpson
Thanks very much, Pete. Bruce Downie is going to be our next presenter. He has been working across the Canadian Arctic for over 35 years on issues of conservation, protected areas and tourism.

Bruce Downie
Thanks very much. It's a pleasure to be here and I feel I've been invited probably not because of my Arctic experience, but because of the experience that I am enjoying now in Africa. It gives me perspective on my Arctic experience and that's what I want to share with you. I do have to say one side thing in response to Pete's comment about the Conservation Plan, and that is that there's an opportunity in the Yukon to put your own conservation plan into the federal one. We have had one for 25 years; it's just been left at the side. It's been mandated to be updated but, of course, that hasn't happened. It's there in the legislation, it's an opportunity and an obligation we have, but we don't take it up. That's one of the things that I want to focus on in my conversation this morning.

In Africa you don't do PowerPoint presentations under a baobab tree in the communities, you talk. Conversation in oral communities like we have here with our First Nations and aboriginal people across the Arctic is, to me, very important. The grassroots nature of that relationship is what it is all about, as far as I am concerned.

As I started to reflect on the theme of this panel, which is really about innovation in the management of natural resources, it seemed to me that it was a very long process. Many other speakers have already spoken about that. Dan started it off, the first speaker on Tuesday, by saying if you want to look back for change, you can't look back three years, you have to look back 20. For me, that's challenging. Why does it have to be that way? Why do we have to take so long? I had the benefit of reflecting on a lot of comments that have been made in the two previous days of this meeting. I have been struck by some of the very positive perspectives that many people have spoken about. The positive experience they talk about is what I have characterized as the balanced or cooperative approach to natural resource management. Each stakeholder contributes what expertise, resources and effort they have towards the common good. That's what the purpose is, and people have talked about that from their experience. The hallmarks of that balanced approach are respect, honesty, trust and working with partners as equals. It's about responsibilities. It takes the thought that we can freely and openly contribute to the management of the resources that are important to us, so that it will be more effective. It takes a collective approach. Marsha talked, not about the we–they, but the us

approach, so that we are working together on things. It's also more typically about individuals and not institutions. When you think about the successes of cooperation, we're talking about individuals; institutions have difficulty with that. It is also true that to adopt the balanced approach, everyone has to be adopting it at once. You can't opt to adopt the cooperative or balanced approach individually or independent of everybody else. So that whole notion of everybody adopting it implies leaving your baggage at the door, bringing in the expertise that you have and can contribute to the outcomes. That's what's really important in the cooperative approach.

Interestingly enough, my experience within government, within the NGO sector, as a member of the public (which is where I'm coming from today) and in private business as a consultant, have more consistently reflected the opposite experience; what I call the power and control approach. The purpose here is that each stakeholder seeks to exert control over the others so that their agenda or approach to management of the resources can be realized. The avenues of power and control are numerous, land ownership is huge, and knowledge, money, language and population are all measures of control that influence, the way people exert control in what should be cooperative situations. The power and control approach is about rights. Usually, based on legal interpretations of the law, when you have a right or entitlement, you can exert power and control. The emphasis is on we–they: I have a position, they have a position, I'm going to win over them. It's typically an institutional approach, not an individual one. In fact, we mask ourselves as individuals in order to present the institutional position.

I have a playground analogy about that. Teeter-totters were very common in playgrounds in my childhood, and there is only one point of balance in a teeter-totter. But you don't have to be the same size or weight as the person on the teeter-totter with you, because you can achieve balance by adjusting your position in relation to the fulcrum. So it doesn't mean unequal players can't be participating in balance. But on the teeter-totter there are many places or many ways that power and control can be exerted. And I've known as a child who was very small that, when the big guy got off, whoa—there's an influence on the way people participate in what we are trying to achieve with a balanced approach.

I'll give you a couple of good examples and some background that will give you enough information

Bruce Downie, Director, Kesho Trust

to further the conversation later. They're both called WMAs. One is from Tanzania, where I am currently heavily engaged, and the other is from here, where I am also heavily engaged. But they are quite different concepts, and ones that are both taking a very, very long time to be fruitful.

In Tanzania, the WMA originated from the pressure of increased local benefits around protected areas. Local communities were not benefiting, so this idea came about to try and address that. It's part of the community-based natural resource management, a CBNRM movement within eastern and southern Africa. It's devoted to trying to give responsibility to

local communities so they can get direct benefits. There are problems with this concept, and the way the WMAs are trying to be implemented in Tanzania. The benefits can be significant, but they are usually inequitably distributed because, of course, they're based on natural resources. Not all areas will be able to benefit. The Tanzanian experience is that WMAs are successful only in areas of exceptionally high wildlife value on the periphery of national parks, where tourist use is already high. In fact, the concept originated in the nexus of the Serengeti, in the Serengeti district, where you have the wildebeest migration moving out of the park into the surrounding lands and then circling back into the park and the Ngorongoro Crater on the rest of its migration during the year. Obviously, if you are going to have benefits from wildlife outside the national park, there is a golden opportunity and you will make a lot of money doing that, which is exactly the case. But the WMA is sitting on the side of Mikumi Park, which nobody in this room knows, and which has basically very little wildlife, no migration, and a much reduced tourism capacity. It is not going to give the local communities the same benefits. And that's the reality. Conservation is achieved, but not to everybody's satisfaction, and the interesting dilemma in the CBNRM is explained by Marshall Murphy. He is an academic from Zimbabwe, who was very much involved in the campfire program. He basically said, for the western sponsors of CBNRM, that is—us, the donors that have been driving this initiative (organizations like WWF, Frankfurt Zoological Society, and so on)—development is the means and conservation is the end, but for the farmer, community development is the end and conservation is the means. Whenever you have these contradicting concepts, you are going to end up with different ideas of what conservation is all about and what can and cannot be achieved.

The third pillar of the CBNRM is around empowerment and, frankly, this still falls short in the devolution that is necessary. The WMA program is designed and implemented primarily by people outside the communities. That is, it is brought in by the government and the donors. And the government control of WMAs is significant; communities don't have the autonomy for resource decision making.

The other interesting idea that was talked about in the past couple of days was the capacity building that is necessary alongside these processes. When you talk about capacity building in the communities surrounding the Serengeti, you're talking about poverty like we don't really understand. We're talking about starvation, we're talking about illiteracy, and we're talking about communities who live day by day hoping to get one meal. So we're talking about a capacity level for engagement in these kinds of processes that is very, very different. And, of course, on the other side of the park boundary, you have people spending $1,000 a night to stay in a luxury lodge and take pictures of the big five. Actually, management of resources at the local level is not a form of government that is embraced by highly centralized states like we find in Africa, in spite of the rhetoric of decentralization and democratization.

WMAs in the Yukon are very, very different, and I'm assuming that you all know that there is such a designation. It has been in the legislation since 1991, but hasn't been used. The intention is to provide an alternative in the land use regulations spectrum that would simultaneously serve the purposes of protecting high conservation values and allowing resource utilization (which is what this meeting is all about), especially non-renewable resource extraction. By necessity, these approaches are long-term thinking. It does require sequential priorities and different models of achieving benefits in negotiated timeframes, but, to me, these requirements seem more possible than not. The problem I see is that such an approach requires the use of the balanced approach to management, which might explain why there are no WMAs to date. The WMA concept has recently been investigated, especially in relationship to the Peel planning process. That opens a can of worms, doesn't it? However, in my view, it hasn't been very clearly articulated or understood, even by the people that are developing the plan, never mind the stakeholders or the public. Nor has it been embraced by government, even though it is embedded in the government's own legislative framework. The Peel watershed is, however, a current opportunity for WMAs to become a meaningful contributor to land decision making in the Yukon. So why are these innovations, the WMAs in both Tanzania and the Yukon, struggling to become effective delivery mechanisms, and how can we

improve that?

My assessment is that they are both caught in the power and control approach. There is a driving desire of parties to achieve independent ends—that is, to see one's own particular perspective prevail in the way land is managed. What we want is different from what they want, and that's not restricted to any one interest. I would suggest that, in both examples, the power and control approach is justified primarily on the principle of responsibility to the greater common good. That is, we delude ourselves by saying that the management strategies we envision are actually required to provide a service to society at large. An example is the extraction of raw materials for manufacturing the goods we use or as a contributor to the national economy. It's required; therefore we have to do this. Another example is that a particular conservation management action is necessary if we are to avoid global environmental catastrophe. It happens on both sides. But defending this approach so vociferously on such a principle as responsibility to the common good really just illustrates how committed we are to the power and control approach. Only we have the answer. So in the Yukon, the management of natural resources in the Peel is highly polarized, as we all know. But at the same time, I think there are opportunities here. I reflect back on Tom Nesbitt's presentation; he offered a third alternative, and the concluding remarks in my presentation basically mirror that third alternative. The interesting point that he made in his presentation is, there's a third alternative, if people want to take it, and I believe that's a direct quote. The point is that we need a willingness to engage in the balanced approach because, without the willingness, we will never begin that process of cooperation and consultation.

I have used examples where we're struggling to get things in place. Clearly, where you have boards that have a legal mandate, that have the willingness on both the institutional and the individual level, that's great. My experience is that that's not common, and we need to work at it. We need to take responsibility as individuals to move that agenda forward. Thanks very much.

Kirstie Simpson

Barry Worbets is a Max Bell Senior Fellow managing environmental issues project development at the Canada West Foundation.

Barry Worbets
I'd like to thank the conference organizers. It's truly an honour to be here. In many respects, I don't belong to this panel; I haven't been in the Canadian Arctic for 25 years. But as I talked to Lindsay over the last week or so, I felt strongly that I'd like to be here and I do have something to say.

I have not been here for the past 25 years. I am coming back and listening to many of the speakers and I have to compliment the Yukon and all of you. The words I'd use are consultation, co-management, good policy governance, good science, and respectful integration of traditional values, science, into the Yukon's public policy. My overarching comment is congratulations; the things I've seen are quite impressive and quite different from what I have experienced in other parts of Canada.

I'm going to try and roll up all of my public policy work at the Canada West Foundation. I actually left private industry twice because I was so upset with government and my company that I had to get out and try to make some sense of what was going on. We did a research project to figure out how you could improve environmental decision making in Canada. We did a poll by Environics a while back, and it said that the majority of Canadians felt as though our vast resource base was not being stewarded in a sustainable manner, and that our environmental decision-making processes are old, broken and need fixing. Eighty-four percent of Canadians believed that environmental assessments for natural resource developments either unfairly favoured the industry or the environmental groups. In this study, everyone agreed that environmental decision making needs improvement. Across Canada, some jurisdictions have made progress, but, clearly, we're in the environmental penalty box.

I am going to try and roll up 35 years of experience into three observations: my Top Three list. I find the words Arctic innovation, managing extremes, and special management are all pretty catchy phrases. My Top Three list is actually contrary to that. There's no

innovation, no extreme, or no special; actually, the elements I want to stress are quite simple, they're tried and true. I know that all of you in this room practise them and you know, I have had, after doing this research and reflecting on it, the success I've had in industry is as a result of this Top Three list. As a country or even working groups in governments or institutions, we've got the list out of whack.

From what I have heard in the last couple of days, I think you're doing some of these things quite well. But it wasn't until we did this Keeping Pace report at the Canada West Foundation that I realized that the whole success of my career was as a result of this Top Three list. I'm not going to give it to you for a bit yet, I just want to talk it through a little more.

Barry Worbets, Senior Fellow, Canada West Foundation

We determined in our study that a good way to start public policy research is to talk to 'thought leaders'. These are Canadians. There's not one aboriginal on the list; although we had four or five we wanted to talk to, the subject area is so rich. I will make the apology right now for the fact that there is no aboriginal input. But what we do have is the captains of industry, former CEOs, world-class scientists, people who have started environmental groups (Patrick Moore who started Greenpeace, the founder of Pembina), and ex-ministers (Jim Prentice, the former Minister of the Environment). We've got a really blue-chip list and we asked them all the same question. We wanted them to reflect on how environmental decision making could be improved. There was absolute consistency across the board, in terms of their conclusions.

I cut my teeth in the '70s working as a jughound on four or five different Arctic islands as a surveyor helper, so I managed to see a lot of the Arctic. I actually did my graduate work on a Beaufort Sea atlas, an oil spill contingency plan. I had the privilege of visiting virtually every single nook and cranny of the Beaufort Sea from the Alaska/Yukon border to Cape Peary. I just reflected on the work that Jason and (I can't remember her name) have done on the Arctic mapping. I was using acetate sheets back then. It's just fantastic, the work that's being done. As a young graduate student, being able to live and experience the Arctic the way I did was absolutely fantastic. I had the honour of, and they are no longer around, flying with Jimmy Jakeson, who was a pilot on the construction of many of the DEW Line stations, and a gentleman by the name of Vince Steen. We spent two summers on his boat and explored every nook and cranny of the Beaufort Sea. We collected a couple of tons of whale bones that we found along the coast for him to carve for many, many years.

It was a great experience, but when I left, I went to the dark side and started working for industry as an environmental scientist. I went to work for Dome Petroleum at Elf Aquitaine, a French national company. I worked for a fellow named Tom Beck; I think a few of the elders here know him. He's had quite a lot of experience in the Arctic. But again, I spent a lot of time offshore Labrador, on the Davis Strait, and drilled in the middle of the Hudson's Bay in the '80s. We chartered a Nunasi DC-3 and spent a month in every community along the coastline of the Hudson's Bay. That film on Belcher Islands the other day was very, very powerful, it was really fun to see Sanikiluaq again.

I left the Arctic in the '80s. I worked in the extreme

in the Arctic in my early days; the extreme changed where I worked in western Canada. We drilled for oil and gas adjacent to and sometimes in some very special areas. I remember being inside the Muskwa–Kechika, Panther River, Kananaskis country, Plateau Mountain. I was involved with companies that were in some of these very sensitive areas. The point I'd make is, when you are an environmentalist, inside a private company, it's amazing the success that you can have. Peter, I was on the board of WWF years ago, but it's amazing when industry and the NGOs and (a lot of times) communities come together. It's amazing how you can push governments to places they wouldn't necessarily go.

Just as a couple of examples. I remember being in a deputy minister's room in Alberta and we were drilling in this place called Plateau Mountain, which is in the Kananaskis. The Government of Alberta was specifically not protecting that area because there could have been oil and gas prospectivity. But I went to him with our CEO and said, we don't need to be here, make it an ecological reserve. It happened in the course of a month. I remember spending a couple of weeks in Muskwa–Kechika with Wayne Sawchuk and there were four or five other people from different companies. We went to the Government of B.C. Wayne and CPAWS were much more instrumental, but, by having companies like ours push the government, we were able to see the Muskwa–Kechika protected. Working with Harvey Locke in Kananaskis and in the Whaleback, working with Alberta Wilderness Association, things did and could get done. If I look back in my career, the things that I really held dear were where you could work with communities and with NGOs to try and make some of this stuff happen.

I have links to environmental papers to share, but I was the founder of an oil sands company which was sold to Statoil. I had a lot of fun working in the oil sands and this is just one example. Sam Wasser is an endowed share (Bill Gates has given him money for the rest of his life to continue his work). I found out about him and got him involved in the oil sands. He uses these scat dogs to find scat from, in our case, caribou, moose and wolves. He analyzes the DNA of these things and can do population counts. The things that he can do with this information and with this scat by using this technique is world class. Interpol has hired him and he has actually found elephant poachers in Africa. They are doing whale studies. This work may have applicability to some of the work that you are doing here. This is just an example of a best practice. Statoil was actually honoured with an award, not only for this stuff, but also for some of the community work we had done at Statoil and North American Oil Sands. There are lots of examples of best practices.

Vic Gillman, Chair, Fisheries Joint Management Committee

A lot of times, especially in this oil sands work, government was risk-averse. For example, in the oil sands, it costs about $3 or $4 million dollars to do an environmental assessment. I was working in the SAGD area. And if you looked at all of the proponents inside the SAGD area and at their environmental study area, there was 90% overlap. I was probably wasting $3 or $4 million dollars of study, as was everybody else, because we all shared the same regional area. People were just collecting duplicate information. We could have donated that $3 million to larger regional monitoring, but couldn't because the government was risk-averse around some of this stuff. A lot of the

times, there are things that can be done, but people are too afraid.

Work in the resource sector is becoming much more extreme. I mean, look at the oil sands. I lived that; I left Statoil a couple of years ago. They wanted me to travel to Norway; they wanted me there to speak to employees and politicians. They just wanted to get a sense of whether the oil sands were environmentally responsible. It was an amazing situation. With the oil sands, the pipelines that we're looking at right now, lines in the sand have been drawn. There's much emotion and I worry where this is all going. Why is this happening? Things are becoming extreme in all parts of the country, and I'd say to you that governments and companies in some parts of our country have dropped the ball.

I'm finally going to tell you what the Top Three list is. It's policy frameworks. We need them updated; they need to be fixed. We're not using science. I'd really like to include traditional knowledge and the work that's being done in the communities. And this whole piece around consultation and infrastructure. Those are the three things that, if we can do them well, things would happen. Those are the things that will expedite decision making or better environmental stewardship in Canada.

What I'd say about the policy framework is that many of our leaders in Canada and policy experts are missing the point. Improving environmental decision making is really not about fixing the Canadian Environmental Assessment Act, the National Energy Board, or the RCB in Alberta. Environmental decision making has to be viewed in a much broader policy context and some changes to regulations are warranted. But it's a very, very small piece of the pie, and, unfortunately, the regulatory framework is taking a hit all across Canada. It's the brunt of criticism and we're missing the point. We need to be getting at things like regional planning, monitoring and compliance, strategic plans, clear goals. There are all kinds of things that we need to solve the problems in the trenches.

With respect to the point of science being underutilized, the science community is almost demonized in this country. We'd rather honour people like hockey stars and rock stars than scientists. Again, the federal government has a huge role to play in exercising leadership, and they are doing the opposite, actually. There are some really good examples around the world. If you look at the U.S. or the U.K., when an important bill is being signed, the chief scientist is standing right beside the prime minister or the president. We don't do that here in Canada. It's an absolute necessity and again, clearly, it is not happening.

Consultation infrastructure: you talked about this National Conservation Plan a few minutes ago, but there's research and engagement. The founder of Greenpeace, Patrick Moore, was almost religious when it came to this whole point around consensus-building processes to solve environmental problems. He thought you could get rid of everything, and if you could get the right people in the room, coming to consensus, you could solve many of the problems we have across Canada.

You've really got this consensus building to a point where I saw it some 20 years ago in other parts of Canada. It's good. I would conclude by saying that the state of environmental stewardship and decision making is not where it should be in Canada. We're a way better country and we need to do much better. We know what's required to make improvements. You've had and I've had success because of good policy frameworks, good science and meaningful collaboration, and I can guarantee that, if this same conference would have been held in Ottawa, B.C., or Alberta, the results would have been about 180 degrees from what we're hearing today. I'm extremely impressed with what I've heard in the last three days. You've got something special here in the Yukon, so please cherish it and continue your good work. Thanks.

Kirstie Simpson
Last night, we had four recipients of the new Yukon North Slope's Conservation Awards: Mervin Joe, Richard Gordon, Dorothy Cooley and Chris Burn.

Vic Gillman has an extensive biography (in your books). I just wanted to mention that he has just been recognized by the Northern Alberta Institute of Technology for lifetime achievement, and is

recognized as one of the top 50 graduates of NAIT for all time. Vic is going to talk about marine protected areas.

Vic Gillman
Thank you, Kirstie. Here are a few selected pictures of the Yukon North Slope and the ISR, and I'm thankful, as most of you are in the room, for my continuing association with it. Some of you are directly associated as residents, but most of us only manage to find some attachment and appreciation for what is in front of us through the privilege to work with it for many years.

I recall that I first got involved with the IFA during the initial negotiations phase. I was part of a team at DFO and was asked to bring some of my experiences in the Arctic and with those people to the table, as advice to Gerald Yaremchuk, who was the key principal for Fisheries. I was asked to attend a senior managers' conference in Val d'Or, Quebec, and address the cadre of senior officials in DFO. I was asked about this new word, co-management. I thought hard about what the components of it were. I said respect, trust, finding a common ground and seeking consensus. I don't think I really knew what I was saying at that moment, except that was my vision. With my return to this area and to the FJMC, I find those things have been realized and they are highly valued.

I'm going to try and talk to you a little bit more about something closer and realer to the ISR and the Yukon North Slope, in the creation of an MPA. What is an MPA? Why does this MPA in the Arctic qualify for this topic about managing in extremes? How did it come about? What makes it special? What are the concerns we should all be interested in?

Marine protected areas are part of the Canadian legislative framework. They're ensconced in Canada's Oceans Act of 1997. They are typified by the recognition of large ocean management areas; they go through an aspect of investigation to identify if they are ecological, biological sensitive areas that warrant consideration under the plan. And they often result in the selection of something that could be described as a marine protected area.

The reasons for establishing MPAs are mostly based in conservation and protection of fishery resources, unique habitats, endangered species, areas of high biodiversity and other marine resources. Currently in Canada, there are eight, and they are scattered about the majority of the provinces and three oceans. You will note that the last one to enter into regulation is actually the one here in the western Arctic—the Tarium Niryutait. A brief history about this special area—there's no question that for centuries the Inuvialuit have harvested beluga for subsistence and have identified the best hunting areas in the Mackenzie Delta.

These zones that I will talk about later have long been known to the communities that whale hunt in the Delta. In '77, Thomas Berger reported that we've got to stop the oil and gas for the moment, but that we also should consider establishing a whale sanctuary, because of the high value that it represented to residents of the area.

In 1984, the IFA ensconced the co-management arrangements, many of which we work with today, and established the principle of protecting species of key interest and value to the Inuvialuit. Under that cooperative management framework, the beluga management plan was established by the FJMC with those communities in 1991.

Finally, the government got into the act and passed the Oceans Act in 1997. They called for the integrated management and establishment of marine protected areas that would bring a national scope to the things that already had been identified in the ISR. This resulted in a long name: the Beaufort Sea Integrated Management Planning Initiative. It was really focused on leading the development of this particular western Arctic TNMPA. It had a senior management committee that included all the key players: DFO, industry through CAP, the Fisheries Joint Management Committee for the cooperative management process, the Inuvialuit Game Council and the Inuvialuit Regional Corporation. That resulted in the creation of the Beaufort Sea Integrated Management Plan in 2009 and, eventually, as I said, the TNMPA entry into regulations in 2010.

Why? It's readily apparent that it's to protect the biological resources and certainly to preserve a

healthy population of beluga whales. This is the world's largest known summering aggregation of beluga. Beluga whales come to this area, we think, to socialize, rear calves and feed. Their tenure is very short. The component of it that's really key, from an Inuvialuit perspective, is that this is a principal subsistence harvesting area. (I'll speak to that more later.) This is our most northern marine protected area in Canada at this point. And, as many of you know, a second one is in development and negotiation in the Darnley Bay area.

What does it look like? It's kind of unique in that most marine protected areas are a single entity and described with a single set of boundaries, but not this one. It's comprised of three separate areas that represent those traditional hunting areas. It comprises in total around 1,800 square kilometres. The partnership aspect still remains in place and captures everyone. That's what it looks like in a microcosm.

This shows the principal steps that you have to go through to establish a marine protected area. Inside that is something called a RIAS—the Regulatory Impact Assessment Statement. In most situations in government, this is a three- to four-year process on its own.

What I really want you to pay attention to is the orange circles, which are the consultation and information-sharing process; they are scattered throughout. Who is part of the game in terms of consultation? Of course, the Inuvialuit perspective is represented by the communities and the harvesters themselves, their hunters' and trappers' organizations, the IGC, IRC, ILA. Every single federal entity that probably has a touch to the Yukon North Slope into the ISR is represented. And all of them have to have some sort of consultation mechanism to finalize an MPA. Of course, the Yukon and territorial governments have a touch that has to be recognized as well.

