

# The Inuit and Climate Change

#### By Terry Fenge [\*]



#### RÉSUMÉ

Selon les modèles de climat mondial présentés par le Groupe d'experts intergouvernemental sur l'évolution du climat (GIEC), il faut s'attendre à des changements marqués du climat sous de hautes latitudes. En ayant recours aux changements marqués du climat sous de hautes latitudes. En ayant recours aux connaissances écologiques traditionnelles, les Inuits et d'autres peuples autochtones du Nord canadien observent et notent des transformations importantes de leur environnement naturel qui semblent résulter de changements climatiques mondiaux. Les Inuits cherchent à créer un partenariat avec le gouvernement fédéral, fondé sur le modèle du Programme de lutte contre les contaminants dans le Nord, qui connaît un énorme succès. Ce programme a permis de regrouper quatre organismes fédéraux, trois gouvernements territoriaux et quatre organismes autochtones pour se pencher sur les nombreuses facettes des changements climatiques, notamment la recherche, la vulgarisation, les impacts, les adaptations et les négociations au plan international. (Traduction: www.isuma.net) (Traduction: www.isuma.net)

#### **ABSTRACT**

Global climate models presented by the Intergovernmental Panel on Climate Change predict marked climate change in high latitudes. Utilizing traditional ecological knowledge, Inuit and other Indigenous peoples in northern Canada are observing and reporting significant alterations to their natural environment that appear to be the result of global climate change. Inuit seek a partnership relationship with the federal government, based on the highly successful model of the Northern Contaminants Program which brings together four federal agencies, three territorial governments and four Indigenous people's organizations to address the many facets of climate change, including research outreach impacts adaptations and international negotiations. including research, outreach, impacts, adaptations and international negotiations.

"The world can tell us everything we want to know. The only problem for the world is that it doesn't have a voice. But the world's indicators are there. They are always talking to us."

QUITSAK TARKIASUK

NORTHERN CANADA is experiencing massive and rapid social and economic change that is likely to accelerate as oil, gas and mineral resources in this "frontier" are developed for southern markets. Hunting and gathering remain centrally important economic and cultural components of life in the Arctic, however, and this should continue as a result of legal and financial support through northern land claim agreements.

Inuit have a well-earned reputation for resilience in the face of externally induced economic and social change. But resilience has limits and many Inuit are now asking two difficult questions: Might the long-term impacts in the North of global climate change erode fatally their hunting and gathering way of life? And, if so, what does the future hold for Inuit as a people? To many outside the Arctic these questions may seem of little importance, but Hugh Brody evocatively cautions: "Without the hunter-gatherers, humanity is diminished and cursed; with them, we can achieve a more complete version of ourselves."[1]

# The policy challenge

Leaders from around the world gathered in Rio de Janiero in 1992 to discuss the environment and to sign various legal and political instruments, including the Framework Convention on Climate Change. But the Arctic was barely mentioned in the preparatory conferences to Rio, the global

summit or the conventions that emanated from it. Viewed still, perhaps, as frozen in the Cold War's geopolitical rigidities, the region was displaced by global concerns for the environmental integrity of tropical, equatorial, and desert regions, and was not identified in Agenda 21, the key policy document endorsed at Rio to lead humanity into the brave new 21st-century world of sustainable development.[2]

Political and scientific developments since 1992 suggest that the circumpolar Arctic is, politically speaking, coming of age, and that its inhabitants, particularly its indigenous peoples could exert significant influence in future global debates, including those on climate change. Indeed, the 2002 World Summit on Sustainable Development (WSSD), billed as Rio plus 10, may well consider Arctic perspectives on a number of globally important environmental issues. But what are the key political and scientific developments bringing broader attention to the Arctic that have a bearing on how and how well this region addresses climate change?