It's situated along the Yukon North Slope and has attachment to some of the interests of the Yukon government. Now that we've got this MPA in place (announced by Prime Minister Harper on Oceans Day in Tuktoyaktuk in 2010), what is it facing as we bring it to conclusion? Climate change pressures, and there's a long list attached to that; increased shipping, perhaps an outcome of retreating ice cover; invasive species and diseases that come with that increased shipping; population growth and increased harvesting; hydrocarbon development and exploration; and the larger-world influences like the long-range transport of contaminants, tourism interest in the Arctic, NGO interests, etc. All of which have the ability to have effects on our marine species, the communities, the people, the traditional ways, and the objectives that we are trying to achieve under this MPA. I'm not going to try and develop that list of stressors because we have a whole management framework that we're working on at the FJMC, but we're going to do it one at a time.

I want to make a few comments about hydrocarbon development and how it might relate to the MPA, and how it represents a challenge with managing in the extreme. On this overlay, these red areas are the MPA; the green areas are the seven 1A and 1B lands. The most important part are the grey ones; these are all the existing known leases for oil and hydrocarbon development and gas. That's a 2010 map; more leases for oil and gas were granted as of June this year. Inside those red areas that I have identified, there is one, the Kavik area, where there were pre-existing significant discovery licenses #25 and #28, when the formation of the MPA took place. It was a significant challenge to say, we want to take these areas and recognize them for their critical importance to the Inuvialuit for subsistence harvesting, and yet to allow these significant discovery licenses, which are legal, owned and paid for, to exist. So inside the MPA management plan there are special measures designed to protect both the SDLs and to shape how the development would occur inside them. It's not as large an area of concern as you might think; it only comprises 1% of the total MPA area.

Achieving protection for the MPA objectives—well, it does have a designation as a special area under the Oceans Act. It's now national in context rather than being regional in context to the ISR. There are no special regulations, but there are two different protection zones inside the MPA management plan that provide for activities in one, but, perhaps, none in another. Mostly, the MPA is going to utilize

existing IFA structures, the Screening Committee, and the Review Board if it is challenged in terms of protecting those elements that we have identified. And, of course, we have the Fisheries Act, though it may be changing, and we don't understand what those amendments mean. I'm quite confident that the annual harvest of beluga whales that has existed for centuries constitutes, by definition, an aboriginal fishery under the Act, and we should use that definition to its fullest power. With each iteration of this MPA, it has got stronger. We had the IFA as a base, we had the beluga management plan, which is owned regionally inside our structure there, and now we have the national context by creating the marine protected area.

Where are we right now? Well, it's been established in regulation, as I indicated. There's a draft management plan that's been presented to the FJMC as of September. It calls for extensive monitoring programs and agreements, such as making administrative arrangements with the FJMC to allow the cooperative management structure (that it has already identified for the Beaufort) to be the one that administers and manages the outcomes of this plan.

Interim funding arrangements are in place. Our request is for an annual contribution agreement (with a continuing dollar value) to support community-based monitoring and research, to evaluate the success of meeting the objectives of this MPA. We've been engaged over the last couple of years with some of this activity. This slide shows that we have been busy trying to find out which indicators would allow us to evaluate the success of this MPA. These are, in large part, a combination of DFO efforts and community-based monitoring.

In summary, this is unfinished business because we've got all the process done, and we've got the management plan, but we still need those other pieces. It's unfinished from another perspective. We know there are the challenges out there around hydrocarbon development. We will never know that this truly works until we achieve a balance of the needs of industry and the objective of the MPA: sustaining the harvest for Inuvialuit of beluga. Is this MPA special? Well, most certainly. It's in the Arctic and it's the first of its nature. Is it innovative? Yes. There's nothing like it and I think it truly represents the consensus process that we have described in the last few days. Will it work? Yes. I'm optimistic because we have to make it work, but it will require the same diligence, commitment and investment, respect and trust that created it in the first place. There are a lot of people to acknowledge who have contributed significantly to this MPA. When I thought about some of the words I heard yesterday, the gentleman on this screen exemplified wisdom in all the things that he did and he contributed mightily to this particular outcome. So my respect and admiration for someone who had true wisdom—Billy Day. My thanks.

Kirstie Simpson

I am going to drill way down and talk about some specifics here. Unlike Vic, I had trouble coming up with a title for my presentation. I thought it was a bit dry—defining disturbance so we can define recovery. I thought the good, the bad, and the ugly was an appropriate title. That's some heli-portable seismic drilling that was done in the north Yukon some years ago—I thought perhaps we could call it doing it right vs. doing it wrong. But I settled on what Joe told us on Tuesday morning: with rights come responsibilities. So that's the title of this talk.

The key message coming out of this, in terms of this panel discussion, is that landscape drives innovation. The environment that you work in drives innovation and your behaviour on the landscape. We started some studies in 2006, doing some work in the north Yukon. Then we actually went into the southwest NWT to look at the current status of some of the historic oil and gas development. We haven't actually had any on-the-ground oil and gas seismic exploration in the Yukon since the 1980s. Since then, it's been air-based or helicopter-based, so we wanted to find out a little bit about what was going on. There were many points to that exercise, but the key one was to learn from what had been done in the past 30 years, in order to change the way we behave in the next 30 years.

We had trouble defining what disturbance and recovery was. It means something different to everybody and, if we can't define disturbance, we can't tell whether or not something is recovered. We can't provide direction to the land users, to industry,

in terms of how they behave, and we can't develop appropriate mitigation and monitoring strategies. So we collected a lot of information on permafrost, width of seismic lines, and vegetation communities and abundance—all the things that you need to collect to understand what the effects of that particular exercise was on the landscape. The intent was for us to be able to assess the status of recovery on these lines: if they exist, in what form, and how much longer will they last. That helps with mitigation strategies, like defining thresholds of impact on the land base. We wanted to understand the dynamics of the recovery, whether or not there were natural successional processes kicking in, whether or not there was introduction of invasive species, movement of predator species. We wanted to understand and support cumulative effects management as it relates to oil and gas development. We wanted to understand the kind of variation in natural recovery: why some things recovered and others didn't. We really wanted to understand how appropriate the advice was (the best management practices) that we gave, such as that around width of a seismic line (should it be a 1½-metre line or is a 10-metre line ok?), snow depth, frost thickness, those kinds of things. We wanted to understand the best and most appropriate kinds of management practices.

This is in the southwest NWT around Ft. Liard. This is an old exploration camp, a drill site and a seismic line. We collected information on our seismic lines and on the camp. We came up with an understanding that all of the oil and gas disturbances fell into one of three categories. There was either no disturbance, or natural processes were moving along as they should. One of the ways that we judge whether or not they were moving as they should was to look at whether the disturbances that were caused (in this case by oil and gas exploration) were recovering in the same way and at the same speed as natural disturbance, like fire. The third kind of disturbance depended very much on the intensity and the kind of landscape. And, sometimes, there was no recovery.

The intent there was that those first two levels of disturbance from oil and gas activity could be grown off the landscape. What was left was the third category. I'm going to show you a few examples: this is, again, the Devon heli-portable program in the north Yukon—so no disturbance, no recovery needed. That's me standing by the drill pad from their heli-portable program. How they achieved this was using a small drill and dropping it into place, walking or snowmobiling from shot hole location to shot hole location, and meandering their way through. Now, helicopters are not always the most appropriate mitigation tool, so it depends very much on the objective of the exercise. If this wasn't in the middle of winter in the north Yukon and the caribou had moved off the area, if this was, for example, in the fall rutting period, then it would not be appropriate to have the helicopters in there. The tool used depends on what the problem is.

This is a hand cut line, again in the southwest NWT. If you stand in that cut line and touch those trees, it's not actually wide enough to even reach across with a full arm span. If you take a look, you can see Labrador tea and currants, and various other undisturbed plants. We know that this particular work was done in the winter, when there was lots of frost and it was pretty cold. You achieve the kind of disturbance that doesn't need recovery by things like cutting lines by hand. It doesn't look very innovative, but it suits the landscape. These are other tools (that's rather a nasty looking tool); it's actually a hydro axe that's used for chopping down small trees.

In this case, the helicopter is sitting on a seismic line in the north Yukon. Trees in this landscape are not the dominant species, so it's hard to even tell once the trees are removed that this was a seismic line. But in this case, the advice is obviously to keep the blade high, and work with ample snow cover and frost. We looked to see what kind of disturbance there was on this fairly fragile lichen landscape. This isn't really what you'd expect from a seismic line, but, again, a good example of adequate mitigation; we found them because they had knocked over a few of the trees. It was -40 when they did the work, so the small trees just snapped off. There are lots of tools out there to help achieve this. This isn't one that I'm crazy about—mushroom cups on the bottom of a Cat blade— it brings the Cat blade up, but the mushroom cups often scrape along the ground.

For Cole Geotech in Inuvik, they just took some pipe, wrapped it around the blade, and chained it in place. That allowed them to just pop around the ground

without actually digging the Cat blade in. Again, this is innovation with a pretty small 'i' to achieve a pretty good result.

Crossing a wetland in the winter—you know, we often think of wetlands as being a place to avoid. But in the North, the higher the water content, the less damage you do. So working your way across wetlands in the winter can be an appropriate way to move across the landscape, as long as it's done at the right time of year. There are a lot of tools out there—low ground pressure vehicles and rollagons, equipment that's been developed in Alaska, that are very appropriate for driving across these areas. Apparently, they loaded one of these vehicles with gravel and drove over somebody lying on the ground— there is very low pressure on the ground with those particular wheels.

It doesn't always work, because human factors come into play. If you've misjudged the time of year that you apply the tool, it's no longer the right tool. So it's not just a question of applying the technology; it's also a question of applying human brain power to the decision making.

One of the things we did to help us judge where recovery was at in some of these disturbed areas was to compare it with the natural landscape. So fire resets the landscape. Natural disturbance resets that successional trajectory. In this case, even though we can still see the dead birch trees on either side of the seismic line, you can see that the understory has actually recovered so that it is the same on and off the seismic line. That tells us, even though I can still see that pretty clearly from the air, that's actually a recovered feature.

And this is in a peat wetland, kind of a raised bog area, in the Turner wetlands on the Peel Plateau. Again, this is a seismic line and the fire has burned through and sort of reset the landscape. In terms of whether or not the disturbance is recovering, again, we need to know what the natural disturbance regime is, and what the natural recovery is. Fire in the north Yukon: this is around the Eagle Plains area. It's about a 50–60 year recovery from fire and we are seeing some of the seismic disturbances in this case recovering at about that same rate. This is a 1960s and a 1970s seismic line. If it looks like it's going to be catching up to the fire disturbance recovery next door, then it's probably another 20 years.

This is an interesting one. We actually call this particular response a magnified recovery, just because this is a really low-nutrition area. As soon as you make any sort of disturbance, all the nutrients that are bound in the soil get flushed out a little bit, so you get some accelerated vegetation growth on the seismic lines. But if you look in the background, the establishing species on that line are successionally comparable with the vegetation around that. So we know that it's going to come back into the appropriate black spruce forest eventually.

This one, on the other hand, won't. This is an ancient black spruce forest with very, very thick understory, insulating layers. In this case, the folks who put the drill pad in cut down to the mineral soil, so they have changed the trajectory of this particular well site. It is now probably in birch and aspen except for the sumps, which haven't done anything to recover yet. Those are about 300 year old trees in the background there, and that well site is never going to go into that trajectory, so we've lost it. The landscape, in this case, can't absorb the disturbance, but, there are trees there. So is that recovered? No, it's not. The same thing in this case—mixing soil profiles really creates conditions that prohibit complete recovery; we know that. We have had many years to understand that mixing of soil horizons prevents recovery of vegetation.

This is kind of an interesting one. This is something we call successional stagnation. This was a road from a well site just north of Eagle Plains. In this case, they had stripped down to the mineral soil and then we had a natural grass grow in. That natural grass, once it's established, prevents any other species from coming in after it. So that natural successional process, where you get the willows and the other shrubs and trees coming in, is stopped by the grass. Creating an environment that allows this to happen prevents that natural process. You can create that same problem by reseeding with grasses.

The worst case in terms of those three levels of disturbance and three levels of recovery is when we got into our permafrost areas. We coined this

as retrogressive succession. This is actually in the Turner wetlands in the Peel Plateau; these are old seismic lines. One of the things that's important to understand about this is, when this seismic exploration was carried out in the 1960s, there was no GPS technology; there were star shots, and there was line-of-sight surveying techniques. If you talk to any of the Cat operators that were working then, they took great pride in putting long, straight lines in because that allowed the guys to have a nice long line of sight to establish their shot hole locations (for their seismic exploration). We don't need to do that anymore; we have satellite technology, we have GPS technology. There is no need to put the Cat blade down. We have learned a lot from this particular exercise. Unfortunately, when you remove that insulating layer in this particular environment, it turns itself into a linear wetland and it just doesn't recover very fast at all—several millennia in this case. Fire does not reset the successional trajectory of disturbances like this.

I found interesting, in this case, this little isthmus in the middle. One of the Cat operators just popped the blade up for a second and dropped it back down again. On average, the permafrost depth in this area is about 40–45 centimetres. We couldn't find the depth of permafrost on any of the linear wetlands, but we only had a couple of feet where the Cat operator had raised the blade and we had 40 centimetres of permafrost in that location. A message to industry is that understanding your landscape ahead of exploration is really critical, especially in sensitive and vulnerable areas. There are lots of clues about how the landscape can be affected by exploration activities by looking at how the landscape is reacting and responding to natural disturbances. The example here is low-lying riparian areas and this peak plateau. A seismic disturbance that mimics that natural disturbance is going to end up with the same response. We've got these linear willow strips going on. The presence of underlying bedrock, or, the presence of permafrost, is indicated by these polygons; these are all indications of how the landscape is going to respond.

To summarize our findings, you can understand the recovery of disturbed sites by understanding the natural recovery systems, and understanding this really does provide the foundation upon which best management practices and mitigation strategies are developed. This is a foundation from which government can provide direction and the basis on which industry can adjust their practices on a given landscape. The bottom line is that the limiting factor to recovery, as we can see here, is the disturbance itself. There are lots of tools out there if you apply them correctly. This is a fibre-size equipment, little thumper trucks; we've got the low ground-pressure vehicles that can operate across shrub landscapes with very little ground pressure. This is a 3D seismic program in the Delta using low ground-pressure vehicles.

I wanted to finish with what Danny told us on Tuesday morning: The land is our warehouse. I close the door, and I leave it the way I found it: my pride and my joy. Industry should think the same way. There is no difference in the way we should operate on the landscape. It's the same door to the same warehouse; we close it leaving behind the resources that we started with. Thanks very much.

Kirstie Simpson
We started with some high-level discussions; we talked about the Barrier Reef and we talked about Africa. We've talked about marine protected areas and we've looked at some of the activities carried out in oil and gas exploration, so I'd like to invite comments and questions at this time.

Questions and Comments

Bob Van Dijken
My question is about rose-coloured glasses. In environmental assessments, at times, we have an elevated assessment of how much we know, how successful we can be at recreating, restoring. I only have to look a kilometre down the road at the Yukon River where they rebuilt the south access on Robert Service Way and disturbed the salmon-rearing habitat. The restoration requirements were to restore the spawning habitat and provide some rearing habitat. It proved impossible to restore the spawning habitat despite three tries and so, in the end, they created more rearing habitat, which is somewhat problematic—if you don't have fish spawning then you really don't need rearing habitat. How can we avoid the rose-coloured glasses in this era of

expediting environmental assessment and rushing things through in support of development?

Pete Ewins
We have to remember it's like what Isaac Newton said: there's action and reaction. So if you do something, there's going to be some reaction. This is about trade-offs. If you do something, there's going to be a reaction. Some of it may be positive, at least based on your current value set, but some may be negative. In a democracy, it's all about plans and trade-offs. So you can start with rosy glasses, but the reality is that there will always be undesirable outcomes and, for others, they will be desirable. We have to work out what the trade-offs are.

Lindsay Staples
I'd agree with Pete on that. For some constituents, the glasses are rose-coloured, for others they're obviously quite dark. I think the challenge, particularly for those involved in assessments and judging effects, is to the whole area of trade-offs. It is an area that is under-recognized and under-utilized. There are ways to quantify and assess trade-offs. I think many panels don't really go through a systematic analysis of the trade-offs or, in some cases, whether or not a significant adverse effect is a justifiable one. When one looks at it in the context of the trade-offs that Pete refers to, it's extremely unlikely that you're going to mitigate and reduce all significant adverse effects. The question is how to analyze those and how to treat them. One of the things I'm encouraged about is the analysis around net environmental benefits. We are seeing small illustrations and cases where people are analyzing the up and down sides and determining the net result. Obviously, if it's a net negative, it should affect and determine a (yes or a no) decision.

What concerns me is often that trade-off analysis isn't done. What you get in a report is simply a list of all the benefits, a list of all the adverse effects, and our judgment. There isn't an analysis of how the positives and negatives were actually broken down to result in a rational decision.

Bruce Downie
Don't underestimate the power of local communities or local people in changing how some things should be done. Again, I am looking at it from inside the head of a proponent, but the companies can do a lot of things if their bell is rung by both the community and government. Kirstie showed some practices that can be utilized today, incredible improvements. But, more importantly, there are some areas of the Yukon that we just need to stay out of. We need to be very clear on that. Industry does like clarity and they can work around it. For balanced development, there should be a lot of 'no-go' zones. Clarity is good for everyone.

Barry Worbets
Which is better, to do something that you don't know the outcome for, or to do nothing? Doing something is always better. It's an imperfect world; we can't guarantee the results, so we do what we think is best, and it requires the contributions of all to figure out what's the best fit. We all have to live with the consequences.

Kirstie Simpson
I'll just add one comment to Lindsay's in terms of the trade-offs. I think we underestimate the power of honesty when it comes to some of these projects. There's nothing wrong with acknowledging what some of the effects of the projects are and then figuring out how to live with them, rather than not acknowledging them and then trying to figure out how to live with them after the fact.

Don Toews
I'm a member of the recently established Carcross-Tagish RRC and our area is the Southern Lakes. This area actually does have quite a long history of wildlife management and, in some cases, it has been very successful, like the recovery of the Southern Lakes woodland caribou herd. This was a modern-day miracle in resource management and was only accomplished by the fact that we had six First Nations, two provincial governments, and the federal government that got together and said, we're going to make this happen for this very sensitive species.

But the whole issue of cumulative effects is something we are having a really, really hard time with. The science of cumulative effects, assessing cumulative stresses, doesn't seem to be that well developed. This area is essentially a semi-urban area; we are dealing with lots of mining projects, big mining projects, exploration projects, not just one but a significant

number. We're dealing with oil and gas, with forestry, with agriculture, with people who want country residential development, and it almost becomes too much at some point. And, of course, there are other stresses like harvesting, which isn't a negative stress, but it is a stress to certain populations, on top of all the development. My question is: how do we deal with the effects of cumulative effects and development in an area? It's probably exemplified more in the Southern Lakes area than any other area in the Yukon. Do we give up our caribou herd, or do we recognize the fact that the recovery efforts are not going to be sustained and gradually it will decline over a period of time? Is there a way of actually limiting development? I think developing special management areas isn't quite enough; it is an important step, but we really have to manage the rest as well. I think that gives us some cash in the bank, but we need to do more than that. That, in itself, won't be enough. And how do we deal with this type of community development? As a resource council, we're struggling with this. And we're trying to respond to individual project proposals, but, in the end, we basically say no, no, no, no, because there are all these other things coming down the pipe.

Lindsay Staples
I actually have quite a strong opinion, Don. I am in a space where cumulative effects assessment is a complete waste of time, because I don't think the tools are there. What I think is important is to put in place the cumulative effects management framework and I think once that is in place, you can actually start to do the assessment. So what is in a cumulative effects management framework? Some of the elements would have to be, first of all, an agreement on what the issues are or what the valued components are. In fact, you need to commit to monitoring over the long term. Proponents are often in a completely impossible situation to meet many of the legal requirements for carrying out a cumulative effects assessment. The available community-level baseline trend data that is relevant to the key issues and valued environmental components being assessed are typically very deficient; the landscape-level plans that would be of benefit to them don't exist. With respect to establishing cumulative effects thresholds that would assist in assessing the significance of accumulated impacts over time and space, in many places they don't exist. I'm not talking about thresholds that could be or ought to be hard wired by regulation, but those that would be useful for benchmark or for reference purposes to assist in impact assessment.

Parties need to agree to a benchmark, such as total area of linear disturbance, square kilometres of linear corridors in an area or levels of social acceptability. The North Yukon Land Use Plan started to look at some of these threshold tools. I think that kind of thinking is very helpful. But with respect to a cumulative effects assessment on a project-to-project basis, currently, I think we're in an impossible place.

Bruce Downie
I would tend to agree with Lindsay's statement about the framework needing to be in place first. In order to understand what framework needs to be in place, you actually have to agree to a vision. I would say many of the problems that we face here in the Yukon, specifically, come from the fact that we don't share a vision of what the landscape will look like 50 years from now. If you can't do that, then it doesn't matter what kind of monitoring or cumulative effects system you put in place; people are not going to be happy with it because their part or their vision is not realized. There will always be change in that respect, because there are, as I said, the power and control mechanisms that allow people to do things to the landscape over and above what other people want. So you have to come together on the vision in the beginning, then set up the system appropriate to the vision. Then I think it can work better; the struggle is in the vision.

Barry Worbets
Look what happened with the Alberta land use planning framework—the place has prosperity and bounty, and went crazy. Whether it was urban sprawl, loss of agricultural land, disturbances on the eastern slopes or the oil sands. I would answer your question in a similar way. The people who are in that place need to envision what they want long term. People call that land use plans, or just a good plan and vision for what they want. If you've got some pretty active monitoring and you're adapting as you go along (adaptive management), those are the tools to get where you're going. I'm on your page, Lindsay,

cumulative effects is kind of a good catch word, but there are lots of things you can do to control the destiny of what you want long term.

Kirstie, can you explain how the knowledge that you have gained can be used to implement the cumulative effects management framework that is at the core of the implementation of the North Yukon Land Use Plan?

Kirstie Simpson
That's a good, on-the-spot question. The biggest thing that comes out of that is education of industry. It's taking the results of the work we are doing and applying it to, for example, a thresholds-based approach to land management. It is only one tool in the quiver for land management. I often think of cumulative effects as being that pie that we have to share amongst ourselves. And the pie is not infinite. It's eventually going to go away if we all decide to, individually, eat every slice in front of us. Eventually, the plates will empty and we cannot get those pieces of pie back. If I took that piece of pie and offered it to you and you decided you weren't that hungry and you turn around and offer it to Gerald instead, then we get to share. It's a concept we don't understand. Joe was talking about the concept of educate versus regulate. The kind of work that we have been doing helps inform industry. Then we go back to the previous question—you have to have landscape-level objectives; if you don't understand what the objective is, you can't meet it. That goes for industry as well as regulators.

Vic Gillman
Thanks. I spent 15 years working in habitat management, and every time I looked at a cumulative assessment program or component for industry to have to satisfy, I said, we simply don't have the tools for them to do this. It always was a piece you just plugged in and hoped that somebody would do some work on. The science is incomplete. I agree that it's actually establishing common goals when you start out on an initiative that will get you a lot further.

Someone asked me how we intend to evaluate the success of the marine protected area and I assume that's the same kind of challenge you're facing here, Don. When you look at evaluating success, you could look at it from the science perspective, as to what you would measure. I go back to what Lindsay said this morning: what are the fear factors that are associated for all the people that come to the table? If you were successful at overcoming those fear factors with your outcomes, then you would have achieved success. For the Inuvialuit, their fear about the marine protected area is that it is going to do things that affect their harvest rights, their practices and their use of the land. For the FJMC, we fear that we didn't do the right thing by supporting something when we already had a beluga management plan. For government, it's the possibility that there's going to be criticism of this MPA because it doesn't achieve all the things that other MPAs do. And an industry fear is that they are going to take advantage of this to create 'no-go' zones where we can't do the things that are really necessary should development occur. Lastly, the one that I discount the most, the preservationists who think that an MPA as a conservation mechanism should be much more than it is. If we take those five fear factors and said, "What's the common outcome that fits most of these?", we would have achieved success without attaching a cumulative effects monitoring program to it.

John Streicker
When I listen to the presentations and think about what's going on, often I see us looking in a scope which is very focussed. What I've often wondered is whether the things that operate at a system-wide level (like cumulative impacts), which we haven't found a framework for, or aren't dealing with very well, I think about the perspective we might need, so we're not doing all this work while ignoring some big things that we haven't been anticipating. I'm wondering if you can speak to how that might be integrated, whether that's through government, or science and traditional knowledge, or in what ways we can gain some of that perspective in order to not miss those other big effects. I'll give one example. When the National Energy Board was talking about drilling in the Arctic offshore, I was very concerned about how it would deal with problems in spills and clean-ups. I asked them if, in the scope of their work, they would also be considering whether those spills originated outside of our waters, but made it to our waters through the movement of sea ice. Their answer was no, that's not their problem, so we're

not going to consider that. I thought, okay, so who is considering it? How do we deal with things that are not within our purview right now or our jurisdiction?

Pete Ewins
The answer is, with difficulty. There are thousands and thousands of people who meet every few months, or years, supposedly to deal with those transboundary international things. I didn't realize that one of the biggest Russian exports to Canada in the Arctic was toxic chemicals, and it's because the multiyear ice is born in the mouth of the Russian rivers and the Russian shelf, and it takes, nowadays, eight or nine years to end up being dumped onto the Arctic coastlines of Canada. Eventually, it melts, and right now, there's a whole bunch of it in Iqaluit harbour. It's got Russian toxins sandwiched into it and nobody's dealing with it. Science tells us more and more about these ecosystem-scale connections, as well as the climate connections. I don't have a magic-bullet answer until humanity really embraces the concept of one shared planet. We all are morally responsible and contribute in a cumulative way. I think we're pretty dysfunctional in our ability right now to address it on a day-to-day regional basis.

Lindsay Staples
It goes back to our understanding of cumulative effects. What do we understand a cumulative effect to be? Without getting technical about it, I think the biggest concerns I have are expressed in the literature and, indeed, within the definition of cumulative effects. It finds itself in various pieces of legislation, but, essentially, cumulative effects are the effects from projects that overlap in time and space. This is a very limited definition of cumulative effects. Cumulative effects are essentially all of the effects as they relate to the sustainability of a particular valued component of the ecosystem. If the focus is on the sustainability of the particular valued component, then you be looking outside of the Canadian or regional range of migrating wildlife populations. If we are concerned about sustainability of these valued components, why wouldn't we want to look at all of those factors or consider, in various ways, those conditions that, in fact, shape and influence its sustainability?

Tom Nesbitt
I'd like to discuss briefly what we did in Deline for several years. I worked there with roughly 25 elders and levels of government and the co-management bodies down in the Sahtú, on what is called the Great Bear Lake Management Plan. The elders there talk about maintaining the health of the ecosystems of the Great Bear Lake watershed, which they consider to be alive. We worked together on this from 2002 to 2005, and came up with this concept that the proponent or developer must demonstrate that it will maintain the ecological integrity of the ecosystems of that watershed. To operationalize that, we said that we would require developers to define objectives or measurable outcomes for this project, for this place. And then, subsequently, they would also have to design a monitoring program to demonstrate whether or not they are, over time, achieving those required outcomes, those kinds of practical measures. They would have to monitor carefully over time to try to achieve that general goal, which we defined as ecological integrity, a goal which must be adapted to any particular circumstance. We found that was the best way of proceeding there, just as with environmental assessment. We found the best test for environmental assessment is minimizing environmental impacts, a general test which must be adapted to a particular context. The Great Bear Lake Management Plan was developed by consensus with both levels of government and various organizations from Deline. Again, it was led by the elders there. We found that the general concept or test (and it would be a test) set out in the Sahtú Land Use Plan and adapted to the particular context and to specific, required, measured, monitored outcomes was the way we tried to do what I think some of the speakers there were alluding to. That was before the Sahtú Land Use Board. We don't know whether they will indeed incorporate that (literally) right now in their draft land use plan to go before the Sahtú Secretariat Incorporated, the territorial government, and the federal government for approvals. That's what we did, really with the leadership of the Deline elders. Thanks.

Unidentified Speaker
I want to say congratulations. Being a proponent and doing some of this work, we spend millions of dollars on environmental impact assessment and a pittance on monitoring afterwards. So I think, good on you. I

think that's the direction we want to go and force the proponents to get involved in that ecological integrity argument through monitoring and the responsibility they have for it. So congratulations.

Vic Gillman
A moment ago I said I wasn't going to talk about indicators, but that's what you're talking about. I have read the report and it's an excellent summary. It sets out a lot of challenges that aren't being quite met yet. But I do think it's a real strong step forward.

When we talked earlier around Don's problem about agreed-upon outcomes for conflicting parties, well, the selection of a measurable indicator is always the challenge. I'm happy to report that, despite maybe not making much progress on cumulative effects monitoring, there is a lot of work going on in the science community to do with selecting the right indicators. This is particularly driven by climate change, where we're thinking about small footprints, about holistic systems and how to measure what the change elements are, from the bottom to the top. We're blessed in that we have quite a bit of work going on in the Beaufort Arctic that is pointed directly at choosing those indicators, so that we can quickly assess what the change is and what it means. I think the indicators you select at the beginning of the exercise are as critical as starting the exercise itself.

Joe Tetlichi
Thank you very much. I have a question for Kirstie, since you're with YTG. I just heard the word 'footprint' and I also want to just touch on 'vision'. I think that's important because everybody has a different vision. What do we want to see in 10 years, in 20 years, or 30 years? First Nations made it quite clear, and I'm just touching on land use planning for the Peel. We know what's happening there; we know the big controversy about staking and all that. If people look at the map, all of the Peel is staked. There's even situations where Category B Lands are being staked, and that's pretty disturbing. Category B Lands are First Nations' private lands, surface lands, and those are being staked also. So how do we have a vision? How do we come together, to walk together, to cooperate and to co-manage when everybody has a different vision? That's the trick.

I'm trying to be careful because I'm a guest here. I have to respect the people that brought me here, but it's really important that we look at a small footprint. I've always said, yes, we want a small footprint. But what if everybody is saying we want to do this; it's going to be a small footprint. It's going to be something like Alberta. And we talk about learning from past mistakes. How are we going to learn from what's happening in Alberta?

I think First Nations have a vision. I think oil and gas mining proponents also have a vision. I always use the statement: When it's not developed, or when it's undisturbed, we have to go in there to disturb it to find out what is there. I think that's a real kind of a bad mentality. I don't want to see the habitat range of the Porcupine caribou having a large footprint. We're thinking of the future generations and how are we going to leave this land for them. That's important. We've got it made today, we have everything. But what are we going to have in 20–30 years?

I want to throw something else in. Kirstie, you looked at the top of the surface of the land, but what are we actually doing down below? We're coming upon that slowly. I'm referring to fracking; nobody's brought that up. In order to all work together, we have to deal with those types of situations. Massi.

Kirstie Simpson
Well, that was a great way to end the comments and the questions, and I don't think there's a lot to be said following that, so thanks very much for that, Joe.

Lindsay Staples
Dr. Mark Fleming from St. Mary's University is a psychologist who specializes in risk assessment and risk management.

Mark Fleming (by telephone and as presented on screen)
What I want to talk about today is a consumer's guide to risk management in areas of high conservation value. My name is Mark Fleming and I am a professor at the University of Halifax in Nova Scotia. I am pleased to be able to participate via recorded lecture and I will be online by telephone to be able to answer questions later on.

I'll talk a bit about my background, what we mean by risk, some lessons from disasters and safety culture improvement systems, and then I'll try and draw some conclusions.

It is important to be clear about some of the terms we are going to use that are often used incorrectly when we are talking about hazard and risk, particularly around decisions to build new petrochemical processing plants or to implement new mining operations. If we think about some of the pipeline discussions that we have been having in British Columbia in recent years, we can see how sometimes we are using the same words to mean different things when we talk about hazard assessment. So it's important that risk is a combination of likelihood that harm or loss will occur and the severity of that harm. It's both the likelihood and the severity that we're talking about when we're talking about risk. Sometimes people get confused and say that the risk is very low because it's unlikely to happen. Most of the types of events that I'm interested in studying are unlikely to happen, but they have very high consequences. So we need to think about risk as a combination of those two things. Something could be relatively unlikely to happen, but the consequences could be so severe that we could judge the risk to be high or too high anyway.

When we talk about harm, we're not just talking about harm to people. We are also talking about harm to the environment. So risk is a complex idea; it is a combination of both likelihood and severity. It's important to think of hazard as anything that can cause harm, and there are endless hazards out there in the environment. In that context, most things could be called a hazard. Water is something that we need to be able to survive, although there's also the possibility we could drown if we were in water and didn't know how to swim, for example. A hazard is anything that has potential to cause harm, and risk is the likelihood that that harm will occur and the severity of that harm if it does occur.

People want zero risk; realistically, that's not possible. There is always going to be some element of risk in any activity that we perform. One of the challenges we have as a society is to decide what an acceptable risk is. How low is low enough and how much are we, as a society, going to be able to tolerate? People talk about risks and benefits and that can be complicated as well. They undergo risks to get the benefits, or they don't value the benefits in the way some other people might. It's really important that we're clear about what we mean by the terms.

Organizations and others debate about the benefits of licensing new mineral exploration projects and those sorts of things. We want to use objective information around that risk. Objective is a bit of a misnomer. The risk of future activities is unknown; we make a judgment based on past risk or statistical risk. But anyone who has retirement investments will tell you the stock will either go up or down; past performance does not necessarily guarantee future performance. So if you were investing in a fund and getting a 6% return previously, that doesn't mean you are going to get a 6% return in future. It could be negative, as is the case for many people in recent years. When calculating the likelihood that something can happen, we don't know for sure what the risk is going to be. So we come up with a complicated statistical model to estimate the likelihood. Often the people who are presenting commutative or statistical data forget that it is an estimate; it's not a fact. And while they can talk about how historically this has been the failure rate of this particular piece of technology, it doesn't necessarily mean that it's going to be the same in the future. That's the real challenge; we don't actually know what the real risk is in many cases. Some of those estimates are very, very good. People who are actuarial experts around the probability of survival are very good at estimating when someone with a particular profile is going to die. They can take a good insurance risk on that even though some individual cases vary. They have an average estimate based on a large amount of data.

In many cases for the technology that we work with, we have good statistical data and can make good judgments about likelihood and consequences. In some new technologies, say for example deep water drilling, we don't have the historical data to be able to make good estimates (in my opinion) of the risk we are exposing people to. I think there are some challenges when we talk about real risk, but we are actually only estimating the risk, based on historical data or on other risk models.

Subjective or perceived risk is the study of attitudes, judgments and feelings towards hazards and risks. This is the public's subjective assessment of risk associated with a particular activity or task; these are usually assessed by the people who may be exposed to it. A lot of research has been done on people's biases. These are created by the things people have been exposed to over the years. People are likely to make poor risk judgments when they compare real risk to subjective risk. There is a disconnect between what people have experienced and their estimates of quantitative risk. People tend to be more conservative about things they have less control over and are more concerned about new habits than they are about old habits. For example, people are going to be more concerned about being shot than they are of dying from diabetes, even though they are much more likely to die of diabetes than they are to be shot. But they are more concerned because it's unknown and something they have no control of.

People's objectivity is inaccurate in risk assessment, so they put it to risk communication, which has some merits. From my perspective, though, there is some merit in subjective estimates, particularly in terms of hazards and in terms of who (in this case) is an expert at judging the consequences of a particular hazard. For example, if you've got a pipeline leak and lots of petrochemical product gets spread over a wide area of habitat, what is the damage and who is the expert to make that judgment? Often people locally may be able to make subjective estimates about the impact, and this might be a very valuable source of information.

Quantitative risk assessment (QRA) is often submitted as part of an assessment when people are reviewing a mining or exploration activity. This is a very useful, structured process that helps us identify the risks and come up with strategies to manage them. The first thing is to identify all the possible hazards that a particular activity might generate. It is easy to miss some hazards, for example, with an earthquake. Have we really thought of all the potential hazards and how to defend against them? When you are in a no-earthquake zone (where earthquakes don't happen very often), you don't identify that as a risk, although there may be the potential for it.

We won't identify this as comprehensive until we identify all potential hazards. Then we might look at the likelihood that they will be realized. People who live close to the area where operations are planned probably know more about some hazards than the technical specialists. It's important to include a wide group of stakeholders. We try to assess the likelihood, so we need to be able to gather data in looking at the frequency of these hazards, historically. For example, we can estimate how likely it is that we're going to have an earthquake in Halifax, based on previous data. What's important when doing a quantitative risk assessment is to know the assumptions you are making. Sometimes that is not clearly articulated. We need to figure out what the consequences are. Some hazards never occur, so we have no idea what the consequences potentially could be. For example, in the case of the Deepwater Horizon we really don't know what the consequences of that disaster have been to the marine environment, because it's never really happened before and we have not monitored one yet. We had a leak previously in the Gulf of Mexico about 30 or 40 years ago, but we don't really have a set of data to understand how it's going to impact the local and immediate environment. The same thing would apply to a catastrophic failure of a petrochemical plant. We may not know how this will necessarily impact the ecosystem, although we have some specific information. Input from our stakeholders would be helpful.

There are limitations of quantitative assessment. Let me be clear that quantitative assessment is a very helpful process that really does help organizations identify hazards and come up with strategies to manage them. But it is the process that is most valuable. The empirical result is actually less helpful than you would think. Sometimes, if people are forced to reach a particular target, they start with the risk number that they want as the outcome. They work backward, and adjust their assumptions so that they meet that final calculation. There can be risk in saying, the risk for this particular event has to be below a certain amount (say, 10^{-6}) and then the person doing the assessment can work backwards based on that target and adjust their assumptions to ensure they come in under that figure. The process

is valuable, and the more transparent it is, the more confident you can be in the results. If they are very clear about assumptions, and if they are very clear about the information they used, then we can have much more confidence in the final figure. Sometimes the quantification consequences can be very difficult; for example, what is the value of the destruction of habitat? I'm not quite sure how you put a value on that. When it's gone, it's gone; you can never replace it. At some time, when we want to put a quantitative value around risk, it's actually about values rather than about how the actual figures are calculated.

The important questions to ask when presented with a quantitative assessment are what assumptions were made, what were the decisions that were made (about the data), and what are the possible outcomes.

There is a level of uncertainty about the risk figures. What is the upper and lower estimate based on the reliability of our numbers? Sometimes the range can be much greater than the number itself. You could have a risk calculation to 10^{-6} for example; that could vary from 10^{-3} to 10^{-9}. That's a wide range of risk estimate and I'm not too comfortable with that level of uncertainty. We need to be quite clear about the uncertainty so there should be some standard deviation expressed as well.

We make judgments and assign values to the consequences of the evaluation. Really, we would like to include a broader range of stakeholders when we are trying to assess the magnitude of consequences. What are the real values of any of the things we want to protect, and would the assessors really understand those values? For example, this is not just an acre of land, it's a sacred habitat. The challenge in communicating about values in monetary terms is one thing, but sometimes we have to use other terms as well. What are the critical control systems that need to be put in place on the basis of the risk? The level of risk that we assess is based on the assumption that certain critical control systems are going to work. We need to know the likelihood of their failure and we need to know what they are.

Another issue, and this speaks to why we have a lot of conflict around risk management, is that perspective can really be viewed differently depending on your role within the decision-making body. We break that down to strategic, tactical and operational levels within an organization. The local stakeholders are at the operational level or, in more similar terms, the decision-making power. The strategic level players consider risk all the time; they are the senior managers and regulators and politicians who are making trade-offs between safety and cost, production and protection, benefits and risks to society. They're making judgment around an acceptable level of risk. There is maybe not enough inclusion or consideration of those at the tactical operation level where they are making judgments on the acceptability of risk. It's the senior leaders who make those judgments and information is passed on after the outcome has been decided.

At the tactical level, these are the people who are trying to make things. They are the operations managers who are running the plant and having to follow rules and make trade-offs between risk and safety. They try to live by the rules; they try to enforce the plans that upper management and the politicians have put in place. They don't really have a lot of decision-making power in terms of the level of risk.

At the operational level, these are the people on the ground, the front-line people close to the operation, close to the risk. They are not really in a position to evaluate the risks they are exposed to. The risk exposure is determined at the strategic level; the rules, the procedures, the equipment they are given to work with on the day really determines the level of risk that they're exposed to. They can make slight decisions around following rules or not. But it is really the technology that they're working with and the design and the resources that they have to work with that determines the overall level of risk. When I think about operational people, particularly the workers and stakeholders, they are the ones who are exposed to the hazards, the risks. When things go bad, they're the people who are killed or harmed, or their livelihood is destroyed. At the operational level, the front line, those are the people who run the risks and who are often put in a position where they have to take those risks. That's why we have this level of conflict between local stakeholders and organizations and politicians who are talking about risk. It is those who are running the risk who often feel that they

have less input into decisions about the extent of the risk that they are taking.

This is a very quick overview around some risk terminology, which I hope is helpful. What I want to do now is talk about the work we have been doing looking at disasters, particularly offshore disasters. We did a review of the inquiry reports into 17 offshore disasters to try and determine the common causal factors. Fourteen of these disaster reports identify cultural causes as the underpinning factor associated with the disasters. We use a framework to classify these causes, which was developed by James Reason. There are four main themes that are highlighted: tolerance for inadequate systems, normalization of deviance, complacency and work pressure. Really, if we're trying to reduce the frequency of these disasters, we need to focus on the extent to which these things exist. We can see these are really not technical issues. It may be that the technology wasn't working as well as it should have been, which would come under tolerance for inadequate systems; people didn't stop the job or managers didn't investigate these issues. So it wasn't that it was technically not possible or the causes were unknown; it's that the people who were making the decisions around this didn't prioritize these things.

Fundamentally, we're saying that this is the culture of the organization surrounding the level of safety in an operation. At this point we need to get back to the simple understanding of what the concept is. Safety culture is misused, but safety culture is comprised of individual competencies and values, and a commitment to see that organizations have a safety management program. Safety is about our values and our patterns of behaviour—what is acceptable to us. What does not justify this to front line staff is that values are not shared across the organization. Senior management values around safety and the trade-off between risk and cost, protection and production, is sort of the issue that you need to look at. This is a model that is often used in the safety management system approach; health and safety is said to be important. And there's an organizational structure that sets out the policies, who's responsible for what, and how we are going to communicate that message. There are plans and we evaluate our performance on an ongoing basis and then come up with an improvement plan. Then we have an audit process that tracks the extent to which we are doing what we said we were going to do. This has been very successful in matching hazards in the safety context. Most organizations now, particularly high-risk organizations, all have a safety management system.

I've taken this and applied it to safety culture. We would propose policies or a vision which would be more appropriate for a positive safety culture and for what we believed was important in the culture of our organization. That would be a short policy statement outlining the vision for that culture. We would also define the responsibilities of different parts of the organization and then we would have plans and actions we would put in place. We would do some assessment (which is different from evaluation) and then we would review and refine our plan and use an audit process. This is a circular process, whereby we can have a company approve our safety culture. There is no end date; we will continue to improve our safety culture. To see if things can be perfected, we would offer the idea of a safety culture and we would build an awareness that we are not going to achieve perfection but need to try.

Some key groups are responsible and accountable for safety culture. The managers or leaders of the organization have a special role to provide a positive safety culture. Supervisors have a role to provide the workforce level culture. Contract management is actually responsible for the particular organization of those contractors and the management staff have to promote a positive safety culture on their team. Non-managerial staff has a role in fitting in and promoting a positive safety culture. Managers in the organization have the main responsibility to lead by example and ensure that a positive safety culture is encouraged.

In terms of plans and actions, you need to have some practices in place. It's about prioritizing safety and demonstrating that this is really important. It's actually about having specific processes that promote a positive safety culture. For example, leadership training, work site visits, employee advocacy or involvement in decision making—all of these factors would try to build an effective safety culture. Assessment of the culture and how it's improving, with interviews, questionnaires and

documents—you're also going to want some more continuity metrics. One of the indicators of a positive safety culture is safety reports done by employees. You might want to look at the quality of those safety reports. You might also want to look at how quickly issues are resolved—are they short time frame or are they left unresolved for longer? What is the response to this safety concern that has been raised?

We can look at other outcome metrics of our safety culture. I'm working on a research project now to develop a standardized set of metrics that organizations can use to track their safety culture continuously, rather than just relying on these episodic assessment methods. Audit is a very strong process: did you do the things you said you were going to do or did your plans meet their objective? We may have a leader training program to educate leaders. We would see a change in behaviour.

We also want to take this information from audits and other outcome indicators; we have external information that would come from other organizations and research. And from all of that, we see if we can refine our culture management system so we have a bigger impact. It's all about trying to refine the system so that we continue to improve our safety culture. It isn't a destination, it's a journey. An organization that feels they have achieved a positive safety culture is very likely heading for disaster.

I want to leave you with this thought. One of the real challenges when we talk about risk and safety is that people typically don't think it will happen to them. When the Captain of the Titanic was asked how he could best describe his experiences at sea, he called it merely uneventful. I've never had a car wreck, he said, and I have never been in a predicament that threatened to end in disaster of any sort. That was the captain of the Titanic. Just because you haven't had a disaster today doesn't mean you won't have one tomorrow. There is a real risk. It's very likely going to happen to you, and very soon.

So thank you very much for your time. I hope that you will be able to ask me questions.

Lindsay Staples
Just let me say how much I appreciate everyone who is here this afternoon. Usually, the third afternoon is like running the last part of a marathon, so I appreciate your stamina and, again, thank you for being here. Mark, thanks very much for putting the PowerPoint together. The technology did work and a number of us sat in on your presentation.

Mark Fleming
Thanks very much for the opportunity to participate virtually.

Lindsay Staples
Are there any questions for Mark with regard to his presentation or any related to risk assessment and risk management?

<u>Questions and Comments</u>:

Pete Ewins
Mark, in that analysis of 17 offshore disasters, you were showing the characteristics of those disasters. I didn't quite understand—there were 9 of those 17 which you said were in the category of normalization of deviance. What does that mean?

Mark Fleming
The criteria that we used was taken from James Reason's examples of a poor safety culture. That seemed like a useful framework. These are just based on the public inquiry reports into these offshore disasters. Normalization of deviance is where it becomes an accepted practice to not do things the way they should be done, either by ignoring a safety rule or regulation or following some bad practice. For some reason, it becomes accepted although it isn't the right way to do it. We know that what we're doing is wrong, but it's okay around here to break the rules, to not follow policies, to not do things in a way that is accepted or may be legally required, because of a particular situation or context. So you often find that it's not just that one bad person broke a rule, it was because, generally, across the organization, people weren't following that particular rule, process or procedure.For example, in the case of the Piper Alpha Disaster off the U.K., the system that controlled work had really become ineffective. People weren't using it as it was supposed to be used, and that was the crucial factor that led to the disaster. It wasn't that just one bad supervisor didn't follow the rules, but

that nobody was following the rules because that had become accepted.