Circumpolar Co-operation. The collapse of the Soviet Union had a profound political impact on the eight countries that occupy the circumpolar Arctic, enabling them to dispense with cold war rhetoric and ideological competition, and to explore their economic, social and environmental commonalities. Co-operation among States to address transboundary environmental matters was avidly promoted by the Government of Finland and received political expression in the Arctic Environmental Protection Strategy (AEPS) signed by all Arctic States in Rovaniemi, Finland in 1991. With growing acceptance in national capitals of the need for and benefits of co-operation in the circumpolar Arctic, the AEPS was renewed and expanded into an Arctic Council established through a political declaration signed by the Arctic States in Ottawa in 1996. Established as a "high level forum," the council recognizes the region's indigenous peoples as "permanent participants" able to participate in council debates and deliberations on the same basis as States.

While the council is nothing more than a political forum and relies for co-ordination upon the good offices of the chair nation, rotated every two years, it defines shared environmental and sustainable development research and policy agendas. Drawing upon information generated by the council's working groups, individual countries are better armed to participate in and support each other in certain international and global fora.[3]

Co-operation among Indigenous peoples and sub-national government in the circumpolar Arctic s predates the AEPS. Significantly, the Arctic Council has attracted certain European states and international non-governmental organizations as official observers. In sum, the circumpolar world is emerging as a geopolitical entity. Just where this will lead and how quickly is difficult to evaluate. But using the council, Arctic States are able to cut across existing blocs in international processes, and there is some evidence that this is beginning to happen. At the very least, the council provides an institutional framework and agenda-setting process for this emerging geopolitical region, with environmental issues high on its agenda. The unique political status accorded to indigenous peoples by the council enables them to influence the agenda out of all proportion to their limited numbers in the States in which they reside.

The Circumpolar Arctic and International POPs Agreements. In May 2001 more than 100 states convened in Stockholm under the auspices of the United Nations Environment Programme (UNEP) to sign a legally binding global agreement to reduce the use and eliminate the generation and emission of key persistent organic pollutants (POPs), including PCBs, DDT, dioxins and furans. This convention had been preceded in 1998 by an agreement among member countries to the United Nations Economic Commission for Europe (UN/ECE) to a POPs protocol to the Convention on Long-range Transport of Atmospheric Pollution.[4]

Research conducted in the early to mid-1990s in Canada under the Northern Contaminants Program (NCP) and simultaneously by the Arctic Council's Arctic Monitoring and Assessment Program (AMAP) showed long-range transport of key POPs from tropical and temperate lands to the Arctic and significantly elevated levels of certain POPs in the blood and lipid tissues of many Indigenous people as a result of eating local food laced with POPs. The NCP provided data to support these conclusions and also brought Inuit, Dene, Metis and Yukon first nations into a direct partnership with four federal agencies and the territorial governments to jointly establish research priorities and to disseminate research results in communities. The program put Indigenous peoples on a steep learning curve about the public health and environmental implications of POPs and

equipped them to participate in AMAP and in international POPs negotiations sponsored by the UN/ECE and UNEP. That global climate change seems to be enhancing transport of POPs to the Arctic is a recent and unwelcome conclusion.[5]

The NCP and AMAP enabled both Arctic governments and Indigenous peoples to persuade the UN/ECE and UNEP to sponsor international negotiations. Political resolutions adopted by AEPS and Arctic Council ministers at their biennial meetings and direct and sustained advocacy by the Inuit Circumpolar Conference and other permanent participants to the council pushed these negotiations to successful conclusions.

Of potential precedence to future climate change debates, both international agreements on POPs single out the Arctic for its vulnerability and ecological fragility and make much of the need to protect the health of its Indigenous peoples from POPs. The States, permanent participants and observers to the council learned from this experience: Arctic concerns can be effectively addressed in international and global negotiations when supported by high-quality scientific research, when Arctic States press UN bodies to sponsor negotiations, and when Indigenous peoples work together with Arctic States to achieve results.

Climate change and the Circumpolar Arctic. In the past 40 years, annual temperatures in the Canadian western Arctic have climbed by 1.5°C while those over the central Arctic have warmed by 0.5°C. According to the federal Department of the Environment, a global doubling of carbon dioxide emissions could cause temperature increases of nearly 5°C in summer and 5-7°C in winter over the Canadian Arctic mainland. Global models of climate change project significant and pronounced changes in temperature and precipitation in high latitudes. Worst case scenarios project massive thinning and depletion of ice cover in the Arctic and northward migration of permafrost boundaries with potentially worldwide climatic impacts and as yet poorly understood but potentially devastating social, cultural and economic consequences to the region's Indigenous peoples, particularly Inuit.[6]

That climate change in the North is already occurring is evident to Inuit, as the next section of this paper shows. In response to global projections and growing local concerns, the Arctic Council initiated in October 2000 an Arctic Climate Impact Assessment (ACIA), to be conducted in co-operation with the International Arctic Science Committee (IASC), scheduled for completion and ministerial review in 2004. The United States is chairing the assessment. Co-ordinated in Canada through the federal Department of the Environment, Canadian scientists are assuming significant research and writing roles in this exercise under the leadership of Gordon McBean, formerly of the Meteorological Service of Canada and now with the University of Western Ontario. Due to their permanent participant status in the council, the Inuit Circumpolar Conference and the Sami Council are members of the assessment steering committee.

# Climate change and traditional ecological knowledge: Three Arctic illustrations

Hunters and gatherers are keen observers of the natural environment. They have to be; they depend upon it for food. Canadian universities and researchers, some employed by federal agencies, have repeatedly documented the extent and intensity of land use by northern Indigenous peoples and their detailed and often exquisite knowledge of animal behaviour and biology, particularly of harvested species, and ecological relationships. Indigenous peoples rely upon a complex set of indicators to illustrate the state and health of the natural environment and to enable them to operate within it.

Traditional, experiential-based ecological knowledge (TEK) of the land by Inuit and Dene is now broadly recognized as legitimate, accurate and useful although it was until recently dismissed by many credentialed experts as anecdotal and unreliable.[7] Federal statutes, such as the 1997 Canada Oceans Act, mandate federal agencies to use TEK in decision making. Resource-management institutions established through northern land claim agreements do so as a matter of course.

Passing information and hunting-based skills from one generation to the next provides a partial

but nevertheless valuable picture of the past rarely provided by comprehensive scientific programs, which in the Arctic are of recent initiation. Policy and decision makers in Ottawa wanting to know of the impacts of climate change in the North might usefully consult hunters, for they have first-hand experience of the rhythms, cycles and subtle changes to the environment. Moreover, Inuit have repeatedly offered to share what they know of their environment in the hope and expectation that their observations will assist others to help them better manage their environment. It is important to separate observations and conclusions in the Arctic resulting from climate change from those relating to other processes. For example, changes in animal distribution, abundance and behaviour—areas in which TEK can be of considerable use—may or may not result from climate change. How best to interpret and use TEK remains a significant challenge.

## Sachs Harbour, Banks Island

In 1999 the Winnipeg-based International Institute for Sustainable Development (IISD) and the Inuvialuit community of Sachs Harbour, Banks Island, Northwest Territories, initiated a project to record and illustrate community observations of climate change. The resulting video in which Inuvialuit quietly but with firm authority point out what is happening to their immediate environment was shown with apparently telling effect to delegates at the 2000 climate change negotiations in The Hague, negotiations that nevertheless failed to agree on how best to implement the Kyoto Protocol.

Community residents reported all manner of climate change-related environmental alterations, beginning in the mid-to late 1980s. While the media and some non-governmental organizations have popularized the image of fewer and thinner polar bears, Inuvialuit in Sachs Harbour also reported commonplace and cumulative changes that threaten their cultural future: melting permafrost resulting in beach slumping; increased snowfalls; longer sea ice-free seasons; new species of birds and fish (barn owls, mallard and pin-tailed ducks and salmon) near the community; a decline in the lemming population, the basic food for Arctic fox, a valuable harvested species; and generally a warming trend. That kerosene and fuel oil no longer resemble milk and jelly in mid-winter is the compelling indicator offered by long-time resident Andy Carpenter. Rosemary Kuptana, also a community resident and member of the board of IISD, pointed out that environmental indicators used for generations to predict weather and aid hunting and travel over sea ice, no longer worked reliably. With temperature and precipitation increasingly unpredictable and the look of the land becoming unfamiliar, it is increasingly difficult for Inuvialuit to read the land and follow the seasons.