Lindsay Staples
Thank you for that, Mark. Further to Pete's question, you were talking about the Piper Alpha. In the literature, has there been any analysis or assessment of how the risk was managed with regard to the Macondo blowout in the Gulf of Mexico?

Mark Fleming
That was another one of the disasters we looked at in the 17. There have been a number of big reports looking at that, coming to various conclusions. Culture was one of the things that was identified. It's important, when we're talking about the culture, to note that it's at a much more senior level than we would necessarily think about on a day-to-day basis. Senior managers were making decisions that were not necessarily minimizing risk as low as is reasonable in that situation, and the focus was on other things. So in Macondo, again, all of those factors were present. It was one of the few disasters that had every one of the elements present: normalization of deviance was there, so people really expected things to not work as intended. A lot of attention was given in the inquiries to the fact that the people who were on the drill deck on the night had got a pressure test that was unusual, or wasn't what they were expecting. They decided to interpret it as meaning what they thought it meant rather than actually going and exploring it further. It wasn't the result that they were expecting; it wasn't a negative result in a clear way. It just didn't make any sense and they then decided to conclude that, well, even though it doesn't make sense, we'll just continue as if it was okay. That really is because, over the whole experience (quite a common experience when drilling deep water wells), nothing makes sense, nothing works as it is intended to. Therefore, we accept things that don't make any sense, we just move on. That sort of general acceptance of things is part of the mental culture.

Lawrence Ruben
Good afternoon. Before lunch break, I had some questions to ask the panel, but they're not sitting up there anymore. I'll ask Mark this: Kirstie Simpson, of Energy, Mines and Resources, Yukon government, made mention to new extraction practices. New extraction practices I take as fracking or fracturing. Risk management or risk assessment in fracturing is what Joe was talking about. It's a process that's new in the North. Up in the Norman Wells area they're going to try that. I sit with the Inuvialuit Game Council; in our June meeting in Tuk, there were two members making a presentation on fracking or fracturing. I took it that they were working for either one of the companies, from either Esso or Imperial Oil or Conoco, or one of those companies. We sat there listening to that information, and it was sort of like they were promoting fracturing in the NWT. I looked at the card that was in front of me, and it had their names on it and they actually work for the National Energy Board. It was like the Board was promoting fracturing for a company and, to me, that was completely wrong. In saying that, are there any risk assessments being done in fracturing in the North? I asked some questions—are there any causes after fracturing and were there any earthquakes from fracturing done in B.C.? They said, yes, from fracturing there were two incidents causing minor earthquakes. So are there any risk assessments being done up in the NWT?

Mark Fleming
I've no idea. My guess is that, with all types of hazardous activities, there will be some form of risk assessment that's being performed to say what the hazards are. I think one of the difficulties we run into when doing risk assessment is trying to deal with some of the unknowns. Seismic effects are known, so we do know that there is a potential for minor earthquakes associated with fracturing in some contexts. I think the general argument, although I am not an expert in this, is that they aren't going to trigger a major event; they're just detectible seismic events. I think that there is probably still more work to be done on that and there is, I think, still a lot that still isn't known about the potential hazards associated with fracturing. My guess is there are different types of hazards that are present depending on the particular area. I think that if there was going to be fracturing or fracking happening in an area near me, I would like to see the risk assessment and look at some of the assumptions that they've made and have that independently assessed. Sometimes there isn't enough independent assessment. That would probably be helpful in thinking about some of the

potential negative consequences.

Lindsay Staples
Thank you, Mark. In your talk, you do a nice job of making the distinction between real risk and perceived risk. In terms of fear factors, in discussions between parties in areas where there are high conservation values (polar bear populations or important features such as denning sites) and the opportunity or the potential exists for hydrocarbon exploration in those areas, you make this distinction between risk runners and risk takers, and the distinction between perceived risk and real risk. I'm wondering if you have any comments with respect to the public debates. I realize I'm asking you to generalize, but are we doing a better job of narrowing the gap between perceived risk and actual risk? Are there any techniques, say, risk communications, that help us narrow the gap between perceived risk and real risk, given that it's the tension between the two that may well stand in the way of reaching the decisions that are more likely to be embraced by a broader number of people or constituencies?

Mark Fleming
The point I was trying to make was that real risk exists, but no one can tell you what it is, particularly for future operations. So people can say, for example, that drilling a well and fracking in this area is going to be safe. They could say that, but what does safe mean in that situation? And they could even give you a risk estimate pertaining to a particular negative consequence in that particular activity. But, again, there is still a large amount unknown, and some of those estimates are just estimates. They use evidence, but they are still based on predictions, on a statistical model, so there's still potential for error. When communities and people who are trying to develop resources have conflict, it's because we're often talking about risk in two very different ways and with a very different language. If companies wanted to reduce the conflict, they would need to have a very much more transparent and involved process. When we try to estimate the consequences, it can be quite difficult, particularly for unknown activities and in sensitive wildlife areas. The people who are the experts in knowing the consequences of bad things are often the people from that local area who can evaluate polar bear habitat. So how do we put values on those things? I don't think there is a dollar value, but we can start to understand the true value of the people who have to deal with the consequences, the ones who are running the risks. They're the people who are running the risks; the people who are making the decisions, the government and the exploration organizations, are the people who are creating the risks. So there's often the big disconnect between the people who are running the risks and the people who are creating them. If we want to have more effective development, it needs to be much more collaborative, where the people who are assuming the risks are involved in the decision-making process and their voice is heard. When they're trying to do a particular risk assessment, the key people to tell us about the consequences are those people who are in that local area and who know how bad it would be if something bad happened. Often, they are the last people to be involved. Rather than including them in the risk assessment process, the companies tend to come, having done some statistical estimate, and then say, here is our safety risk assessment, and we're telling you it's safe. Local people think, a) I don't necessarily understand that because it's just a whole bunch of numbers, and b) I don't believe you because I wasn't part of the process. So I think if we want to collaborate, we need to truly assess the risk associated with a particular activity. I hope that answers your question.

Lindsay Staples
I'd like to call up the ever-present Dr. Chris Burn. Chris is going to offer up his reflections on the discussion of the last three days—what he's heard from you and a number of the panellists. Then we'll have an opportunity for any closing comments or observations. Please welcome, yet again, Dr. Chris Burn.

Final Keynote

Chris Burn
About three months ago, Christine Cleghorn phoned me up and said, "Can you do me a favour?" Now, she had done me many favours with respect to the production of the Herschel Island book, so I could hardly say no. She asked me if I would be willing to produce some reflections on the whole conference.

As you can imagine, this is a daunting task and you have to be careful, because when you do something like this, you don't want to leave anyone out. There are some people's comments that I will refer to in this presentation; those people should know that I value what they said. There are other people who have said things which I value very much, but I may not have been able to remember exactly who you were or when you said them. So if I do repeat your comment and I don't say who you are, please forgive me. Imitation is the sincerest form of flattery.

I'm going to tell you what I have learned in the last three days. When Lindsay introduced the conference, he talked about the stage we are at since the signing of the IFA more than 25 years ago. During that period, there has been implementation of many of the elements of the IFA. But it was negotiated in a context of incredible anticipated resource development. We haven't seen incredible resource development in the western Arctic in the last 28 years, but there is always a possibility that that will happen: not just the expectation, but also the realization of significant resource development. It's quiet at the moment, but two weeks ago when I was in Inuvik, I met somebody from ConocoPhillips who told me they were preparing 10 years out for the possibility of drilling offshore. A 10-year timeframe is what industry is using for the possibility of drilling a well in the Amalagak field. That may seem to be a long way off, and it may seem unlikely, but just imagine if, sometime in the next six months, Israel bombs Iran and the price of oil becomes $150 a barrel. People will be looking very clearly at offshore resources.

So what happens in the western Arctic is not something that is isolated from the rest of the world; it's not something over which anybody in this room has any control. Minister Currie Dixon said that the world is watching. What he meant was that the world is looking, not specifically at the North Slope, but at the Arctic in general. Really, the reason for looking at the Arctic is climate change, there's absolutely no doubt about that. All of our understanding about how climate change is working in the Arctic seems to have been conservative. All of the predictions that were regarded 15 years ago as being extremist seem to be taking place. We have less sea ice this year in the Arctic than ever before. The amount of sea ice we have this year in the Arctic was predicted to occur in 2040. It seems to be about 25 years too soon.

In that context, I found the message that Danny gave us on the first day particularly moving. Danny opened with Roland Saaruaq and closed with Harry and Minnie Inukilak. So Danny's message was about continuity, about something that's happening over a long period of time, but in which we are the people, at the moment, who are present. And, after we have gone, there will be others. They will have the legacy that we leave behind, just as we are living in the legacy of people that have gone before us. In that context, I found that Gregor and Nigel spoke about serious problems that are encountered in the implementation of some of these agreements.

While I was thinking about the context of this conference, I came across this prayer of Sir Francis Drake. Now, some of you know that Sir Francis Drake was a pirate; others of you know that he was a great sailor and soldier, a servant of Queen Elizabeth I. Before he went into the harbour at Cadiz and blew up 37 Spanish galleons and other ships, and destroyed the Spanish Armada for one year, giving England time to prepare for the invasion that was about to occur the next year, he prayed: "Lord God, when you call your servants to endeavour any great matter, grant us also to know that it is not the beginning but the continuing of the same until it be thoroughly finished which yields the true glory." In other words, it's not all the excitement at the beginning, all the excitement of signing things, but it's the hard work that occurs later on that is essential to a final land claim agreement or a co-management board actually being able to fulfill its task. It's not the excitement at the beginning, but it's overcoming the difficulties that occur later on.

As I was thinking about the difficulties that people have to overcome, I found this matter of the honour of the Crown, that the lawyers were talking about, very interesting. It's not the honour of the government, it's not the honour of the politicians, it's not the honour of the state, it's the honour of what we think of as our ideal, the Crown. The Crown is the symbol of everything that we hope our country will be. So there's the sense that, in order for that symbol to have integrity, it has to be honoured.

I heard three themes which I had heard earlier this year in a completely different context. About 10 years ago, I brought my mom and dad to the western Arctic. We went for a week to Richard's island, where they appreciated some of the wonderful things about the outer Mackenzie Delta. They came back to Canada this summer in June and I took them to Moose Factory on James Bay. I had never been there before and was astounded to see the similarities between the issues the Moose Cree and the MoCreebec First Nation are facing and those that are on the table in the western Arctic.

The first issue is how to deal with the changing environment. Moose Factory is in the middle of a big river just coming into Hudson's Bay; people travel on James Bay when there's sea ice; but they can't travel as much at the moment because there isn't as much sea ice. The river flow has changed, so they are cut off from the mainland for longer than they used to be. Climate change is very clearly a part of what they are dealing with. Second, resource development is on their agenda because they're close to what is known as the Ring of Fire, the properties in northern Ontario where there is significant industrial interest, and also close to where DeBeers is building its second Canadian diamond mine. So they are figuring out how to integrate their activities and their people into those developments. And thirdly, in that region, even though it's in a province, there is the question of governance. The question of governance has dominated the discussion here in a way that it didn't at the last North Slope Conference. Primarily, I think, because we are not looking over our shoulders with concern, but we know that the federal government has imposed a financial squeeze. The federal government has decided that it wants to raise fewer taxes and do things by charging people less tax. That means they have less flexibility, so the programs that they offer are being squeezed. It would be naïve to think the programs of the federal government in the western Arctic will not be impacted by what's happening.

As the future rolls out, and Canada's population becomes older, it will only become more difficult because the demands for people increase as they age. There is a person who died in Whitehorse about three months ago. He used to run the '98. I'm a proud member of the Breakfast Club; I have actually had breakfast in the '98. But when Barney ran the '98, he was one of the two people in the Yukon who collected both Old Age Security and the Baby Bonus. It's most unusual that you should be able to collect those two things. Lots of people doing that is going to affect the flexibility to call upon the resources that self-governance requires.

There are, in terms of climate change, three primary issues for the North Slope. The first issue, which Environment Canada presented to us in some detail, was the issue of coastal erosion. Coastal erosion proceeds at a rate of about five to ten metres a year, depending on where you are. As far as I can make out, the most important element of coastal erosion is the loss of cultural sites close to the coast. Danny pointed out that, as he travels along the coast, he visits places where there are old buildings, or there are places where there are graves. These are close to the coast. One of the questions that I think needs to be considered in the future is, as coastal erosion accelerates and as places that were a long way from the coast become vulnerable to erosion, what do we do? What do we ask the agencies that are mandated to conserve cultural resources to do?

The second element, which is somewhat closer to my heart, is the melting of permafrost. Now, Wendy Nixon showed me some satellite interpretation that Jim Hawkins had done where he examined aerial photographs of the North Slope in the Stokes Point area that were taken in 1985, compared to satellite images that were taken just recently. Many, many ice wedges are melting out now, so there are far more little pools on the tundra than ever before. Eight years ago, the Alaskans told us that this was happening there. I hadn't seen it happening in the Mackenzie Delta area or on the Dempster Highway or the North Slope at that time (2008). In the summer of 2010, I began to see this at Gary Island, at Ilisagvik, near Dennis Lagoon, and now near Seal Lake in the outer Mackenzie Delta. So regionally, there is a significant change in habitat through the melting of near-surface ground ice. I think that will have a significant impact on the ability of large areas of the coastal plain to sustain summer herds.

The third element to consider is what climate change

means in the winter. In the last few years we have many more periods where it starts to rain or it thaws in January, and the snow becomes really hard. When the snow becomes really hard, it's difficult for the caribou to get the lichens under the snow. So access to food for wildlife is impeded by what we've observed happening over the last three or four years. The rangers at Herschel Island talked about finding dead animals, not because something else had caught them, but because they think they had starved.

In terms of the future, there are three things we've heard about. Peter Ewins and John Streicker talked about the meaning of the lack of sea ice. When we have a much greater movement of sea ice, if we have drilling happening in Russia, will we have material from Russia ending up in the Beaufort Sea? The dynamics of sea ice are something that will change the world as we know it, because ships will travel through the Arctic Ocean. They don't travel through the Arctic Ocean now (unless they are very strange ships). But there will be ships travelling through the Arctic Ocean; that will be something we haven't seen before. If the Arctic Ocean has no sea ice, then where the polar bears go will change. You remember that Frank was saying that the bears will go where there is ice. If there's hardly any ice, where will the bears go? That's a key question regarding the future of the North Slope and I think it may change the whole story.

The second is the question about offshore drilling. It lurks because 10 years is almost too far for us to think about, but people in big organizations have started planning. That's something I think WMAC (North Slope) should probably think about.

The third thing is the question about access. Will climate change mean that it is difficult to travel on the North Slope? If there is lots of overflow on the rivers, how do you cross? If the ice is always thin on the rivers, how do you cross? If there's no snow until January, do you travel? These are questions all driven by climate change, which we must think about for the future.

We talked quite a bit about research and how research should be conducted in the Inuvialuit Settlement Region. You all know that there was a big program called the International Polar Year. The federal government (it was called, in those days, DIAND) organized the program. They were absolutely insistent that this program should contain a significant amount of aboriginal participation. There was great emphasis on working together. Now the IPY program has finished and there is nothing to replace it. In fact, not only has the IPY program just finished but, at the same time, many of the federal government's research activities were terminated. The IPY raised expectations and, for two years, there was a significant amount of activity. But we've now reached the wall. And, in response, what has happened? In the western Arctic last summer, the Germans came to town; the Aurora Research Institute hosted 500 person-days of German scientists. There were about 200 person-days of scientists at Herschel Island. German scientists: 700 person-days of German scientists in the western Arctic last summer. By contrast, the biggest Canadian program in the Arctic last summer had four people there for two months (about 240 person-days).

So the Germans have come in force, the Luftwaffe. In fact it was the Luftwaffe, because they brought their own airplane. And next year, the two biggest programs will be the German and the British programs; the British people want to study carbon flux, or how carbon is leaving the permafrost and going into the atmosphere. So the Europeans have come in, and the Canadians have taken off their hats and said, come on. In these days where sovereignty is one of the federal issues, we need to think about whether, even though we are very good friends with the Germans and with the people from the United Kingdom, in fact, we want them to do our work for us. The reason why we've ducked down, as Marsha said, is because costs are going up and up and it's difficult to do the work. But remember, our taxes are going down. The costs are going up, our taxes are going down; working in the public interest is harder.

Another theme that we discussed in some detail was the development and sustenance of long-term relationships. If we don't trust each other, we don't want to have a long-term relationship; it will be short and that will be that. I was quite interested in what we heard from the legal panel about how the law is being used to achieve reconciliation. Some of you know that I have been mixed up in a

legal case. My experience was that the law did not achieve any reconciliation at all. It certainly achieved settlement, but it didn't achieve reconciliation. And so reconciliation requires a legal framework, but also a sense of trust that people are trying to work for the common good. A long-term relationship won't work if people are going in different directions. This morning Barry mentioned the importance of aligning priorities; we all have to be pulling in the same direction and work on the same things. He said that the most important element of his analysis was this business of identifying the policy priorities in environmental management. Figure that out and then go for it.

But in that same panel, Bruce commented that there's no point in trying to do this from the top down; it has to come from the bottom up; grassroots is the only way that democracy works. We are paying the price for neglecting the sustenance of long-term relationships. Dan Lindsey told us about the problems around the lack of institutional memory; there are people who know lots, they retire or move away. One of the elements that is absolutely critical in the future is to have a system whereby young people are both trained and inspired to grow within an organization. What that means is, if a young person shows initiative, that person should be sustained. That person should not be slapped down, but should be nurtured and cultivated. That's sometimes very difficult to do in a volatile political context.

The final point about the long-term relationship was the term silos. We tend to be very well specialized in particular things, but we don't develop a sufficient appreciation of what our neighbour is doing. We don't have to become an expert in what our neighbour is doing, but we should at least value that and understand some of the problems that person is facing. I regret the way the research community and the research business in western society is developing. It is one of greater and greater specialization and less and less integration. This is a significant problem. Agencies like WMAC(NS) are in a remarkable position to be able to address this because they aren't particularly interested in specialized knowledge in isolation. They want to see the big picture.

I heard from someone, I think it was Walter who said that one of the greatest challenges he felt he faced was the loss of language. I don't know what it would be like to lose my ability to speak English. I lived for eight years in India and I know that, at one point, when I was about six years old, I was fluent in Tamil. We came back to England for two years and I lost it. I can remember distinctly when I was eight going back to India and having a hard time communicating. The way I tried to make my position clear to people was to stop talking like this, and to start shouting, because they didn't know what I was saying. Slowly, some of my Tamil came back to me and I was able to talk to people. But to have your language lost is a terrible thing because it's not just part of your culture, it's part of who you are. The way we speak affects the way we think. The word in Greek for word is 'logos.' It means knowledge or a word. The word in Hebrew for word is 'dava' and that means word, but it also means deeds. So when they say the word word, they actually mean doing something. When the Greeks say the word word, they mean thinking about something: completely different. That's the same with words in Uummarmiutun or in Siglitun which, when they're translated into English, don't capture the meaning. That loss of meaning is very, very difficult to replace. That's one of the areas I think may be very difficult to do anything about. It is something we should mourn if it is, indeed, at some point, lost.

The second key change I think we will encounter is finance. I think the way that money will be available will change. I don't know how, but it may create significant challenges in the short term, maybe in the long term, for co-management. Key priorities have to be really clearly set, so if using a consensus model is a priority, then that will be the way we can maintain things, even when other things are difficult.

But the third item, which I think is significant, is that we shouldn't think of the North Slope as a place for recreation. We should think of it as a place to live. One of the great difficulties I see in the future is when people can't travel because they are busy at home, working. They can't travel, and so going out is going out for recreation, not going out for life. I was thrilled to be at Shingle Point this summer and to meet people who were able, for six weeks, to live at Shingle Point, not just being there for recreation. There are a few small enemies that we have to guard against and watch out for. The most important one is this emphasis on efficiency. By emphasis on efficiency,

I don't mean doing the same with less; what I mean is doing things too quickly. Doing the same with less usually means we have to speed everything up; if we speed everything up, we have less time to think. As people, we haven't evolved very much in the last hundred years. The people one hundred years ago were just as smart as we are today. Many of them, in fact, when I read their work, were smarter than we are. But they were able to do things more slowly. They had time to think about things and to enable decision making to take place in due course. Now we often have to do things fast. I think speed increases risk. That's really what I mean about the acceleration of life.

I also have very mixed feelings about the Internet. I find it great for information that we want, but we are bombarded with stuff we don't want. Just about everybody here receives e-mail each day. I expect that just about everybody here deletes about 60% of their e-mail without reading it. It's a waste of our time. But the most significant thing the Internet does, which I think is really insidious, is that allows you, if you're a nut, to create a community of nuts. You all know about groups of people who talk about things that are destabilizing or difficult or just particularly harmful. For example, if you have a great interest in model railways, you can have a great community of friends on the Internet. But if you are interested in promoting the hate of Muslims, you can find a community on the Internet. So what the Internet does is create things which are very, very difficult to manage, like enhancing disrespectful discourse. When we have a process for making decisions which involve a discussion between panels and members of the public, we can also, at the same time, believe that the way to get our view across is to stamp our feet and jump up and down and scream. But we establish a process. In some cases, it's what elders have established for us and we should respect that process. We see disrespectful discourse all the time in the political world. It is a great enemy because it means that we shout at each other and we use slogans; we don't talk about ideas.

The theme of the conference was innovation. When we think about innovation, there is really one easy way that we can innovate—we can use new stuff. We have technology: things that we can use to do things more quickly, or sense new things, or measure things that we have not been able to measure before. We may be able to communicate much more rapidly. Technology is very attractive. But what we have to develop is, after 25 to 28 years of the IFA, a process of daily working which is going to last for the long run; the implementation period is over. Now it's the hard work, the mature implementation. That's actually going to require innovation because we won't have the original enthusiasm; it's going to be maintaining things that we are doing.

The third element of innovation is respect—respect for where we are now because of what people before have left for us. I think that is something that we will have to keep telling people again and again: that we are here today not because of what we've done, but because of what people did in the 1980s. I was particularly moved at the end of Danny's talk, where he showed us a picture of Harry and Minnie Inukilak. Now, Minnie's name in Inuvialuktun was Natmak, and last year, Gerry Kisoun, who knows where she was buried, went to Herschel Island and put up a new grave marker. And this year, as I was walking around there, I saw it. I hadn't seen it before. I saw her name, and I asked Dougie if he had seen this. He said yes, that's my great-grandmother. I realized I was standing next to the flesh and blood of the person on the hill and I wondered, at that time, what she would think about what we were doing today. She would look down from the hill, and she would see Pauline Cove, lots of people buzzing around in boats. She would see people wearing yellow and red outfits. She might be able to hear telephone communication from Herschel Island to Germany. She would see ice in the Cove gone three or four weeks before when she was there. She would know that the ice would not come back to the Cove until maybe late October or early November. I thought her world was different from our world. But then I also wondered whether she is resting in peace. It's interesting to think that we ask our elders to rest in peace. Now, some of us think that the elders are there in a different way than they were before. In a sense, not just their memory but part of them is really there. I've heard people say that when the owl flies by, that represents one of their ancestors.

So, going back to Queen Elizabeth and Sir Francis Drake and to Moose Factory. In Moose Factory I

stayed with a man from the MoCreebec First Nation called Victor Linklater. He was a remarkable fellow because he is from the MoCreebec First Nation, but in the basement of his bed-and-breakfast were the collected works of the poet John Donne. John Donne lived from 1572 to 1631 and, at the end of his life, John Donne was preparing to go away. Some of his words, which I will read to you in a minute, are words that may apply in summer to the North Slope. In summer, John Donne was preparing to go where Nunmuk is. He said: "Where I go, there shall be no darkness nor dazzling but one equal light; no noise nor silence but one equal music; no fears nor hopes but one equal possession; no ends nor beginnings but one equal eternity." When I sit on the North Slope in the summer, these words fit the land. Danny C. said: The land has been good to me, let us be good to the land. Thank you.

Closing Comments

Bob Bell
That was a very insightful and thoughtful wrap-up. When I got here on Monday afternoon, I saw a sea of round tables in a big room and thought to myself, this isn't going to work. In my day, the meeting rooms were large, but there would be a whole bunch of break-out rooms, and there would be flip charts and raconteurs. The downside of that is that you lose a lot of time and everything that gets said gets filtered by someone else as it comes back into the plenary session. In fact, it's not particularly efficient. I think this has been a wonderful arrangement where everybody heard what everybody said. Academics, community folks, government folks, co-management folks—everybody was talking to each other. I think the folks who organized it made the right choices.

The era of awards hasn't quite ended. I'd like to ask Vic Gillman, Chair of the FJMC, to come forward, please. The FJMC idea of an awards hierarchy was the brainchild of Burton Ayles and it has served us very well. And that's what it's all about.

Vic Gillman
Thank you, Bob. I certainly appreciate you mentioning Burton as the carrier of our FJMC awards. We have struggled with having a venue such as this to honour the people who make contributions to our programs. So I really do envy you in that. The FJMC members met just recently and have decided to present Lindsay with a little award. Now, I don't know how many of you are aware of Lindsay's likes and dislikes, but he has a certain appetite for good Scotch. So the Committee met last night and bought Lindsay a bottle of Scotch. However, staying with the theme of the conference, we gave it a validity test. So Lindsay, if you would come forward and accept the remainder of the bottle? The FJMC has also decided that Lindsay and his team have done a remarkable job of finding people who could stimulate the conversation over the last two days. Most of us appreciate how much work goes into the making of a conference, both from the direction and from the implementation. So I am pleased to advise Lindsay that he is the recipient of an FJMC Spontaneous Award. James Malone will make the arrangements, and I hope you put it to good use.

I have one other award for my elder to the right. This is a safety razor and from now on Bob is no longer entitled to use one. There are a lot of admirers out here and people who are concerned with your health, Bob, so we got together and are giving you an electric razor.

Bob Bell
I'd like to thank all the folks that are associated with putting this conference together. And thanks to the panellists and the speakers; those who presented posters; WMAC (North Slope); the Government of Yukon; the Inuvialuit Game Council; Unitech (and Marshall); the Westmark Hotel; the Kwanlin Dün Cultural Centre; Leaf Solutions; Richard Gordon; our MC; and Meagan Perry for the podcasting.

And also, for those who have travelled a long way to attend. All the delegates, have a safe journey home and thanks for the interest you have shown. I would like to thank the Yukon government, the IGC, and WMAC for the chance to be here, to see so many old friends, and just generally enjoy the event. Thank you very much.

Appendix 1
2012 Yukon North Slope Conference Agenda

Monday, October 1

3:00 pm to 5:00 pm **Registration**

Tuesday, October 2

8:00 am **Registration**

9:00 am **Welcome and Opening**
Currie Dixon, Minister of Environment, Yukon Government (YG)
Lindsay Staples, Chair, Wildlife Management Advisory Council (North Slope)
Frank Pokiak, Chair, Inuvialuit Game Council
Bob Bell, 2012 Yukon North Slope Conference Chair

Break

10:00 am

Yukon North Slope: The Land of the Midnight Sun

10:30 am Danny C. Gordon, Aklavik harvester, AHTC member, WMAC(NS) member

11:00 am **Panel 1 - Applied Co-Management: Challenges and Innovation**
John Cheechoo, Director, Environment and Wildlife, Inuit Tapiriit Kanatami –Panel Moderator
Tom Nesbit, Chair, Tuktut Nogait National Park Management Board; lawyer and facilitator
Larry Carpenter, Chair, Wildlife Management Advisory Council (NWT)
Gregor Gilbert, Resource Management Coordinator, Makivik Corporation
Aaron Dale, Torngat Wildlife Plants and Fisheries Secretariat
Taqulik Hepa, Director of Wildlife Management, North Slope Borough
Dan Lindsay, Director of Wildlife, Environment Yukon, YG
Marsha Branigan, Manager, Wildlife Management, Environment and Natural Resources,GNWT
Joe Tetlichi, Chair, Porcupine Caribou Management Board

12:00 pm **Lunch (provided)**

1:00 pm **Panel 1 - Applied Co-Management**

2:30 pm **Break**

Panel 1 - Applied Co-Management

4:30 pm **Coastal Mapping presentations** **Poster sessions 4:30-5:30**
Jason Duffe (4:30-5:00)

7:00 **Meet and Greet** (wine and cheese provided)

8:00 **Film screening: *People of a Feather***

Wednesday, October 3

8:30 am **Welcome and Announcements**

9:00 am **Panel 2 - The Practice of Implementation: A Legal Perspective**
Lindsay Staples, Chair, Wildlife Management Advisory Council (North Slope)
Nigel Bankes, Professor, Faculty of Law, University of Calgary
John Donihee, Legal Counsel to Inuvialuit Joint Secretariat
Michael d'Eça, Legal Counsel to Nunavut Wildlife Management Board

10:00 am **Break**

Panel 2 - The Practice of Implementation cont'd

12:00 pm **Lunch (on own)**

1:30 pm **Panel 3 - Integrating Science, Traditional Knowledge and Communities in Research and Resource Management**
Evelyn Storr, Wildlife Management Advisory Council (NWT & NS) - Panel Moderator
Peter Armitage, Consulting Anthropologist, Wolverine and Assoc.
Lois Harwood, Stock Assessment Biologist, Fisheries and Oceans Canada
Frank Pokiak, Chair, Inuvialuit Game Council
Dr. Chris Burn, Professor, Department of Geography, Carleton University
Doug Esagok, Harvester and Community Researcher
John Cheechoo, Director, Environment and Wildlife, Inuit Tapiriit Kanatami

3:00 **Break**

Panel 3 - Integrating Science, Traditional Knowledge and Communities cont'd

4:30 **Poster sessions 4:30-5:30**

5:30 **Banquet**
Kwanlin Dun Cultural Centre - Dinner, awards, entertainment

Thursday, October 3

8:30 am **Registration**

9:00 am **Welcome and Announcements**

9:15 am **Panel 4 - Managing the Extremes: Innovation in Area Requiring Special Management**
Kirstie Simpson, Senior Advisor, Dept of Energy, Mines and Resources Yukon - Panel Moderator
Lindsay Staples, Chair, Wildlife Management Advisory Council (North Slope)
Dr. Mark Feming, Assistant Professor, Department of Psychology, St. Mary's University
Vic Gillman, Chair, Fisheries Joint Management Committee (Marine Protected Areas)
Dr. Peter Ewins, Senior Officer, Species Conservation, World Wildlife Fund
Barry Worbets, Senior Fellow, Canada West Foundation
Bruce Downie, Consultant, Kesho Trust

10:00 am **Break**

Panel 4 - Managing the Extremes cont'd

12:00 pm **Lunch (on own)**

1:30 pm **Final Keynote**
Dr. Chris Burn, Professor, Department of Geography, Carleton University

Wrap up
Bob Bell, 2012 Yukon North Slope Conference Chair

3:00 pm **Adjournment**

Appendix 2
Registration Package

Welcome Letter

Welcome From the Conference Chair

Dear Participant,

On behalf of the Conference Organizing Committee, it gives me great pleasure to welcome you to the 2012 Yukon North Slope Conference. This gathering is an important opportunity to discuss common issues, share ideas and present information relating to this year's conference theme: "Pathways to Arctic Innovation" with a focus on Arctic Wildlife, Conservation and Co-management, Lessons Learned and Future Challenges.

The conference brings together individuals and organizations who share a common interest in, and appreciation for, the unique culture and landscape of the Yukon North Slope. Our experts bring their understanding of traditional, local and scientific knowledge to create a holistic picture of the changes facing the environment of the North Slope, and how wildlife, people and communities are responding to their changing world. The insights shared by our speakers, panel participants, and poster presenters will offer all of us a comprehensive forum to review and reflect on lessons learned in environmental monitoring and reporting.

It is my sincere hope that each one of us will bring to this conference a sense of curiosity and interest, and take from it a greater understanding of the challenges facing Yukon's North Slope. With this, I believe each of us can play a part in applying our knowledge to preserving the integrity of this important landscape and contributing to effective wildlife management in the region.

Enjoy the discussions and the good company.

Bob Bell
Chair
2012 Yukon North Slope Conference

Panel Descriptions

Panel 1
Applied Co-Management: Challenges and Innovation

"Co-management" is an institutional relationship between Aboriginal people and federal, provincial, territorial and state governments, which is rooted in modern day land claim agreements. In the arctic, these are the Alaska Native Claims Settlement Act, the James Bay and Northern Quebec Agreement, the Inuvialuit Final Agreement, the Nunavut Land Claim Agreement, the Labrador Inuit Land Claims Agreement and the Nunavik Inuit Land Claim Agreement. From Alaska to Labrador, and elsewhere, these and other agreements have established a variety of shared and collaborative arrangements for the management of wildlife (including fish and marine mammals), habitat, parks and other areas of special natural and cultural significance, as well as the environmental review of proposed developments. This session will explore the challenges, the lessons learned and the innovations required to make co-management work to the satisfaction of Aboriginal, federal, territorial, provincial and state authorities.

Panel 2
The Practice of Implementation – A Legal Perspective

The implementation of land claim agreements in arctic Canada fundamentally altered the exercise of harvesting rights, the management of wildlife and the environment, and the review of development proposals. Over 35 years, a great deal has been learned, challenged and resolved about the standing of these agreements, including the duty of the Crown to consult with Aboriginal authorities and co-management organizations on a wide range of matters. These include the application of conservation and precautionary principles as they affect harvesting restrictions, and the treatment of recommendations from co-management and other advisory and decision-making bodies. These unresolved matters continue to complicate the implementation of co-management, and the exercise of harvesting rights. This session will review areas of legal uncertainty, and debate and explore new approaches that could contribute to resolution.

Panel 3
Integrating Science, Traditional Knowledge and Communities in Research and Resource Management

The evolving relationship between science-based and traditional knowledge in research and management, and the participation of communities in research programs have been heavily influenced by co-management arrangements established under the land claims agreements. The agreements generally require full consideration of the contributions of local and traditional knowledge in wildlife and environmental management. Notwithstanding, the relationship has been challenging and at times, uneasy. In addition, traditional knowledge studies have and will come under increasing scrutiny, with respect to the methodology and rigor. This session will explore best practices in the treatment and application of traditional knowledge, and the involvement of communities in research. It will address the institutional prejudices that continue to undercut the use of traditional knowledge in decision making and will explore ways to overcome these and other obstacles.

Panel 4
Managing the Extremes: Innovation in Areas Requiring Special Management

This session will explore challenges and innovations in managing areas with both high conservation and cultural values, and (proven and unproven) resource development potential. The former includes wildlife, habitat, harvesting and wilderness recreation. The latter includes potential mining or oil and gas exploration and development. These areas may have designated or legislated protection. Often they are areas where there is an intention to allow "balanced development". What this means and what criteria should be used to ensure the balance and determine regulations or best practices, are often not articulated. At the heart of the management challenge is managing real and perceived environmental risk.

Panelists / Speakers

Peter Armitage
Originally from B.C., Peter has worked for three decades with Aboriginal people in Labrador, Northern Quebec, and Ontario as a researcher and consultant on land claim negotiations, historic and cultural resources, environmental impact assessment, local environmental knowledge, and forestry management plans. Economic relations, religious beliefs, ethnicity, land use and occupancy, and environmental knowledge have been important interests. He curated two Innu-related exhibits for the Provincial Museum of Newfoundland and Labrador in addition to the virtual museum, Tipatshimuna, and a Labrador Innu place names website called Pepamuteiati Nitassinat. His current research interests include land use and occupancy, place names, sense of place, and environmental knowledge. In December 2011, he was retained by the WMAC to complete an Inuvialuit Polar Bear Traditional Knowledge study.
Over the years, his work in the north gave him access to some of eastern Canada's most beautiful scenery and fertile ground to nourish his life-long love of rugged, sparsely populated places. In the fall of 1982, he spent three months in the bush hunting and trapping with an Innu family from the Quebec North Shore. Since then, he has hunted caribou west of Davis Inlet, and snowmobiled and skied in the Mealy Mountains and interior barrens of Labrador.

Nigel Bankes
Nigel Bankes is a Professor of Law at the University of Calgary (where he has taught since 1984) and an adjunct professor at the University of Tromsø, Norway. He did graduate work at UBC in the late 1970s where his advisor and mentor, the late Andy Thompson, kindled what has become a long-standing interest in northern land claims. Nigel has worked for Inuit organizations, northern First Nations, northern NGOs and the three territorial governments on a variety of topics including oil and gas, fisheries, protected areas, and socio-economic benefits agreements. He has published extensively in the areas of oil and gas law, water law and the rights of indigenous people and is an active contributor to http://ablawg.ca/

Bob Bell
Bob Bell has had considerable involvement with the Yukon North Slope and played a key role in the implementation of the Inuvialuit Final Agreement.
Bob graduated from the University of Manitoba with his MSc. in Limnology, and worked as a teacher and principal in rural Manitoba, Aklavik, and Hay River before joining the NWT Wildlife Service. Bob worked to establish a conservation education section within that organization. He went on to work as the Director of Wildlife Management and Chief of Technical Services heading the Department's scientific and technical wing. Bob represented the NWT (working with and for the late Jimmy Bourque) during the development of the Porcupine Caribou Management Agreement. He then went into private practice in northern Saskatchewan.
In 1988 Bob was asked jointly by the Inuvialuit and DFO to chair the Fisheries Joint Management Committee. He knew how important country foods were to the people of the Inuvialuit Settlement Region, and how they had been distanced from the management of those resources. Bob accepted and occupied the position until March 2009.
The North Slope Wildlife Management Advisory Council and the Inuvialuit Game Council are pleased to welcome Bob Bell as the Chair for the 2012 Yukon North Slope Conference. We are thrilled to have him.

Marsha Branigan
Marsha Branigan has worked full time for the Government of the Northwest Territories in the Inuvik Region since 1995 and currently is the Manager for the Wildlife Division of ENR in Inuvik. Marsha has served as a member on the EISC and currently serves as the ENR member on the WMAC (NWT) and the Porcupine Caribou Management Board. With many overlapping wildlife species, the work of ENR is closely linked with counter parts on the North Slope. Recent work includes porcupine caribou, grizzly bears, polar bears, Dall's sheep, muskox and moose.

Chris Burn
Chris Burn is Professor of Geography at Carleton University in Ottawa, and NSERC Northern Research Chair. He has been studying permafrost in the Yukon and western Arctic for 30 years and has published over 120 articles about this research. He has close ties to the community of Mayo and over the last 10 years he has developed a great interest in Herschel Island. He organized the recent publication of the book about Qikiqtaryuk, which was written by a team of 43 authors, 24 of whom live in the North. The book is published by WMAC (NS). Chris has been very fortunate to have worked with several Inuvialuit, especially Douglas Esagok. Douggie and Chris have studied permafrost together for 15 years, travelling almost every year since 2002 to Herschel, and to places in the Mackenzie delta area and Paulatuk. Most of Chris's students work in the North after they have finished their projects; one of these people, Steve Kokelj, will be known to many at the conference.

Recently, Chris has been working for the EIRB in its review of the proposed Inuvik - Tuk road. Chris met his wife Joan in Mayo, 29 years ago. Together they brought their son Andrew to the Yukon for many summers. Andrew came with Chris and Douggie to Herschel about five times.

Larry Carpenter

Larry Carpenter was raised on Banks Island in what is now part of the Inuvialuit Settlement Region (ISR). Larry is a hunter and guide who enjoys being out on the land.

For more than a decade, Larry has served as the Chair of the Wildlife Management Advisory Council (NWT), a co-management board, established under the Inuvialuit Final Agreement, responsible for the conservation of wildlife and wildlife habitat in the Inuvialuit Settlement Region. During his tenure on the Inuvialuit Game Council, Larry has served in numerous capacities on behalf of the Inuvialuit as well as becoming the chair of the IGC, a position he held until his resignation in late 1997.

As chair of the IGC, and more recently the WMAC (NWT), his portfolios included the official signing ceremony establishing Tuktut Nogait National Park, Convention on International Trade of Endangered Species (CITES), North Atlantic Marine Mammal Commission (NAMMCO), and the International Union for Conservation of Nature (IUCN). Larry is also an active member on the SARA Conference of Management Authorities (CMA), as well as the Advisory Committee for Cooperation on Wildlife Management (ACCWM).

Larry has represented the Inuvialuit regionally, nationally and internationally at numerous gatherings, and has presented papers on wildlife management in Canada and abroad.

John Cheechoo

John is the Director for Environment and Wildlife at Inuit Tapiriit Kanatami. He has been working with ITK for the past 14 years. He started at ITK as the Director of Communications, and then as a policy advisor for socio-economic development and now has been working on wildlife and environment policy for the past 9 years, both nationally and internationally. John has worked on a number of issues and federal legislative areas that deal with species at risk, oceans, fisheries, climate change, including the establishment of the Aboriginal Traditional Knowledge Sub-Committee for the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the National Aboriginal Council on Species at Risk. John is involved in the Inuit litigation action against the European Union regarding its Seal Import Ban regulation. He continues to work in a facilitative role between ITK and the Inuit regional organizations, as well as with the federal government on polar bear conservation issues, and to promote the greater inclusion and recognition of Traditional Knowledge nationally and internationally with respect to wildlife research, management and policy.

Aaron Dale

Aaron Dale lives in Happy Valley – Goose Bay, Newfoundland and Labrador, with his wife and daughter. He completed a B. Sc. in Geography at Memorial University in 2004, and a Master's in Geography and Environmental Studies at Wilfrid Laurier University in 2009. This formal education blended biological and social dimensions of resource and environmental management, and his Master's research focused specifically on traditional knowledge and wildlife co-management in the Canadian (sub) Arctic. Since 2010 Aaron has worked with the Torngat Wildlife, Plants and Fisheries Secretariat, which provides administrative and decision support to the Torngat Wildlife and Plants Co-Management Board, and the Torngat Joint Fisheries Board – both established by the Labrador Inuit Land Claims Agreement in 2005. With the Secretariat, Aaron is continuing to explore the human-environment relationship.

Michael d'Eça

Prior to becoming a lawyer, Michael d'Eça followed an eclectic career path that included stints as a landscaper, beekeeper, carpenter and sculptor. Working as a sole practitioner since his call to the bar in 1995, Michael has concentrated his practice in the areas of Aboriginal and land claims law, primarily focused on administrative and environmental legal issues. He has a particular interest in the legal recognition and practical application of Aboriginal Traditional Knowledge in wildlife management. In addition to acting as Legal Counsel and policy advisor to the Nunavut Wildlife Management Board - an institution of public government established under the Nunavut Land Claims Agreement - Michael regularly provides legal and policy advice to a number of Canadian Aboriginal organizations. He is a member of the Law Societies of Nunavut, the Northwest Territories and Ontario.

Currie Dixon

In 2011, Currie Dixon was elected to the Yukon Legislative Assembly and was sworn into Cabinet as the Minister of Environment and Minister of Economic Development. At 26 years old he was the youngest cabinet minister in Yukon history and amongst the youngest in Canadian history. Currie was born and raised in Whitehorse and graduated from Saint Francis Xavier University in Antigonish, Nova Scotia with a BA (Honours) in Political Science and History. In the spring of 2011, he received his MA in Political Science from the University of Northern British Columbia.

His studies there focused on northern and First Nations governments. Currie's Masters project examined the relationship between Yukon First Nation governments and the Yukon Government in the field of education.

John Donihee

John Donihee is a partner and leading member of the northern practice group of McLennan Ross LLP, a law firm with offices in Yellowknife, Edmonton and Calgary. His practice is focussed on northern resource management, aboriginal and regulatory issues. John has over 30 years of northern environmental management and legal experience.

John is a member of the law societies of Alberta, Northwest Territories and Nunavut. He has worked on resource management and land claims implementation issues for governments and aboriginal organizations in the NWT, Nunavut and Yukon. He is counsel to tribunals responsible for environmental assessment and land and water regulation in the Mackenzie Valley, and has been counsel to the Joint Secretariat and the Inuvialuit Game Counsel for over 10 years. John is a previous Chair of the North Slope Conference.

John holds graduate degrees in Environmental Studies and Natural Resources Law. He is a frequent speaker at conferences addressing northern resource issues and has appeared at all levels of Canadian Courts, including representing the Tlicho Government in the Little Salmon Carmacks appeal in the Supreme Court of Canada. From 1994 to 1997 John served on the Executive of the National Aboriginal Law Section of the CBA, and he was the founding Chairperson of the Environmental Law section of the NWT Branch of the CBA.

Bruce Downie

Bruce Downie has been working across the Canadian arctic for over 35 years on issues of conservation, protected areas and tourism. He has held positions in Parks Canada, BC Parks and Yukon Parks during that time, but has worked primarily through his consulting company PRP Parks: Research and Planning Inc. Bruce extended his conservation experience internationally beginning in the early 1990's in Africa, working on World Bank (GEF), CIDA, IDRC, IUCN, USAID and OCOD projects focusing on eastern and southern Africa.

It was in this international context that he started the Kesho Trust, an international NGO focused on the relationship between conservation and community development, which works primarily in Tanzania where Bruce lived and worked for 6 years.

Bruce is also a member of IUCN's World Commission on Protected Areas, and a member of two subgroups – the Theme on Indigenous Peoples, Local Communities, Equity & Protected Areas, and the Tourism and Protected Areas Specialist Group.

Bruce continues to work in Africa as well as Canada. He is currently a PhD candidate at the University of Victoria and the holder of a SSHRC Doctoral Scholarship. He is conducting his research on livelihood decision-making in communities adjacent to national parks in Tanzania.

Jason Duffe

Jason Duffe has an M.Sc. in Biology from Carleton University. He has been with Environment Canada since 1997, beginning as a research assistant in the Wildlife Toxicology Division. He began to specialize in remote sensing and GIS and their applicability to wildlife and landscape research in 2000. He is currently the acting manager of Landscape Science Section (Environment Canada). He manages a Geomatics Lab at the National Wildlife Research Centre located at Carleton University in Ottawa, Ontario.

Jason lives outside the town of North Augusta, Ontario where he operates a small organic farm called Villa Augusta. He has a heritage breed of sheep called Cotswolds, and raises chickens and Muscovy ducks. He keeps a few hives of honeybees and sells produce direct to local restaurants.

Douglas Joe Esagok

Douglas Joe Esagok is a well-known young Inuvialuit hunter from Inuvik. He is a member of the Inuvialuit Game Council. He has travelled widely in the western Arctic, both for traditional activities, and as an advisor and assistant to scientists. He has been a hunter for over twenty years, and has travelled on the North Slope and the Beaufort Sea in all seasons. He is an experienced Canadian Ranger, and regularly wins awards as regional champion marksman. He has visited Herschel Island over six times with scientific parties. In September he published a paper in the journal Arctic, in collaboration with Steve Kokelj, one of the scientists with whom he has worked frequently.

Peter Ewins

Pete Ewins was born in Worksop, England, earned an honours degree in Zoology from Edinburgh University and when on to complete his doctorate at Oxford University in 1986, studying the ecology of Black Guillemots in response to oil and gas developments in the North Sea.