## Nunavut Tunngavik Incorporated Climate Change Workshop

In response to growing concern about the long-term impacts of climate change, the Nunavut Tunngavik Incorporated (NTI), the Inuit organization mandated to implement the 1993 Nunavut Land Claims Agreement, hosted a two-day workshop in Cambridge Bay in March 2001 to bring together elders and hunters from 15 Nunavut communities. A verbatim record of the workshop is available from NTI.[8]

It was only a reconnaissance study involving fewer than 20 people, but participants noted widespread environmental change in Nunavut as a result of altering climate and weather and repeated many of the observations made by Inuvialuit in Sachs Harbour. These observations included melting permafrost, retreating glaciers and ice sheets on Baffin Island, new species of birds in summer, longer ice-free seasons in Hudson Bay, shorter snowmobile travel seasons over sea-ice, more pronounced wind storms, and strengthening sun. Elders joked about the need for Inuit hunters to use stronger sunscreen lotion, which suggests growing problems with UVB radiation. The workshop concluded that Inuit must prepare themselves for climate change and the social and economic developments that will surely follow, particularly use of the North-west Passage by general cargo vessels.

## Voices from the Bay

Perhaps the most ambitious, rigorously conducted and generally successful TEK study of environmental change in northern Canada is reported in *Voices from the Bay*, a book published by

the Canadian Arctic Resources Committee and the Municipality of Sanikiluaq, a small Inuit community on the Belcher Islands in the midst of Hudson Bay.[9] Completed in 1996 and published in 1997, this study brought together 78 Inuit and Cree hunters and elders from 28 communities on the shores of Hudson and James bays in a series of workshops over three years to describe, record and verify ecological changes in this huge bioregion, including but not limited to climate change. The book is based on a geographical information system and computer-assisted analysis of a 2,000-page, approximately 800,000-word database generated through the workshops.

The attached table summarizes environmental observations recorded in this study. Particularly interesting observations include wholesale changes in location, number and duration of polynas—open water areas in winter—in eastern Hudson Bay, and changing flyways of Canada and snow geese. The study provides a complex model of sea-ice formation and ablation related to temperature, currents, wind and tides, likely to be of considerable use to oceanographers and climate change scientists. The study indicates that alterations in weather and climate are by no means uniform within the bioregion.

TABLE 1 Regional Environmental Changes Observed by Inuit and Cree in the Hudson Bay Bio-region							
	Eastern James Bay	Eastern Hudson Bay	Hudson Strait	Northwestern Hudson Bay	Western Hudson Bay	Western James Bay	
Weather	shorter spring & fall seasons greater variability in fall colder winters in reservoir areas increased snowfall	persistence of cold weather into springs snow melts later spring and summer cooling trend less rain: fewer thunder-storms	greater variability: less predictable  cooling trend  new snowfall cyclecle  longer winters: snow melts later  less rainfall	greater variability  warmer and shorter winters  snow falls and melts earlier  cool summers in early 1990s	colder springs snow melts faster	shorter and warmer winters spring wind shifts several times a day	
Atmosphere	change in sky colour	change in sky colour sun's heat blocked by haze	change in sky colour	change in sky colour	change in sky colour	change in sky colour	
Sea Level	salinity changing along north-east coast  more freshwater ice forming in the bay  less solid in La Grande River area: freezes later, breaks earlier	freezes faster solid ice cover is larger and thicker fewer polynyas floe edge melts before breaking up	freezes faster  poorer quality  landfast ice extends farther offshore  polynyas freeze floe edge				