He spent 12 years in Shetland, including a post as Assistant Warden for three years at the world famous Fair Isle Bird Observatory. His introduction to applied conservation was provided during six years working for the UK government as Nature Conservancy Council officer for Shetland. He worked from 1990 until 1996 on the Great Lakes wildlife

toxicology programs of the Canadian Wildlife Service, documenting levels and impacts of toxic pollutants on wildlife at the top of aquatic foodwebs.
He joined WWF-Canada, as Director of Canada's Endangered Species Program in 1996. He then directed WWF's Arctic conservation work from 2000-2006, focusing heavily on shifting the industrial development paradigm to one that provides adequately for conservation of intact ecosystems, and ecological and cultural diversity. Pete headed WWF's interventions in the Mackenzie Gas Project EA Joint Review Panel hearings, and now leads WWF's conservation work on Arctic species (e.g. polar bear, arctic whales, caribou and migratory birds). He is the Senior Officer, Species, WWF-Canada.
He has served on many government and non-government committees and boards, and is a public speaker on ecological and conservation biology subjects. Author of over 100 scientific papers or popular articles, and 11 book chapters, he is highly committed to effective communication of both research results and conservation challenges and solutions.

Mark Fleming
Dr. Mark Fleming is an Associate Professor in the Department of Psychology at Saint Mary's University. He received his Bachelor's in Psychology and Master's in Human Factors from Aberdeen University and his PhD in Psychology from The Robert Gordon University in Scotland. Mark is an applied psychologist with nearly 20 years of experience in safety culture assessment in high hazard industries, including offshore oil and gas, healthcare, nuclear power, and construction. He is dedicated to developing practical and valid tools to assist organizations to prevent harm.

Currently, Dr. Fleming's research includes investigating methods for measuring and improving safety culture, safety motivation, safety leadership and patient safety. He advises many Canadian and international organizations (e.g. International Atomic Energy Agency) on safety culture assessment and improvement.

Gregor Gilbert
Gregor was born in Toronto Ontario and completed an Honours Degree in English Literature and Language at the University of Western Ontario. After moving to Montréal in 1994 to work in the music industry, Gregor changed careers and returned to school at McGill University, completing an undergraduate degree in Wildlife Biology and a Masters Degree in Entomology and Ecology, studying the determinants of patterns of colonization of arthropods in birds' nests. Gregor was hired as the Director of Wildlife Management for the Nunavik Marine Region Wildlife Board, and was responsible for establishing the Board's office in Inukjuak, and setting up the early priorities and management objectives of the NMRWB. In 2010, he was hired by Makivik Corporation as the Resource Management Coordinator, and has been involved in issues relating to wildlife management and conservation as they relate to subsistence harvesting rights entrenched in the James Bay and Northern Québec Agreement and the Nunavik Inuit Land Claims Agreement. He is currently involved with issues pertaining to polar bears, caribou, and marine mammals, as well as performing analyses of the environmental impacts of various industrial developments that will affect the rights and interests of Nunavik Inuit.

David Victor Gillman
Vic Gillman is the current Chairman of the Fisheries Joint Management Committee (FJMC), a cooperative management body formed under the terms of the Inuvialuit Final Agreement concerned with fish, fish habitat, and marine mammals management in the Inuvialuit Settlement Area. Prior to the Chair assignment in 2009 Vic served as a Canada member appointment to the FJMC for 3 years and has been instrumental in the FJMC adopting new approaches and upgrading its involvement with issues and organizations of interest affecting the well being of fish and marine mammals stocks in the Beaufort Sea. Vic retired from the federal Department of Fisheries and Oceans after a 34-year career involving Arctic fisheries field biology, fisheries management, habitat management, and integrated management in the Great Lakes. Serving as a program manager and executive with DFO he has been instrumental in establishing and building new program approaches and concluded his career in 2006 as the Regional Director of Science for the Central and Arctic Region. Key North Slope interactions are on marine coastal interests, Dolly Varden char, and forwarding capacity building in northern communities.

Danny Gordon
Danny Gordon is currently a director of the Aklavik Hunters and Trappers Committee. A resident of Aklavik, Danny is an active hunter and trapper and is highly involved in his community. Originally from Barter Island, Alaska, he made the long journey to the Mackenzie Delta by foot and dog team as a young boy. Danny worked for the government in Aklavik for many years, but always made time to spend on the land. The partnership between his people and the Yukon government has made it possible for his people to be an important part of the management of Herschel. He has been part of WMAC for a really long time.

Lois Harwood
Lois obtained her B. Sc. from the University of Victoria (1979) and her M.Sc. from the University of Alberta (1989). She originally moved to Inuvik in 1988 to take the staff position with FJMC, and then moved to the DFO Area Biologist position in Inuvik in 1992. She has continued with DFO, presently in the Science Sector and based in Yellowknife, NT. She has worked with ISR and Gwich'in subsistence harvesters on a variety of fish and marine mammal research and monitoring projects in the Beaufort/ Mackenzie area over the past two decades. Monitoring has included harvest-based studies (seals, beluga, trout, charr), and research has focused on the study of range, distribution and movements of marine mammals through aerial surveys and satellite telemetry. She says that by far the greatest reward of her career has been the privilege of working cooperatively with so many skilled, experienced, knowledgeable, and respectful harvesters. Lois is a recipient of the FJMC Cooperative Management Award, Queens Golden Jubilee Medal, and is a Research Fellow of the Arctic Institute of America.

Taqulik Hepa
Ms. Taqulik Hepa was born and raised in Barrow, Alaska. She grew up living a subsistence-based lifestyle and has great respect for her traditional and cultural way of life. Participating in subsistence hunting activities with her family has taught her many valuable lessons in subsistence survival skills.
Currently, Ms. Hepa serves as the Director for the Department of Wildlife Management for the North Slope Borough. In this capacity, she is in contact with many local people and outside agencies dealing with subsistence related issues.
She is a member to the following boards and commissions; Rural Alaska Community Action Program, Inc. Gates of the Arctic National Park and Preserve Subsistence Resource Commission, Indigenous People's Council of Marine Mammals, Alaska Migratory Bird Co-management Council, Barrow Arctic Science Consortium, and Ukpeagvik Inupiat Corporation. Taqulik cares deeply for the protection of her environment and subsistence resources and wishes to expand her opportunities to participate in the advancement of research programs in the Arctic.

Dan Lindsey
Dan has worked in the Yukon for the majority of his career initially in renewable resource field positions. This was followed by an "immersion" in early land claim negotiations (Gwich'in, Yukon Umbrella Final Agreement/ initial 4 Yukon First Nation Final Agreements). Since those days, he has managed various operational programs ranging from environmental protection and compliance to fish and wildlife management activities. He has had considerable involvement in the initial implementation and ongoing working relationships with the Yukon Fish & Wildlife Management Board, various Renewable Resource Councils and in earlier times, the Porcupine Caribou Management Board. He is currently the Director of Fish and Wildlife Branch, Department of Environment, Government of Yukon.

Tom Nesbit
Tom Nesbitt is the Chair of the Tuktut Nogait National Park Management Board (1998 to present) and Co-Chair of the Saoyú-ʔehdacho Management Board (2007 to present). He is a professional mediator and land use planner as well as a lawyer (private practice). He has worked in the negotiation, facilitation and/or implementation of protected area agreements and/or land use plans in the NWT and Nunavut since1986.

Frank Pokiak
Frank was born in Sachs Harbour and currently resides in Tuktoyaktuk where he has spent most of his life. He is a beneficiary of the Inuvialuit land claim. Since the signing of the Inuvialuit Final Agreement (IFA) in 1984, Frank has made wildlife management a priority in his life. Frank has been involved with his local Hunters and Trappers Committee (HTC), both as a Director and as President since the early 80's. He has also been a member on the Inuvialuit Game Council (IGC) for many years and is currently the Chair. The IGC represents the collective Inuvialuit interest in wildlife and wildlife habitat and is made up of the six HTCs in the Inuvialuit Settlement Region. The IGC advises the Wildlife Management Advisory Councils and the appropriate governments on all issues related to wildlife management and Inuvialuit harvesting. Frank has also been a member at various times on the co-management boards established under the IFA such as the Environmental Impact Screening Committee and the Wildlife Management Advisory Council (NWT) of which he is a current member.
Frank has represented the Inuvialuit and at times all Inuit at many regional, national, and international gatherings on wildlife management issues. Frank currently represents the Inuvialuit in the development of NWT Species at Risk legislation with the GNWT and the three other land claim groups in the NWT. Over the years Frank has worked hard to ensure that aboriginal harvesting rights are protected in new legislation. Some other positions which Frank currently holds include being a member of the Canadian Arctic Shelf Exchange Study (CASES) board, a member of the Inuvialuit-Inupiat Joint Commission for the South Beaufort Polar Bear Population, a member of the national Polar Bear Technical Committee and a member of both the

Working Group and the Senior Management Committee for the Beaufort Sea Integrated Management Planning Initiative (BSIMPI).
Frank is an acknowledged Traditional knowledge holder and is an experienced harvester of many species. He has managed to find a balance between his commitments to wildlife management, and still pursue and practice his traditional harvesting activities. He is proud to pass his experience, skills, and knowledge on to his children.

Kirstie Simpson
Kirstie Simpson has 30 years of northern and arctic experience as a scientist in the fields of resource management, environmental monitoring, environmental assessment, and regulatory permitting, as well as research related to ecological responses to oil and gas exploration in both marine and terrestrial environments. She has worked in a number of capacities in relation to Beaufort, Mackenzie Delta, Arctic Islands and Yukon Oil and Gas exploration and development, and is currently designing an Integrated Landscape Best Management Practices Model for industrial development in the Yukon. Her present position is Senior Advisor, Sustainable and Integrated Resource Management with Energy, Mines and Resources, Government of Yukon.

Lindsay Staples
A resident of Whitehorse, Lindsay Staples serves as the Wildlife Management Advisory Council (North Slope) Chair, and also works as a private consultant. His expertise lies in the fields of natural resource management, socio-economic and environmental impact assessment, and land claims and self-government negotiations and implementation. Lindsay has a special interest in sustainability-based effects assessment and cumulative effects management. He possesses extensive experience in negotiation, facilitation and consensus-based processes involving a broad range of public policy issues.

Evelyn Storr
Evelyn Storr is a resident of Aklavik, NT. She has been a member of several Committees including the Environmental Screening Board, WMAC (NS), WMAC (NWT), Aklavik Community Corporation (Chair), Aklavik HTC, Inuvialuit Investment Committee, and the Local Government Administrators of the NWT. She has represented the Inuvialuit and her community at many local, regional, national and international meetings, which involves everything from local government responsibility to ensuring that the needs of the Inuvialuit people are met as per the Inuvialuit Final Agreement. She feels that consistency in the processes and procedures that govern the various Boards and Committees is important and ensures that proponents and clients are all treated equally. Evelyn has many personal interests. Her priorities are her family and being healthy and active in the many planned activities that her community provides.

Joe Tetlichi
Joe Tetlichi has been the Chair of the Porcupine Caribou Management Board since November of 1995. He was born and raised in Fort McPherson, Northwest Territories and was educated in residential school for 12 years. He spent 20 years out on the land, living the traditional subsistence way of life. He has served as Chair of the Tetlit Gwich'in Renewable Council and Chief of the Tetlit Gwich'in First Nation in the Northwest Territories.
Joe moved to Old Crow, Yukon, in 1995 and continues to reside there with his wife and two sons. He currently works for the Vuntut Gwitch'in First Nation as the Community Justice Worker in Old Crow.

Barry W. Worbets
Barry Worbets is Max Bell Senior Fellow, managing environmental issues and project development at Canada West Foundation. His more than 35 years of professional experience has been focused on the intersection of business and environmental realities. He has a reputation for getting "stuff" done in the areas of environmental stewardship, aboriginal business engagement, training, employment and consultation. Barry has just completed leading an initiative with Parks Foundation Calgary to reconstruct the weir on the Bow River in downtown Calgary—Harvie Passage. He has a passion for the environment, particularly here in western Canada.
Prior to his role as Max Bell Senior Fellow, Barry worked with the Canada West Foundation for four years, leading a project on Natural Capital, which in small part, was responsible for initiating Alberta's Land use Framework. He is respected by many environmental, energy and policy stakeholders and has a great ability to bring people, ideas and resources together in creative projects.
In 2001, the Emerald Foundation for Environmental Excellence recognized Mr. Worbets for his corporate leadership. Barry has had executive roles in numerous energy companies including Statoil, North American Oil Sands Corp., Husky Energy, Canterra Energy, Aquitaine Company of Canada and Dome Petroleum. In these companies he has lead their Environmental, Health and Safety, Corporate Social Responsibility and Aboriginal business engagement programs and has worked in virtually all parts of Canada both on and offshore. Born and raised in rural Alberta, Mr. Worbets graduated from the University of Alberta with a B.Sc. and the University of Calgary with a Masters of Environmental Design.

Make Your Data Matter: Yukon Conservation Data Centre *

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The Yukon Conservation Data Centre (YCDC) is a trusted source for information on the animals and plants of Yukon. We provide the science-based information, and expert analysis needed for conservation, land use planning, and natural resource management. Our products and services include:

- lists of all Yukon species and their status;
- detailed data on the location and status of species and ecosystems of conservation concern;
- biodiversity inventory and mapping;
- expert consultations related to conservation and land use issues; and
- specialized software for managing biodiversity data.

In place since 2004, the YCDC is part of an international network of 80 conservation data centres. By using common methods and data-management systems, these centres offer a broad suite of products and services related to ecosystems and at-risk species.
The YCDC would like to bring local knowledge into the data bank because it will lead to better management. Ensure your studies and observations contribute to land-use decisions by providing information to the YCDC.

Freshwater Ecological Integrity Monitoring in Ivvavik National Park

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The freshwater ecosystem (rivers, streams and lakes) represents 76 km2 (1%) of Ivvavik National Park. The Firth River is the largest river system in Ivvavik, draining over 61% of the park, and notably home of possibly the largest Dolly Varden char population of the Yukon North Slope. The presence of several aufeis throughout the park is also a unique feature, sustaining a healthy ecosystem and providing for stable river flow and water quality. A healthy freshwater ecosystem is not only important for aquatic organisms (fish, benthic invertebrates, etc.) but also for the wildlife and plants relying on freshwater. Five monitoring measures have been established, but the overall condition of the freshwater ecosystem in Ivvavik was not assessed due to insufficient biological information. Currently, the water quality and river flow were determined to be in good condition with a stable trend while the aufeis condition was determined to be fair with a declining trend. Measures still in development include benthic invertebrate and Dolly Varden Char. Several options are being explored to monitor Dolly Varden including aerial monitoring of redds as a pilot project in 2012.

Herschel Island Qikiqtaryuk: a natural and cultural history of Yukon's Arctic island

Edited by Christopher Burn / Carleton University
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A wide-ranging account of the natural and social environment of Herschel Island was published in April this year by the Wildlife Management Advisory Council (North Slope). The book was a collaboration of 43 authors, 24 of whom are northerners. It was produced in Whitehorse with copy editing by Patricia Robertson and a stunning layout by Eleanor Rosenberg of Aasman Design. The book attempts to summarize the scattered literature on the history and culture of former residents of Qikiqtaryuk, and to describe the biophysical environment of Yukon's most northern park. It emphasises the continuing occupation of the island by Inuvialuit, and the important role it has played in the history of resource development in western Arctic Canada.

Implementation of the Canadian Porcupine Caribou Harvest Reporting Program*

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There are 8 main groups of hunters in Canada who harvest the Porcupine Caribou Herd. Although there have been a number of data collection programs for the various user groups over the years, the programs ran intermittently, operated in different years, used

different methodology, had varying hunter participation rates and generally were never coordinated. By signing on to Harvest Management Plan for the Porcupine Caribou Herd in Canada (2010) (HMP), all Parties have agreed to an integrated approach and a minimum standard in the quality of data from all harvesters at all times. The overall objective of the program is to annually estimate the total number, by sex, of Porcupine Caribou harvested in Yukon and NWT and the reliability of that estimate. This information will be used to assess the total harvest rate on the herd and will be incorporated into computer population models.
There has been major progress on several fronts; there are several areas where work continues. Most notably, all Parties are collecting at least some harvest data. For the 2010/11 season, Parties submitted some sort of estimate for all Canadian User Groups for the first time ever. A generic database is being designed to minimize data entry errors and will automate most of the mathematical calculations needed to produce the estimate. User groups need to stratify hunter lists to increase the precision of the estimate. Data sharing arrangements need to be discussed. Further communications with hunters is planned.

To mix or not to mix: Management implications of expanding muskox populations

Dorothy Cooley / Government of Yukon, Marsha Branigan and Brett Elkin / Government of NWT, Susan Kutz / University of Calgary, Dave Paetkau / Wildlife Genetics International and Patricia Reynolds / USFW
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Concerns about the expansion of adjacent muskox populations; North slope population that range from Alaska to the Richardson Mountains and the Mainland populations that range east of the Mackenzie Delta on the NWT mainland led to investigation of the implications of these populations mixing. Several concerns were raised about this potential interaction; related to 2 lungworms (Umingmakstrongylus pallikuukensis in NWT muskox and Protostrongylus stilesi in North Slope muskoxen), diseases (ORF- Contagious Ecthyma or Sore Mouth and Clamydiophila), and genetic mixing. The North Slope muskoxen come from Greenland originally and are therefore recognized as a different subspecies than the native mainland muskoxen. Past genetic studies showed that muskoxen are very similar to each other and did not show a difference between different populations. The results to gather more information on these concerns will be presented with emphasis on more information needed and how these results could inform management direction. Management approaches for these populations, particularly in the region of potential overlap, will differ depending on the decision to mix or not to mix. The Banks Island muskox population is also included to provide a broader regional perspective.

Updating Coastal Sensitivity Atlases for Oil-Spill Preparedness in Canada's Arctic*

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Environment Canada and other Federal agencies have important roles in terms of emergency preparedness along Canadian coastlines. However, information in the Canadian Arctic is limited, outdated and patchy. As there are many opportunities for economic development in Canada's North, including increased shipping and exploration activities, the need to enhance our state of preparedness is critical. Baseline coastal information, such as shoreline form, substrate and vegetation type, is required for operational prioritization, coordination of on-site spill response activities, wildlife and ecosystem management. As part of the eSPACE project (emergency Spatial Pre-SCAT for Arctic Coastal Ecosystems), oblique digital HD videography with accompanying audio commentary has been acquired using rotary-wing aircraft flying at low-altitude over five study areas: James Bay and Hudson Bay (Manitoba); Beaufort Sea; Resolute Bay; Labrador; and Victoria Strait. The video is georeferenced during acquisition using the Red Hen system, hardware that combines the video, audio and GPS signals into a single output. The georeferenced video product is then processed using GeoVideo, an ArcGIS extension that provides geospatial random access to digital video through ArcGIS's ArcMap interface. An interpreter is required to examine the video and audio commentary to identify shoreline characteristics, coastal habitats and resources at risk. Using supporting products, such as the 20 m SPOT 4/5 orthoimage mosaic over Canada, 50k Canvec shoreline vectors and 50k Toporama products provided by the Centre for Topographic Information, NRCan, the interpreter

manually segments the shoreline according to the shoreline type (e.g., sand tidal flat) of the upper intertidal zone as determined from the video. The upper intertidal zone is deemed the most sensitive part of the intertidal zone, as this is where oil would be deposited in the event of an oil spill. Twenty shoreline types have been identified for the Canadian Arctic and are ranked according to sensitivity. The shoreline characteristics for each segment are recorded into a form created in-house that meets the requirements of environmental emergency response (i.e., SCAT: Shoreline Clean up Assessment Technique). This approach has already been successfully applied to the majority of southern Canadian coastlines. The products from eSPACE will be organized in a Coastal Sensitivity Atlas using state-of-the-art GIS and web-mapping technology for emergency responders, Arctic communities and regulatory agencies.

Identifying important features for ecosystem resilience in the Arctic Tundra: WWF's "RACER" remote sensing toolkit*

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With immense changes to the arctic climate underway, and associated changes to arctic ecosystems already observed, a new approach to spatial planning and conservation must be adopted. This dynamic approach will be essential to maintain the underlying ecological processes and functions of arctic ecosystems in a rapidly changing environment. Through the Rapid Assessment of Circum-arctic Ecosystem Resilience (RACER) project, WWF has developed a tool to (1) identify features conferring resilience to arctic ecosystems and (2) assess whether those features will persist under forecasted changes in climate within the 21st Century.

With guidance from an international advisory group of Arctic conservation and climate experts representing both Indigenous and scientific knowledge, we have extended our methodological framework to four eco-regional case studies (two marine and two terrestrial) in the Canadian and Russian Arctic. The output of this analysis points to places in the Arctic where valued ecological features are likely to remain intact. This suite of exceptional features may make a significant contribution to maintaining ecosystem processes, functions and services that are essential to arctic communities and livelihoods. The methods and outputs of WWF's RACER remote sensing toolkit will inform spatial planning, including land and resource use management, at regional and national scales. These tools will assist in developing a dynamic approach to conservation planning in the Arctic that accounts for the effects of unprecedented rapid climatic change.

Circumpolar Biodiversity Monitoring Program*

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CAFF's Circumpolar Biodiversity Monitoring Program's CBMP has grown to 60 organizational partners and 700 members representing an international network of scientists, local resource users and experts working together to improve our ability to detect, understand, report on and respond to important trends in the Arctic's living resources. Through coordination and integration of Arctic biodiversity monitoring we aim to generate long-term data to inform decision-making, contribute toward understanding of ecosystem changes and underlying processes, underpin authoritative assessments of status and trends, and enhance the overall efficiency and effectiveness of Arctic biomonitoring.

Towards this end, the CBMP has been very successful to date at implementing pan-Arctic approaches to harmonizing information management, monitoring and reporting as it relates to Arctic biodiversity. However, indigenous knowledge holders have had limited capacity to engage the CBMP effort to date, thereby, limiting the opportunity to utilize knowledge that can be applied to inform on a changing Arctic and how we can better mitigate and adapt to these changes.

To address these challenges the CBMP is also focused in 2012-13 on short-term activities that increase the current and long term use and application of local knowledge. Specifically activities will aim to identify local knowledge sources, (2) bringing experts together to identify potential integration methods to affect decision-making and management, and (3) completing a pilot project(s) demonstrating how arctic people's knowledge can be integrated.

Bowhead whale feeding aggregations in the Canadian Beaufort Sea (2007-2008), and their role in the real-time mitigation of effects of seismic underwater noise.
Lois Harwood and Amanda Joynt / Department of Fisheries and Oceans Canada
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A systematic strip-transect aerial survey (10% coverage) of the SE Beaufort Sea was flown 22-23 August 2007 (7,166 km2) and 2-20 August 2008 (4,703 km2), to update our knowledge of the distribution and use of the Canadian Beaufort Sea by bowhead whales. A secondary objective was to contribute to an adaptive mitigation plan for 2D seismic surveys underway at the time of, and following, the aerial surveys. Survey conditions were good-excellent for spotting whales on all transect lines throughout all survey areas flown, although in 2008, there were unavoidable interruptions in survey progression due to weather. Primary observers recorded 132 bowheads whales on transect in 2007, and 136 bowhead whales on transect in 2008. On-transect sightings were assigned to 20 x 20 km grid cells over the entire study area, densities of surfaced bowheads were calculated for each grid cell, and maps were prepared to depict grid cells with the highest densities of bowheads (red and orange squares on poster).