			melts before breaking up			
Currents	weaker in Eastmain area  swifter and less predictable north of La Grande River	weakening currents	weakening currents	weaker currents in Roes Welcome Sound		
Rivers	seasonal reversal in levels and flow  decline in water quality  unstable ice conditions on La Grande River: freezes later, breaks earlier  vegetation dying along diverted rivers	decreased water levels and river flow	decreased water levels and river flow	decreased water levels and river flow	seasonal reversal in water levels and flow increased salinity, erosion and sediment in Nelson River decline in water quality	decreased water levels and river flow in southern James Bay rivers increased erosion and mud slides
Canada and Snow Geese	coastal and inland habitat changes  coastal flyways have shifted eastward  fewer being harvested in spring and fall  large flocks of non-nesting/moulting geese along coastal flyway	smaller flocks of Canada geese arrive in Belcher Islands since 1984 increase in non-nesting/moulting geese in Belcher and Long islands	new snow goose migration routes increase in number of moulting snow geese Canada geese no longer nest in Soper River area	more Canada geese in Repulse Bay area during summers of 1992 and 1993	more snow geese migrating to and from the west habitat changes and Marsh Point staging area earlier and shorter fall migration	habitat changes in Moose Factory area more snow geese flying in from the west  Canada geese arrive from the north first part of June  Change in fall migration patterns
Beluga whale	decrease in numbers	decrease in numbers along coast moved to and travelling in currents farther offshore	decrease in numbers in Salluit area	decrease in numbers in Repulse Bay and Arviat area	increase in numbers in Fort Severn and Winisk estuaries decrease in numbers in Nelsen River estuary	
Fish	mercury contamination  loss of adequate habitat for several species, e.g., whitefish morphological	decrease in Arctic char and Arctic cod in Inukjuak area		decrease in Arctic cod in near-shore areas  Arctic cod no longer found in near-shore areas off	mercury contamination loss of habitat including spawning grounds	morphological changes in sturgeon Dried river channels

	changes in sturgeon			Cape Smith and Repulse Bay	change in taste of fish: some are inedible	
Polar bear		increase in numbers since 1960s	decrease in numbers in Ivujivik area	increase in numbers appear leaner and more aggressive	thin-looking bears in York Factory area drink motor oil change in behaviour	recent increase in reproduction rates fearless of humans
Walrus	no longer present in Wemindji area	shift away from Belcher Islands	increase in numbers around Nottingham Island	decrease in numbers near Arviat and Whale Cove increase in numbers near Coral Harbour and Chesterfield		decrease in numbers in Attawapiskat area
Moose	loss of habitat  decrease in numbers  change in body condition  change in taste of meat	in-migration from southeastern James Bay			change in taste of meat greater number drowning no moose at March Point	
Caribou	change in body condition and behaviour  increase in number of diseased livers and intestines  change in diet  change in taste of meat  more caribou along the coast	caribou from different areas mingle together very large herds travelling closer to coast change in diet change in taste meat	increase in number increase in abnormal livers, e.g., spots and lumps change in diet	increase in number not intimidated by exploration activity feed close to exploration camps change in diet	increase in number Pin Island herd is mixing with Woodl and herd	

### Conclusions from the case illustrations

Voices from the Bay illustrates inherent methodological difficulties of connecting TEK observations with climate change. That northern Indigenous peoples have important and accurate things to day about the distribution, abundance, behaviour and health of animal populations, and that this should be incorporated in resource management is no longer controversial: Their knowledge is avidly sought by wildlife biologists. Yet suggesting a causal relationship between say, changes in animal behaviour as recorded through TEK studies and climate change remains problematic. Notwithstanding these difficulties, all three cases illustrate the advantages of working with Inuit and all northern Indigenous peoples and calling upon their expertise to address the multi-faceted climate change agenda.

Each case illustrates an important fact: much of the impact of climate change on northern Indigenous peoples will be channelled through ecological changes to which they will have to adapt. Already Inuit are altering their hunting patterns to accommodate changes to the ice regime and distribution of harvested species, both marine and terrestrial. We can expect significant changes in Inuit land and resource use from those documented in the 1970s in the superb three-volume Inuit Land Use and Occupancy Project.[10] Having spent considerable time and political energy negotiating comprehensive land claim agreements which guarantee their right to harvest wildlife, Inuit leaders are warranted in questioning the value of the agreements if, as a result of climate change, key species can no longer withstand hunting or are no longer to be found

### A northern perspective on Canada's policy response

It is well known that northern Indigenous peoples are likely to pay a disproportionately heavy price culturally, socially, environmentally and economically as a result of climate change. Nevertheless, the federal government has yet to seriously engage these peoples on this most compelling of issues, even though climate change has been a policy challenge for many years.

At the intergovernmental meeting of energy and environment ministers of April 1998, which mandated 16 Multistake-holder Issue Tables to produce options for the National Implementation Strategy on Climate Change, Indigenous peoples and their interests were all but ignored. A perusal of northern projects supported by the Canadian Climate Action Fund reveals that most involve physical science, and few attempt to incorporate TEK. Those few that address the concerns of northern Indigenous peoples, including the first case illustration reported in this paper, involve southern-based non-governmental organizations as interlocutors to manage projects, effectively diluting the opportunity for partnerships to develop between Inuit and other northern Indigenous peoples and federal agencies. These projects were established in spite of the fiduciary principles and comprehensive land claim agreements that are meant to govern the way Indigenous peoples and the federal and territorial governments manage land, water and wildlife in the North. A similar conclusion can be drawn about the recently established Whitehorse-based Northern Climate Exchange. A March 2001 circumpolar conference on climate change organized by the exchange issued a declaration that failed to single out or even mention Indigenous peoples.

# The policy opportunity: Partnering with northern Indigenous peoples

What lessons from the global POPs and circumpolar experiences might help the federal government better address climate change in the North, bearing in mind that the region's Indigenous peoples, particularly Inuit, are on the front line in adapting to the impacts of climate change? In the 1992 *Green Plan*, Canada committed \$5 million per year through the NCP to examine sources, pathways, bioaccumulation, and health and environmental effects of transboundary contaminants in the North. It also funded the Inuit Circumpolar Conference (Canada), Inuit Tapirisat of Canada, Dene Nation, Council for Yukon First Nations and Metis Nation-Northwest Territories to help manage the NCP, to explain the issue to their constituents, to promote informed food choices to avoid ingestion of contaminants, to sensitize federal agencies, parliamentarians and non-governmental organizations to the public health as well as environmental implications of the issue, and to help Canada prepare for and participate in international negotiations on POPs.

By bringing Indigenous peoples together with four federal departments—Indian and Northern Affairs, Environment, Fisheries and Oceans, and Health—to manage the program, the NCP helped link together domestic science with domestic policy. Inuit organizations were able to bring their NCP-based knowledge to bear in parliamentary hearings to amend the Canadian Environmental Protection Act. The program had a marked influence in defining environmental security threatened by long-range transport of POPs to the Arctic as a Canadian foreign policy objective to be addressed in the Arctic Council, the UN/ECE region and globally. Drawing upon their work in the NCP, northern Indigenous peoples established a coalition that participated actively and adroitly in all global POPs negotiations, frequently in support of Canada's aims. Indeed, at the final global POPs negotiations in South Africa in December 2000 the coalition assumed the role of defending

the Government of Canada from ill-informed, inaccurate accusations about its position authored by a putative academic from Harvard University and published in *The Globe and Mail*.[11] That Indigenous peoples would publicly defend the honour of the Crown says much about their partnership with, and trust and mutual respect for agencies of the Government of Canada developed through the NCP. For their part, civil servants on Canada's negotiating team came to appreciate the significant public relations and political value of having northern Indigenous peoples vocally "on side," and appreciated that they were, representing the interests of Inuit, Dene, Metis and First Nations in the negotiations.