Bowhead whales aggregate in the SE Beaufort Sea each summer for feeding, starting in early August and lasting until late September or early October. During surveys, approximately 90% of the bowheads observed are in feeding aggregations. Of those whales in the Canadian Beaufort, 50% or more tend to aggregate offshore of the Tuktoyaktuk Peninsula, mainly in waters 20-50 m deep. They also use other geographic areas of the Beaufort Sea and Amundsen Gulf for summer feeding, including Yukon coastal waters especially between Shingle Point and Komakuk Beach. The bowheads move amongst these locations to some extent over the course of the summer. Waters off the Yukon coast are attractive to feeding bowhead whales, particularly subadult animals, but that this only occurs in some years (i.e., 2007) and not in others (i.e., 2008). Interannual differences in the extent to which bowheads use Yukon coastal waters in summer are a reflection of annual changes in oceanographic and atmospheric conditions, which in turn influence the type, concentration and availability of bowhead prey. Easterly wind regimes create conditions that are particularly conducive to upwelling, and production of bowhead prey (zooplankton) is enhanced as a result.

The propensity of bowheads to aggregate, and a real-time knowledge of the aggregation areas they use in a given season, has fostered development of a stricter mitigation scheme in relation to seismic surveys in the Canadian Beaufort Sea. Seismic operators ensure that seismic surveys within the whale aggregation areas are attempted only during periods of full visibility (A), so that on-board Marine Mammal Observers have maximum opportunities to detect them. If darkness (B) or fog (C) impedes the view of the entire safety radius, a shutdown of the seismic operation is invoked until full visibility was regained. This ensures protection of whales in the feeding areas, and does overly constrain industry in areas of limited interest to bowhead whales, where regular mitigation practices are applied.

Wildlife Monitoring in Ivvavik National Park
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Recent wildlife surveys in Ivvavik National Park have been completed to assess populations of moose, peregrine falcons and muskox in the region. In 2009, a survey of the eastern part of the park documented 52 moose in the Tulugaq and Babbage River Valleys. Although more moose were documented further west, overall abundance of moose was similar to that recorded in a survey in 2000. During the 2010 Canadian Peregrine Falcon Survey (in partnership with Environment Canada and the Yukon Government), a total of 20 occupied raptor territories were documented in Ivvavik: 9 peregrine falcon, 9 golden eagle and 2 rough-legged hawk. This number of peregrine falcon territories is comparable to previous surveys and indicates a stable population. Falcon productivity was high and the trend continues to be positive indicating that this population of peregrines is re-established since it was locally extirpated. In 2011, a Yukon North Slope muskox survey was completed (in partnership with Yukon Government) to coincide with the Alaskan muskox survey. A total of 101 muskoxen in 5 groups were recorded within Ivvavik and Herschel Island region. Alaskan partners found 190 muskoxen west of the Alaska National Wildlife Refuge, suggest-

ing that the northeastern Alaska and northwestern Canada total population is at least 291 animals. In 2006, a census of the same region counted 296 muskoxen. These wildlife surveys in Ivvavik National Park were funded in part by IFA Wildlife funds. In 2012, a pilot project was initiated to test the use of remote cameras to monitor the presence, distribution and habitat use of wildlife in Ivvavik. Seven cameras were deployed around Sheep Creek and the Firth River. Photos were captured of moose, caribou, sheep, wolves, lynx, wolverine and grizzly bears. We hope to expand the project in 2013 to deploy more cameras throughout the park. Parks Canada will continue to collaborate on regional wildlife population monitoring with partners in future.

Tundra and Forest Ecological Integrity Monitoring in Ivvavik National Park

Molly Kirk and Linh Nguyen / Parks Canada
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Ecological Integrity monitoring is used to assess the condition of each major ecosystem indicator in Ivvavik National Park. The tundra ecosystem includes the coastal plain and alpine tundra in the mountains and encompasses approximately 73% of Ivvavik. The measures of ecological integrity for the tundra are: Porcupine caribou, breeding birds, plant productivity and timing of green-up, land cover change, and vegetation structure. The condition of each of these measures was rated as good in the recent review of ecological integrity, and the overall condition of tundra was considered good. Measures in development for tundra include soil properties and permafrost. The forest ecosystem in Ivvavik is represented by the taiga, a transitional forest between boreal forest and arctic tundra. Forest covers approximately 25% of Ivvavik, and includes some of the most northerly trees in Canada. The measures of ecological integrity for the forest are: breeding birds, soil properties, vegetation structure, and land cover change. The condition of each of these measures was rated as good in the recent review of ecological integrity, and the condition of the forest ecosystem was considered good overall. Measures in development for the forest include plant productivity and timing of green up, and permafrost.

Yukon North Slope Grizzly Bear Study: Population and Demographic Analyses

Ramona Maraj and Shelley Marshall / Government of Yukon
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This study focused on grizzly bears on the Yukon North Slope between the Firth and the Blow Rivers. This study was developed to find out more about the grizzly bear population on the Yukon North Slope. Wildlife managers need this information when they are determining harvest quotas and making management recommendations. The study will provide information on population size, the number of bears that are born and die, where bears can be found at different times of the year, and how much they move around. It also includes a review of harvest activity. The study began in 2004 and fieldwork was completed in 2010. Bears were collared and DNA-based mark-recapture from hair samples was used to estimate the population size. The grizzly bear population size for the North Slope appears to be healthy and the estimated population size is higher than previously thought. Traditional knowledge was also used for many aspects of the project.

Using Aerial Surveys to Estimate Polar Bear Populations in the South Beaufort

Ramona Maraj / Government of Yukon, Seth Stapleton / University of Minnesota, Marsha Branigan / Government of NWT and Lily Peacock / USGS
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Methods to estimate polar bear population often involve physical handling of bears. Recently, other jurisdictions in Canada have been using aerial survey methods to attempt to estimate polar bear populations. As part of a collaborative study we investigated the potential for this method to be applied to the South Beaufort population. We conducted a pilot study by flying 3000 kilometers of transect lines out to the continental shelf between Tuktoyaktuk and the US/Canada Border. We found 12 groups of bears. Analyses using this method indicate that the aerial survey method is feasible for the South Beaufort region but will require more extensive survey work, requiring up to 7 times more aerial transect line. Costs for the work would be high, but are still within the range of total costs in comparison to other methods.

However, aerial transect work does not provide the same level of information as other methods. Communities and managers will have to weigh the pros and cons of each survey method when determining how to estimate polar bear populations.

Beaufort Regional Environmental Assessment (BREA)
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The Beaufort Regional Environmental Assessment (BREA) is a partnership among Inuvialuit, industry, governments, regulators and academia to prepare for oil and gas activity in the Beaufort Sea. Through multi-stakeholder committees, the BREA is building a regional knowledge base to inform regulatory processes and project-specific environmental assessments related to oil and gas activity in the Beaufort Basin. This is being achieved through the implementation of a targeted research program and working groups that are addressing key regional issues including cumulative effects assessment, information management, regional waste management, oil spill preparedness and response, socio-economic indicators, and climate change. For more information visit BeaufortREA.ca.

Harvest Management Plan for the Porcupine Caribou Herd in Canada
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In 2010, all eight Parties responsible for Porcupine Caribou management in Canada signed an unprecedented plan for the cooperative harvest management of Porcupine Caribou. The Harvest Management Plan coordinates management actions in Canada. In the past two years, Parties have been implementing the plan. This poster summarizes the main points in the plan and provides an update on the implementation progress.

Monitoring the status of the Porcupine Caribou Herd
Porcupine Caribou Technical Committee and the Porcupine Caribou Management Board
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The Porcupine Caribou Herd is a population of barren ground caribou that ranges across northeastern Alaska, Yukon, and northwestern Northwest Territories, providing an important source of sustenance for user communities. Cooperative monitoring and research on the herd is guided by two co-management boards in Canada and Alaska. This poster summarizes the current management program for the herd and some of the major results that have been documented for the herd since 1985.

Coastal Ecological Integrity Monitoring in Ivvavik National Park*
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The Beaufort Sea coastal ecosystem is an important and potentially at-risk component of Ivvavik National Park. The coastal habitats include lagoons, estuaries, open beaches and continental shelf and comprise only 1% of the park. A number of climate-related factors may be acting cumulatively to cause ecological change along the Beaufort Coast. A longer open water season, rising sea levels, and increased frequency and intensity of storms are predicted to result in more rapid rates of coastal erosion in the soft, ice-rich coastline of Ivvavik. As part of a larger climate adaptation project entitled "Understanding Climate-Driven Ecological Change in Canada's Northern National Parks", Parks Canada is aiming to develop a sustainable and effective monitoring program for coastal ecological integrity in Ivvavik. Tasks completed in June 2012 included: oblique videography of the coastline, ecotype vegetation class data collection and verification in the coastal plain, and assessment of the extent and degree of shrub encroachment in areas of key caribou habitat. Also, following cultural resource monitoring protocols, several important cultural sites along the coast were visited to assess the degree of coastal erosion. Based on the fieldwork data, an updated ecotype map for Ivvavik National Park is in development and will be used to guide the establishment of future ecological integrity monitoring measures for the coastal ecosystem.

Changes in distribution and abundance of muskoxen in Arctic National Wildlife Refuge and adjacent areas in northern Alaska and Yukon, Canada
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Muskoxen (Ovibos moschatus) are an arctic-adapted species likely to be affected by changes in climate. The species was extirpated from Alaska and northwestern Canada by the late 1800's, but was restored to the Arctic National Wildlife Refuge (Arctic Refuge) in 1969 and 1970. Sightings of muskoxen in 1972 and 1973 and surveys in 1978-1981 showed that three mixed groups containing males, females, and subadults were established in the Arctic Refuge by the 1970's. In 1983-2011, we flew annual pre-calving censuses and located radio-collared muskoxen in the Arctic Refuge. We conducted surveys east and west of the Arctic Refuge in 1986-2005 and carried out censuses of the entire population range in 2006 and 2011. We used Geographic Information System (GIS) analysis to detect patterns of population distribution and changes in local abundance. In the Arctic Refuge, numbers of muskoxen in 1972 - 1986 and then stabilized as mixed groups moved into new regions. The total population increased until the mid 1990's, but declined >50% between 1999 and 2002. Muskoxen disappeared from the Arctic Refuge as mortality rates exceeded rates of recruitment and groups left the Arctic Refuge. Population size was relatively stable between 2006 and 2011. Changes in distribution suggest that areas of occupation periodically shifted over time and contributed to changes in local abundance.

Summary of activities in the North Yukon Region of Environment Yukon's Fish and Wildlife Branch

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Environment Yukon's North Yukon Regional office in Dawson is the primary Fish and Wildlife Branch contact for communities in the THTT, VGTT (including the overlap with a portion of the GSA in Yukon), and ISR. The Dawson office is one of five regional offices that were created in 1991 to assist in the Branch meeting its obligations for implementation of the various land claim agreements. Because of the close tie to land claims, regions are roughly defined by First Nation Traditional Territories or settlement areas, with the North Yukon Region covering an area of approximately 150,000 km2.

The North Yukon Regional Management program is unique relative to other regional programs in the Yukon. IFA Implementation Funds cover approximately half of the biologist's salary and is the primary source of funding for wildlife research and monitoring in the portion of the ISR that falls within the region. The position also plays an important role in managing Porcupine and Forty-mile Caribou management.
Within the ISR, wildlife project proposals are reviewed and recommended for IFA funding by the Wildlife Management Advisory Council (North Slope). Project partners for ISR related projects often include the Aklavik HTC, Parks Canada (Western Arctic Field Unit), Yukon Parks, GNWT and GRRB. A sample of current and previous projects includes:

- Completion of a plan for muskox
- North Richardson Mountain moose survey
- Yukon North Slope grizzly bear ecological studies
- Porcupine Caribou satellite program, and fall composition count
- Aklavik harvest data collection and program development
- Polar Bear survey method assessment and Traditional Knowledge project
- Numerous Porcupine Caribou projects
- Richardson Mountain sheep periodic surveys and management plan (many partners)
- North American Peregrine Falcon surveys every 5 years (many partners)
- 6-year muskox survey and satellite collar program, 1999 to 2005 (with Parks Canada)
- Herschel Island Ecological Monitoring, 1999 to present (with Yukon Parks)

Arctic Borderlands Ecological Knowledge Co-op: Developing rapid reporting tools from local knowledge*

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The Arctic Borderlands Ecological Knowledge Co-op (Co-op) monitors and assesses change in the range of the Porcupine Caribou Herd and adjacent Mackenzie Delta area in NWT, Yukon & Alaska. The Co-op focus is also to ensure monitoring data is turned into usable information. Each year, Co-op partners meet to review and assess current findings at an Annual Gathering held in a community in the Borderlands region. These activities are important to help create linkages from land users to land managers/ management bod-

ies (turning data into information).

The Arctic Borderlands Co-op has been conducting community based ecological monitoring and analyses since 1996 with particular focus on the impacts of development, climate change, and contaminants. This year in addition to the annual community based monitoring, the Co-op will focus attention to accelerating to data analysis to influence decision makers.

A new data service will allows for rapid primary analyses provide information to resource management decision making boards and discussions when it matters. Primary analysis includes response summaries related to such things such as caribou condition, meeting community harvest needs, migratory birds, and or species at risk. Moreover, the Co-op will be developing rapid secondary analysis related to recent publications that propose use of the local data to generate caribou condition indices etc.

Butterflies of Herschel Island and Komakuk, Yukon
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Within Canada's arctic tundra, Herschel Island and Komakuk in northern Yukon lie within an area known to be particularly rich in butterfly fauna. As butterflies are short-lived, highly visible, and can respond rapidly to changes in habitat, they are good indicators of climate change. The main purpose of the butterfly work was to establish a database for detecting future changes in butterfly species diversity. Butterflies were sampled along transects that traversed a variety of different habitat types. The main findings from the study were: (1) The relative abundance of adult butterflies was lower when spring/early summer temperatures were low and snow melt was late, as in 2009; (2) The timing of adult butterfly flight was notably more advanced in July 2008 than in the either 2007 or 2009. This can be attributed to the early snow melt and warm June and July temperatures of 2008; (3) A total of 21 species of butterflies have now been recorded for Herschel Island, including six newly detected ones during this project from 2007 to 2009; (4) Butterflies on Herschel Island were most commonly found in habitats with many flowers. These were the "Arctic Willow/Dryas-Vetch" and "Arctic Willow/Lupine/Forget-me-not" vegetation types.

Shrub expansion in alpine and Arctic tundra of the Yukon Territory
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Canopy-forming shrubs are reported to be increasing around the circumpolar Arctic. Our study indicates expansion in canopy cover and height of willows on Herschel Island (Qikiqtaryuq) located at 70° north on the western Arctic coast of the Yukon Territory. We examined historic photographs, repeated vegetation surveys, and conducted monitoring of long-term plots, and found evidence of increases of each of the dominant canopy-forming willow species (Salix richardsonii, Salix glauca and Salix pulchra), during the 20th century. A simple model of patch initiation indicates that the majority of willow patches for each of these species established between 1910 and 1960, with stem ages and maximum growth rates indicating that some patches could have established as late as the 1980s. Collectively, these results suggest that willow species are increasing in canopy cover and height on Herschel Island. We do not find evidence that expansion of willow patches is currently limited by herbivory, disease, or growing conditions.

Arctic Fox vs. red fox in the Canadian Arctic: Is there a clear winner after 38 years of monitoring in the warming northern Yukon?
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During the last century, the red fox (Vulpes vulpes) has expanded its distribution into the Arctic, where it competes with the Arctic fox (Vulpes lagopus), an ecologically similar tundra predator. The red fox expansion correlates with climate warming, and the ultimate determinant of the outcome of the competition between the two species is hypothesized to be climate. We conducted aerial and ground fox den surveys in the northern Yukon (Herschel Island and the coastal mainland) to investigate the relative abundance of red and Arctic foxes over the last four decades. This region has undergone the most intense warming observed in North America, and we hypothesized that this climate change would lead to increasing dominance of red fox over arctic fox.

Results of recent surveys (2007-2009) fall within the range of previous ones (1970s and 1980s), indicating little change in the relative abundance of the two species. North Yukon fox dens are mostly occupied by arctic fox, with active red fox dens occurring sympatrically. While vegetation changes have been reported, there is no indication that secondary productivity and food abundance for foxes have increased. Our study shows that in the western Arctic of North America, where climate warming was intense, the competitive balance between red and Arctic foxes changed little in 40 years. Our results challenge hypotheses linking climate warming to red fox expansion, and support an alternative hypothesis for expansion, - anthropogenic food supplementation, - which has been largely absent in north Yukon over the study period.

Short-eared Owl in north Yukon

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We investigated nesting behaviour, food habits and inter-specific interactions of Short-eared Owls (Asio flammeus) within an Arctic tundra raptor community at Herschel Island and Komakuk Beach, north Yukon, Canada. Short-eared Owls were the least common nesting raptor. We found only 3 nests, all on Herschel Island. All nests were on relatively elevated sites with fairly substantial vegetative cover. All nests failed in the egg stage, from a combination of human disturbance and possible predation by Arctic Fox (Vulpes lagopus) or Red Fox (Vulpes vulpes). The owls only nested in years when spring small rodent densities were at least 4 to 5 individuals per hectare. The owls almost exclusively ate Collared Lemmings (Dicrostonyx groenlandicus), Brown Lemmings (Lemmus trimucronatus) and Tundra Voles (Microtus oeconomus), without clear selection amongst these small rodents. Peregrine Falcons (Falco peregrinus) killed two adult Short-eared Owls. In north Yukon the Short-eared Owl remains an uncommon summer resident and uses the region as a migration route. Spring rodent densities and inter-specific predation are prominent limiting factors, and human disturbance also limits nesting success. We recommend access restrictions for most tundra areas during mating, nest initiation and incubation. We recommend that human infrastructure be designed so that it cannot support novel nesting, and therefore local range expansion, by other nesting raptors that are competitive and predatory on the owls.

Lemming winter habitat choice: a snow fencing experiment

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The insulative value of early and deep winter snow is thought to enhance winter reproduction by arctic lemmings (Lemmus and Dicrostonyx spp.). This leads to the general hypothesis that landscapes with persistently low lemming population densities, or low amplitude population fluctuations, have a low proportion of the land base with deep snow. We experimentally tested a component of this hypothesis, that snow depth influences habitat choice, at three Canadian Arctic sites: Bylot Island, Nunavut; Herschel Island, Yukon; Komakuk Beach, Yukon. We used snow fencing to enhance snow depth on 9 ha tundra habitats, and measured the intensity of winter use of these and control areas by counting rodent winter nests in spring. At all three sites the density of winter nests increased in treated areas compared to control areas after the treatment, and remained higher on treated areas during the treatment. The treatment was relaxed at one site, and winter nest density returned to pre-treatment levels. The rodents' proportional use of treated areas compared to adjacent control areas increased and remained higher during the treatment. At two of three sites, lemmings and voles showed significant attraction to the areas of deepest snow accumulation closest to the fences. The strength of the treatment effect appeared to depend on how quickly the ground level temperature regime became stable in autumn, coincident with snow depths near the hiemal threshold. Our results provide strong support for the hypothesis that snow depth is a primary determinant of winter habitat choice by tundra lemmings and voles.

Do Arctic nesting birds respond to earlier snowmelt? A multi-species study in north Yukon, Canada

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Climate change has altered the timing of many ecological processes, especially in the Arctic. The initia-

tion of nesting is a key signal of phenological changes in Arctic-nesting birds, and is possibly connected to the circumpolar trend of earlier snowmelt. We collected data on lay dates of 7 bird species, representing shorebirds, passerines, a sea duck, a bird of prey, and a sea bird, nesting on Herschel Island, Yukon, Canada, in the years 1984-86 and 2007-09. Snowmelt was significantly earlier in the 2007-09 time period. Shorebirds and passerines showed strong trends to earlier lay dates in conjunction with earlier snow melt; the other species did not. Prey type, especially for juvenile birds, seemed to be a strong determinant of the strength of response. However, the migratory birds' abilities to find food and to track the advancement of Arctic spring while on migration, could also create a migration mismatch between arrival time on the nesting grounds and tundra spring conditions.

The north Yukon tundra food web: synopsis of findings from the IPY research

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The tundra food web is fairly consistent across the north Yukon, with a few significant differences between mainland (more wetlands, ground squirrels, golden eagles and gyrfalcons) and Herschel Island. The International Polar Year project, - Arctic Wildlife Observatories Linking Vulnerable EcoSystems (Arctic WOLVES), - investigated the passage of energy through the vertebrate food web, and the role of climate change on ecosystem processes. A wide suite of predators consumes a high proportion of the annual production of small herbivores (lemmings and voles), dampening potential population fluctuations in these herbivores. Climate change includes trends to warmer temperatures in most months, later ocean freeze-up, and earlier snow melt in spring. It also potentially results in later onset of autumn snow, increased frequency of winter thaws, and reduced cloud and fog cover. These trends can have diverse impacts on the food web, ranging from increased growth and earlier flowering in plants, spread of woody shrubs, earlier availability of insect prey for birds, faster melting of permafrost cliffs used by nesting raptors, reduced duration and quality of winter snow pack required by lemmings for insulation, and reduced access to forage for caribou and muskoxen in some winters. There is large variation in these patterns among years, despite the trends. However, the increased primary production does not appear to have enhanced the population densities of small rodents, probably because of the heavy predation rates. The situation with ungulates is less clear, with reductions in key lichen winter food for caribou, but potentially enhanced food availability for muskoxen. Hypotheses regarding future likely trends are presented, with a call to include one or more sites in north Yukon as long-term ecological monitoring sites within the framework of the Circumpolar Biodiversity Monitoring Program.

Did Quaternary glacial cycles drive walrus diversity?*

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Arctic Sea ice is a key component to walrus survival. Ice provides a surface for moulting, pupping and resting between foraging trips on the sea floor. Most populations migrate seasonally with the ice. Reduced sea ice leads to increased hauling out on land and increased mortality of young. As Arctic sea ice continues to decrease, it will be important to predict how walrus populations will respond.
Walrus fossils (n=9) discovered on Herschel Island, Yukon provide critical information on walrus populations in the past. Herschel Island lies northeast of the present range of Pacific walrus populations. Walruses are rarely seen at present near Herschel Island. Radiocarbon dates (14C) indicate these fossil are >50,000 years old and suggest they lived during the Last Interglacial (Marine Isotope Stage 5: 130,000 to 70,000 years ago) of the Pleistocene when climates in the Northern Hemisphere were warmer than today and the median sea ice limit would have been closer to the North Pole. To further understand the systematic relationships of these ancient Herschel Island walruses, we are combining analyses of ancient DNA, modern DNA and paleoenvironmental information. Our data set includes samples from 119 ancient/historic and 54 modern walruses; including those from northern Eurasia, the Bering Sea, Beaufort Sea, the eastern Canadian Arctic, and Atlantic Canada/USA. This study is examining: 1) how walrus genetic diversity and distribution has changed through time? and,

2) are these population changes correlated with Arctic climate change?. Using these data we aim to: 1) predict walrus population responses to climate change and inform conservation management and 2); identify potential marine refugia and patterns of connectivity during glacial/interglacial cycles.