It would be incorrect and naive to suggest that the global POPs experience is transferable holus bolus to the economically and politically more complex issue of climate change. Be that as it may, a partnership between the federal government and northern Indigenous peoples on all facets of climate change, including research, impacts, communication and adaptation, is possible, desirable and overdue. Here lies a challenge for the federal departments of Environment and Natural Resources, Ottawa's lead agencies on climate change, and for Indian and Northern Affairs Canada, which should be promoting a partnership model with sister agencies. There should also be considerable room for input and involvement by northern Indigenous peoples in Canada's international position, strategy and posture.

A partnership is taking shape in the climate change assessment sponsored by the Arctic Council. It is curious that Canadian Inuit are more closely a part of this international initiative than they are of national assessment and evaluative processes—on which they are, however, consulted. Federal agencies and Canadian-based permanent participants in the council cannot draw upon a climate change equivalent of the NCP because one does not exist in the policy, institutional and intergovernmental framework Canada uses to address this issue. Just how effective Canadian participation will be in the circumpolar assessment without such a program remains to be seen. All northern Indigenous peoples organizations involved in the NCP have suggested it as a model partnership for action and research on climate change. The President of ICC Canada formally proposed such an arrangement in her speech at the March 2001 circumpolar climate change conference sponsored by the Northern Climate Exchange. [12]

Failing the establishment of an NCP-style program on climate change or a reworking of existing programs, implementation of northern comprehensive land claim agreements might provide the framework in which to develop the partnerships that are required. Implementation plans approved by federal and territorial governments as well as Indigenous peoples could supplement these agreements to address climate change related programs, activities, and responsibilities. The bottom line, however, is that federal agencies with mandates to address climate change should talk with Inuit, Dene and Yukon first nations organizations to establish the partnerships required to bring northern concerns more fully to the attention of national and international decision-makers.

#### **Note**

- Terry Fenge is President of Terry Fenge Consulting Inc., and Strategic Counsel to the President of the Inuit Circumpolar Conference Canada. He can be reached at <a href="mailto:tfenge7006@home.com">tfenge7006@home.com</a>
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- 2. N. Bankes, T. Fenge and S. Kalff, "Toward Sustainable Development in Canada's Arctic: Policies and International Relations," in F.O. Hampson and C.J. Maule (eds.), *Global Jeopardy* (Ottawa: Carleton University Press, 1993), pp. 170-189
- 3. For a useful outline and discussion of Arctic co-operation see C. Archer and D. Scrivener, "International Co-operation in the Arctic Environment," in M. Nuttall and T.V. Callaghan (eds.), *The Arctic: Environment, People, and Policy* (Amsterdam: Harwood Academic Publishers, 2000), pp 601-619
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- 7. For an introduction to traditional ecological knowledge see J.T. Inglis (ed.), *Traditional Ecological Knowledge Concepts and Cases* (Ottawa: International Development Research Centre and Canadian Museum of Nature, 1993).

- 8. Nunavut Tunngavik Incorporated, "Elder's Conference on Climate Change" (2001) mimeographed.
- 9. M. McDonald, L. Arragutainaq and Z. Novalinga, Voices from the Bay (Ottawa: Canadian Arctic Resources Committee and Environmental Committee of the Municipality of Sanikiluaq, 1997).
- 10. M.M.R. Freeman (ed.), Inuit Land Use and Occupany Project 3 vols. (Ottawa: Minister of Supply and Services, 1977).
- 11. The offending opinion editorial "DDT Saves Lives," by A. Attaran was printed in *The Globe and Mail* on December 52000. A letter in response, "We Can All Win," by S. Watt-Cloutier, R. Charlie and J. Crump was printed in *The Globe and Mail* on December 11, 2000. Both the opinion editorial and letter are reprinted in *Silarjualiriniq* no.6 (October to December 2000).
- 12. V. Ford, "From Consultation to Partnership: Engaging Inuit on Climate Change," Silarjualiriniq No. 7 (January-March 2001), pp 2-4.