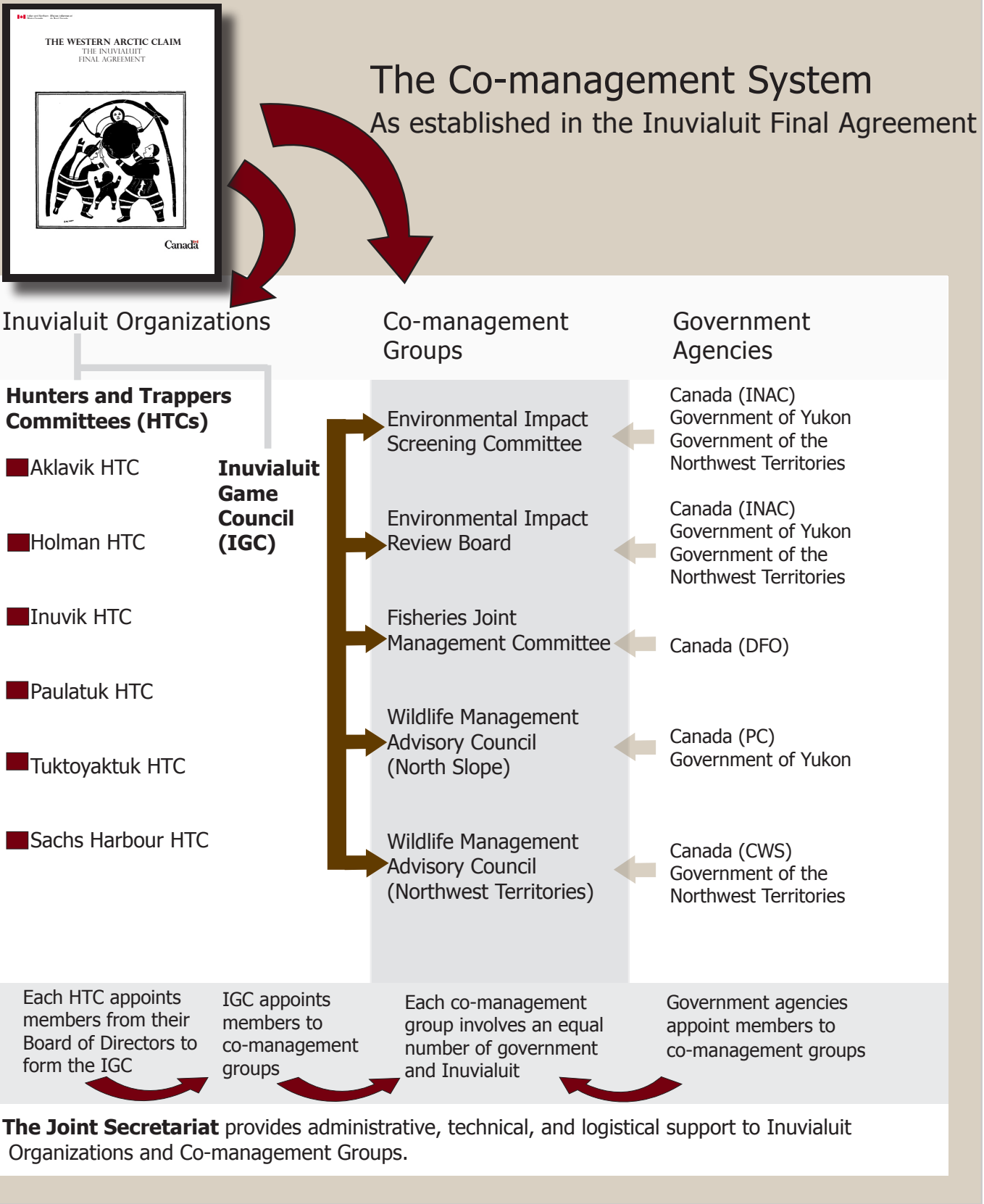
Preliminary mitochondrial DNA analyses reveal that modern walruses form three well-supported mitochondrial groups: one Atlantic and two Pacific, corresponding to historic differentiation in the Pacific that likely no longer exists. Different analyses suggest very different systematic relationships of the ancient Herschel Island walruses, none are statistically supported and remain ambiguous; a) they are an extinct lineage; b) are an ancestral population to all living walruses; or c) are a population ancestral to only Atlantic walruses. Estimates of effective population size based on genetic diversity indicate increases during Pleistocene glacial cold periods, suggesting that populations increased in size and also likely became more diverged from one another by more extensive sea ice. Further analyses of additional samples, including nuclear DNA, from ancient and historic walruses is underway to further resolve these systematic relationships of the Herschel Island walruses and other populations during the recent and ancient past.

Appendix 3
List of Acronyms

AANDC	Aboriginal Affairs and Northern development Canada
ACCWM	Advisory Committee for Cooperation in Wildlife Management
ANWR	Arctic National Wildlife Refuge
ABEKC	Arctic Borderlands Ecological Knowledge Co-operative
AHTC	Aklavik Hunters and Trappers Committee
ATK	Aboriginal Traditional Knowledge
ANCSA	Alaska Native Claim Settlement Act
ANILCA	The Alaska Native Interest Lands Conservation Act
ANOA	
AFN	Alaska Federation of Natives
AEWC	Alaska Eskimo Whaling Commission
AWC	Alaska Whaling Commission
BLM	Bureau of Land Management
CEAA	Canadian Environmental Assessment Act
CBNRM	Community Based Natural Resource Management
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMA	Conference of Management Authorities
CWS	Canadian Wildlife Service
CYFN	Council of Yukon First Nations
DIAND	Department of Indian affairs and Northern Development
DFO	Department of Fisheries and Oceans
DND	Department of National Defense
EIRB	Environmental Impact Review Board
EISC	Environmental Impact Screening Committee
ENR	Environment and Natural Resources
eSPACE	Emergency Spatial Pre-SCAT for Arctic Coastal Project
FJMC	Fisheries Joint Management Committee
YFWMB	Yukon Fish and Wildlife Management Board
GNWT	Government of the Northwest Territories
HTC	Hunters and Trappers Committee
IFA	Inuvialuit Final Agreement
IGC	Inuvialuit Game Council
IRC	Inuvialuit Regional Corporation
ISR	Inuvialuit Settlement Region
ITK	Inuit Tapiriit kanatami
ILA	Inuvialuit Land Administration
IPG	Institutions of Public Governance
IQ	Inuit Qapirangajug
IWC	International Whaling Commission
JBNQA	James Bay and Northern Quebec Agreement
MPA	Marine Protected Area
MMPA	Marine Mammals Protection Act
MVR	Mackenzie Valley Review

MVRMA	Mackenzie Valley Resource Management Act
NEB	National Energy Board
NLCA	Nunavut Land Claims Agreement
MOU	Memorandum of Understanding
NFA	Nunavut Final Agreement
NTI	Nunavut Tunngavik Inc.
NGO	Non Governmental Organization
NWMB	Nunavut Wildlife Management Board
PCMB	Porcupine Caribou Management Board
SAO	Senior Administrative Officer
SAGD	Steam-assisted Gravity Drainage
RRC	Renewable Resources Council
RIAS	Regulatory Impact Assessment Statement
RCB	
RWSNH	
TEK	Traditional Ecological Knowledge
TK	Traditional Knowledge
TNMPA	Tarium Niryutait Marine Protected Area
USFWS	United States Fish and Wildlife Service
WMAC (NS)	Wildlife Management Advisory Council (North Slope)
WMAC (NWT)	Wildlife Management Advisory Council (Northwest Territories)
WMA	Wildlife Management Area
YTG	Yukon Territorial Government

Appendix 4
IFA Organizational Structure



Appendix 5
IFA Section 12 - Yujkon North Slope

Yukon North Slope

12.(1) For the purposes of this section, "Yukon North Slope" means all those lands between the jurisdictional boundaries of Alaska and the Yukon Territory and the Northwest Territories, north of the height of land dividing the watersheds of the Porcupine River and the Beaufort Sea, and including adjacent nearshore and offshore waters and islands.

Principles

12.(2) The Yukon North Slope shall fall under a special conservation regime whose dominant purpose is the conservation of wildlife, habitat and traditional native use.

12.(3) Subject to subsections (5) to (15):

(a) all development proposals relating to the Yukon North Slope shall be screened to determine whether they could have a significant negative impact on the wildlife, habitat or ability of the natives to harvest wildlife;

(b) other uses within the Yukon North Slope shall be considered and may be permitted if it is shown that there would be no significant negative impact on wildlife, habitat or native harvesting;

(c) other uses within the Yukon North Slope that may have a significant negative impact on wildlife, habitat or native harvesting shall be permitted if it is decided that public convenience and necessity outweigh conservation or native harvesting interests in the area; and

As amended January 15, 1987

(d) development proposals relating to the Yukon North Slope that may have a significant negative impact shall be subject to a public environmental impact assessment and review process.

Disposal of Land

12.(4) Subject to this section, the withdrawal from disposal under the Territorial Lands Act of certain lands described in the Prohibition and Withdrawal of Certain Lands from Disposal Order (SOR/80-198, 27 March, 1980, as set out in Annex E-1), within the Yukon North Slope shall be maintained.

As amended January 15, 1987

National Park

12.(5) Canada agrees to establish, under the National Parks Act, the Settlement Legislation or such other legislation as may be appropriate or necessary, a National Park comprising the western portion of the Yukon North Slope shown in Annex E and more particularly described as the area bounded to the south by the height of land being the watershed and to the east by the eastern shoreline of the Babbage River.

12.(6) The planning for the National Park and the management thereof shall have as their objects to protect the wilderness characteristics of the area, maintaining its present undeveloped state to the greatest extent possible, and to protect and manage the wildlife populations and the wildlife habitat within the area.

12.(7) Except as provided in subsection (14), the National Park shall be zoned and managed as a wilderness oriented park.

12.(8) Development activities inconsistent with the purposes of the National Park shall be prohibited, and any change in the character of the National Park shall require the consent of the Inuvialuit.

12.(9) The Wildlife Management Advisory Council established by subsection (46) shall advise the appropriate minister on park planning and management. The Council shall recommend a management plan for the National Park.

As amended January 15, 1987

12.(10) No lands forming part of the National Park shall be removed from National Park status without the consent of the Inuvialuit.

12.(11) Canada agrees that prior to the establishment of the National Park, the lands comprising it shall be maintained in a manner that recognizes their future use and protects the land and its habitat for this purpose.

12.(12) Nothing inconsistent with the provisions of this Agreement shall be permitted between the date of the execution of this Agreement and the coming into force of appropriate legislation creating the Park.

12.(13) The rights provided to the Inuvialuit under this Agreement in respect of the National Park shall take effect as of the date of the coming into force of the Settlement Legislation. For greater certainty, the Government of the Yukon Territory shall retain its present jurisdiction until the creation of the National Park.

12.(14) If it is determined pursuant to section 11 that an area identified in Annex E as Stokes Point is re-

quired for limited scale use and temporary use purposes in support of hydrocarbon development, the use shall be permitted on the following conditions:
(a) the land to be used does not exceed forty (40) acres and any additional land that is required to satisfy the licencing requirements of the Yukon Territorial Water Board;
As amended January 15, 1987
(b) the use of the land is such as not to prevent its restoration to the state it was in prior to such use; and
(c) the activity must not be on a scale and of a nature as to significantly derogate from the quality and character of the adjacent Park lands.
12.(15) In subsection (14),
(a) "limited scale use" includes the storage of fuel and supplies, emergency repairs and maintenance facilities, transhipment depots, caches and similar uses; and
(b) "temporary use" means a period of active occupation that, in the aggregate, does not exceed six (6) years.
As amended January 15, 1987

Territorial Park
12.(16) The parties agree that Herschel Island is to be established as the Herschel Island Territorial park and, in establishing that Park, the Government of the Yukon Territory will consult the Inuvialuit.
12.(17) Except for the lands adjacent to Pauline Cove, the park regime on Herschel Island shall be no less stringent than that of the National Park pursuant to subsections (5) to (13).
As amended January 15, 1987
12.(18) Within the lands adjacent to Pauline Cove, the historic resources shall be protected in a manner no less stringent than that of the regime of a National Historic Park as set out in the National Parks Act.
12.(19) Any development activity proposed within the lands adjacent to Pauline Cove shall be subject to:
(a) the screening and review process set out in section 11; and
(b) the criteria set out in subsection (23) shall apply; and
(c) the terms and conditions governing such development shall be no less stringent than those under the Territorial Land Use Regulations in force at the time.
Subsection as amended January 15, 1987

Area East of the Babbage River
12.(20) The parties agree that the area east of the Babbage River extending to the jurisdictional boundary between the Yukon Territory and the Northwest Territories, but not including the adjacent nearshore and offshore waters, shall be designated as an area in which controlled development may take place, subject to the provisions of this Agreement and to laws of general application.
12.(21) Any development activity proposed for the area referred to in subsection (20) shall be subject to the screening and review process set out in section 11.
12.(22) Any development activity proposed for the adjacent nearshore and offshore waters shall be subject to the normal government process and the wildlife compensation provisions of section 13.
12.(23) The appropriate review board shall take into account the following criteria in its consideration of any development proposal:
(a) analysis of the significance of the part or parts of the Yukon North Slope proposed for development use from the standpoint of conservation and harvesting interests;
(b) evaluation of practical alternative locations and of the relative commercial and economic merits of and environmental impact on such locations compared to the part or parts of the area proposed for utilisation in the application;
(c) evaluation of the environmental and social impacts of the proposed development;
(d) weighing of the interests of users, conservationists and harvesters in the Yukon North Slope against public convenience and necessity for development;
(e) evaluation of the ability of the applicant to demonstrate that he has, or will acquire, the proven capability to carry out the project in accordance with established standards of performance, safeguards and other requirements and to carry out the necessary environmental mitigation and restoration; and
(f) requirements for effective machinery to ensure that the development proceeds in accordance with any established terms and conditions.

Inuvialuit Harvesting Rights
12.(24) Subject to the laws of general application respecting public safety and conservation, the Inuvialuit right to harvest on the Yukon North Slope includes:
(a) subject to the collective harvesting rights in favour of all native peoples under the Porcupine Caribou

Management Agreement referred to in Annex L, the preferential right to harvest all species of wildlife, except migratory non-game birds and migratory insectivorous birds, for subsistence usage throughout the Yukon North Slope;
(b) the exclusive right to harvest furbearers and polar bear; and
(c) the exclusive right to harvest game within the National Park, the Territorial Park and adjacent islands.
12.(25) Where harvesting rights are extended to other native peoples pursuant to subsection (33) and subsections 14(17) and (18), their requirements as to subsistence usage shall be taken into account in setting subsistence quotas and the subsistence requirements of all native peoples shall be accommodated within conservation limits.
12.(26) Sport fishing shall be permitted throughout the Yukon North Slope including the National Park and the Territorial Park.
12.(27) Where, in the exercise of their exclusive right to harvest game within the National Park and the Territorial Park, the Inuvialuit wish to permit:
(a) persons who are not beneficiaries of the Settlement or adjacent land claims settlements to harvest any such game, prior approval of the appropriate minister is required and that minister may grant the privilege on any terms and conditions he stipulates; and
As amended January 15, 1987
(b) persons who are beneficiaries of adjacent land claims settlements to harvest any such game, those persons, if so permitted, may harvest game on the same basis as the Inuvialuit.
12.(28) Where, in the exercise of their exclusive right to harvest polar bear in the Yukon North Slope outside the National Park, the Inuvialuit permit persons who are not beneficiaries of the Inuvialuit Settlement or adjacent land claims settlements to harvest any such polar bear, the harvesting shall be regulated by the competent authority under the laws of general application.
12.(29) Where, in the exercise of their exclusive right to harvest furbearers in the Yukon North Slope outside the National Park, the Inuvialuit permit non-Inuvialuit to harvest any such furbearers, the harvesting shall be subject to any approval or notification required by the appropriate government and shall be regulated by the competent authority under the laws of general application.
12.(30) For greater certainty, the Inuvialuit shall make no gain or profit from the granting of permission to non-Inuvialuit to harvest furbearers except where it is part of a reciprocal arrangement with beneficiaries from an adjacent land claims settlement.
12.(31) The Inuvialuit may trade and barter game products with other Inuvialuit beneficiaries in the Yukon North Slope.
12.(32) Subject to the provisions of the Migratory Birds Convention Act and any regulations thereunder, the Inuvialuit may for subsistence usage sell game products to other Inuvialuit beneficiaries in the National Park.
12.(33) Where native beneficiaries in adjacent land claims settlements acquire rights to game resources within the Yukon North Slope on the basis of traditional use and occupancy, those beneficiaries shall be entitled to exchange game products with the Inuvialuit on the same basis as that provided for the Inuvialuit under this Agreement.
12.(34) Where, in the final settlement of the land claims of adjacent native groups, provision is made for the exchange of game products with the Inuvialuit, the right of the Inuvialuit to exchange amongst themselves shall be extended to those other native beneficiaries.
12.(35) Subject to the provisions of the Migratory Birds Convention Act, any regulations thereunder and other similar laws of general application, the right to harvest includes the right to sell the non-edible products of legally harvested game.
12.(36) The right to harvest game includes the right to use present and traditional methods of harvesting and the right to possess and use all equipment reasonably needed to exercise that right, subject to international agreements to which Canada is a party and to laws of general application respecting public safety and conservation. The right to harvest game includes the right to possess and transport legally harvested game within and between the Yukon Territory and the Northwest Territories.
12.(37) Subject to subsection (38), the right to harvest game includes the right to travel and establish camps as necessary to exercise that right.
12.(38) In the National Park referred to in subsection (5) and the Territorial Park referred to in subsection (16) the Inuvialuit have the right to use existing hunting, fishing and trapping facilities associated with their game harvesting activities and to establish new facilities after consultation with the management authority. The location of new facilities shall be determined on

the basis of the management objectives for these parks.
As amended January 15, 1987
12.(39) The Inuvialuit need not obtain permits, licences or other authorization to harvest wildlife but may be required to show proof of status as Inuvialuit beneficiaries. Where, for the purpose of conservation, permits, licences or other authorizations are required by the appropriate minister or on the recommendation of the Wildlife Management Advisory Council, Fisheries Joint Management Committee, or the Porcupine Caribou Management Board, the Inuvialuit shall have the right to receive such permits, licences or other authorizations from the local authority at no cost.
As amended January 15, 1987
12.(40) Nothing in this Agreement or the Settlement Legislation shall prevent any person from taking game for survival in an emergency.
12.(41) Within their respective jurisdictions, governments shall determine the harvestable quotas for wildlife species based on the principles of conservation and the following procedures:
(a) the Wildlife Management Advisory Council (North Slope) established by subsection (46) shall determine the total allowable harvest for game according to conservation criteria and such other factors as it considers appropriate. The Council shall make its recommendations to the appropriate minister, who shall, if he differs in opinion with the Council, set forth to the Council his reasons and afford the Council a further consideration of the matter;
(b) in determining the total allowable harvest, conservation shall be the only consideration. For greater certainty, where the Inuvialuit have the exclusive right to harvest, they shall be entitled to harvest the total allowable harvest;
(c) for the purposes of management and in order to protect the interest of the Inuvialuit harvesters, subsistence quotas for the wildlife referred to in paragraph (24)(a) shall be jointly established by the Inuvialuit and the governments having jurisdiction over species or species groups of subsistence value, as follows:
(i) within the total allowable harvest for game, the Wildlife Management Advisory Council (North Slope) shall determine the subsistence quotas according to the criteria and factors it considers appropriate in addition to those referred to in subparagraph (ii). The Council shall make its recommendations to the appropriate minister, who shall, if he differs in opinion from the Council, set forth to the Council his reasons and afford the Council further consideration of the matter, and
(ii) in determining the subsistence quota, the following criteria shall be taken into account by the Council or, where appropriate, by the Porcupine Caribou Management Board, and the appropriate minister:
(A) the food and clothing requirements of the Inuvialuit,
(B) the usage patterns and levels of harvest of the Inuvialuit,
(C) the requirements for particular wildlife species for subsistence usage,
(D) the availability of wildlife populations to meet subsistence usage requirements including the availability of species from time to time,
(E) the projections for changes in wildlife populations, and
(F) the national and international obligations of Canada with respect to migratory game birds;
(F) as amended January 15, 1987
(d) the allocation of the Inuvialuit quotas amongst themselves shall be the responsibility of the Inuvialuit.

Economic Benefits
12.(42) The parties agree that the predominant number of persons employed in the operation and management of the parks referred to in subsections (5) and (16) should be Inuvialuit. The appropriate government shall provide training to assist the Inuvialuit in qualifying for such employment.
12.(43) To the extent that the management regime of the said parks provides for economic activities, the parties agree that opportunities should be provided to the Inuvialuit on a preferred basis.
As amended January 15, 1987
12.(44) The Inuvialuit shall be invited to participate in the planning process for any development on the lands available for development adjacent to Pauline Cove on Herschel Island, and in the economic opportunities arising out of such development. Subject to all applicable laws, the Inuvialuit shall have the right of first refusal with respect to any activities in the nature of guiding related to wildlife within the Yukon North Slope.
12.(45) The Inuvialuit and the Council for Yukon Indians may enter into bilateral agreements such as the agreement dated March 15, 1984 between the Council for Yukon Indians and the Inuvialuit, whereby the native groups may share in the rights, privileges and benefits afforded Inuvialuit beneficiaries in the Yukon

North Slope.

Wildlife Management Advisory Council (North Slope)
12.(46) In order to provide for joint planning by the native people and the governments in the Yukon North Slope with respect to the principles set out in subsections (2) and (3), a Wildlife Management Advisory Council shall be established as soon after the execution of this Agreement as is practicable.
12.(47) The Council shall have as permanent members a Chairman and an equal number of native and government members.
12.(48) The permanent members of the Council shall include at least one person designated by the Government of the Yukon Territory and one person designated by the Minister of the Environment of Canada.
12.(49) In addition to permanent members of the Council representing government, temporary members may be co-opted from government departments as they may be required from time to time.
12.(50) The permanent members of the Council appointed to represent the native interests shall include persons designated by the Inuvialuit, and, subject to agreements, by other native groups that have acquired harvesting rights in the Yukon North Slope under their land claims settlements.
12.(51) The Chairman of the Council shall be appointed by the Government of the Yukon Territory, with the consent of the native members and Canada.
12.(52) The permanent members of the Council shall each have one (1) vote. The Chairman shall have a vote only in case of a deadlock. Temporary members shall not have a vote.
12.(53) The Council may establish rules and adopt bylaws regulating its procedures.
12.(54) The Government of the Yukon Territory agrees to provide a secretariat to assist in meeting the administrative needs of the Council.
12.(55) Each party shall pay the remuneration and expenses of the members of the Council that it appoints or designates.
12.(56) The Council shall provide advice to the appropriate minister on all matters relating to wildlife policy and the management, regulation and administration of wildlife, habitat and harvesting for the Yukon North Slope and, without restricting the generality of the foregoing, the Council shall:
(a) provide advice on issues pertaining to the Yukon North Slope to the Porcupine Caribou Management Board, the Yukon Land Use Planning Commission, the Review Board and other appropriate groups;
(b) prepare a wildlife conservation and management plan for the Yukon North Slope for recommendation to the appropriate authorities as a means for achieving and maintaining the principles of conservation set out in subsections (2) and (3);
(c) determine and recommend appropriate quotas for Inuvialuit harvesting of game in the Yukon North Slope; and
(d) advise on measures required to protect habitat that is critical for wildlife or harvesting including those referred to in subsection 14(3).
As amended January 15, 1987

Yukon North Slope Annual Conference
12.(57) There shall be a Yukon North Slope Annual Conference, to be held once a year in the Yukon Territory, to promote public discussion among natives, governments, and the private sector with respect to management co-ordination for the Yukon North Slope.
12.(58) Each Yukon North Slope Annual Conference shall be attended by representatives of native groups with an interest in the Yukon North Slope, at least one senior official from each appropriate government department and representatives of other interested parties, as selected by the Chairman, including industry and special interest groups.
12.(59) A Chairman shall be named at each Yukon North Slope Annual Conference to hold office until the next Annual Conference. The first Chairman shall be appointed by the Government of the Yukon Territory, the second Chairman shall be appointed by the native groups that have an interest in the Yukon North Slope and, thereafter, the Chairman shall be appointed by those parties on an alternative basis.
12.(60) The Government of the Yukon Territory agrees to provide administrative support services for the Yukon North Slope Annual Conference.
12.(61) During the third Yukon North Slope Annual Conference, Canada, the Government of the Yukon Territory and the Inuvialuit shall collectively review the proceedings and results of past Conferences and determine whether the objective in having such Conferences warrants their continuation and, where the Conferences are continued, such a review shall be carried out every three years thereafter.

Appendix 6
Delegate List