

# **Public and Inuit Interests, Western Hudson Bay Polar Bears and Wildlife Management: Results of a Public Opinion Poll in Western Hudson Bay Communities**

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May 2012

*The views expressed herein are solely those of the author and do not necessarily reflect those of the Department of Environment, Nunavut or Government of Nunavut.*





## Executive Summary

The Nunavut Land Claims Agreement (NLCA) provides a clear indication of the wildlife management system that will exist in Nunavut. For example, the objective of the NLCA is to create a wildlife management system that:

- is governed by, and implements, principles of conservation,
- fully acknowledges and reflects the primary role of Inuit in wildlife harvesting,
- serves and promotes the long-term economic, social and cultural interests of Inuit harvesters,
- as far as practical, integrates the management of all species of wildlife,
- invites public participation and promotes public confidence, particularly amongst Inuit, and
- enables and empowers the Nunavut Wildlife Management Board to make wildlife management decisions pertaining thereto.

Thus, through the NLCA, a number of human dimensions have been included in wildlife management.

Here, we conduct a public opinion poll of residents of Arviat, Baker Lake, Chesterfield Inlet, Rankin Inlet and Whale Cove, communities in Nunavut that harvest from the western Hudson Bay polar bear population, about:

- their priorities for the Government of Nunavut, Department of Environment, and wildlife managers;
- polar bears, including determining preferred polar bear population levels;
- wildlife management performance and trust; and,
- participation through the Department of Environment.

A total of 106 northerners were interviewed with 52, 2, 7, 35, and 10 people from Arviat, Baker Lake, Chesterfield Inlet, Rankin Inlet and Whale Cove, respectively.

Regarding people's priorities:

- The Government of Nunavut should focus on housing, education and employment.
- The Department of Environment should focus on mining and wildlife.
- Wildlife managers should focus on polar bears and caribou.

Regarding polar bears, most respondents indicated that:

- There are currently 'the most' polar bears.
- They prefer that there are 'some' polar bears.
- The polar bear abundance level is above their preference.
- The polar bear abundance level is within their tolerance.
- they were not concerned about the future of the western Hudson Bay polar bear population.

Regarding wildlife management:

- The performance of elders, conservation officers, and hunters and trappers organizations received the highest ratings.
- The performance of bureaucrats, legislators and the Government of Nunavut received the lowest ratings.
- Elders, conservation officers and Hunters and Trappers Organizations were the most trusted wildlife management groups.
- Bureaucrats, legislators, and scientists were the least trusted wildlife management groups.

Regarding public participation with the Department of Environment:

- The Department of Environment was rated most highly for 'courteous treatment', 'providing understandable information', and 'accuracy of information'.
- The Department of Environment was rated most poorly for 'use of input', 'response to concerns', and having a 'fair decision making process'.

These results could be used in informing decision-making in Nunavut and measuring the impacts of those decisions. It may be possible to learn more about this by examining how other jurisdictions, such as the Canadian federal government, integrate societal values and opinions into decision-making (Government of Canada, 2000).

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## Introduction

Tension and Inuit resistance to government wildlife management had been occurring in Nunavut prior to the Nunavut Land Claims Agreement (NLCA). Kulchyski and Tester (2007) examine some of the history of Inuit-Government relations involving wildlife management prior to the NLCA and Nunavut's creation. These tensions are one of the issues that led to the NLCA and why the NLCA includes an article devoted to Inuit harvesting rights and wildlife management in the Nunavut Settlement Area.

The signing and ratification of the Nunavut Land Claims Agreement led to a major effort in its implementation. Over the thirteen years of Nunavut's existence, reviews and revisions of pre-existing legislation, regulations and policies and the creation of new ones has been taking place. In trying to adapt government practices, the government has been emphasizing that it shall be guided by Inuit societal values. For example, since the creation of Nunavut, a new *Wildlife Act* was passed by the legislative assembly that incorporates *Inuit qaujimajatuqangit* principles, and some of the principles, objectives and procedures of the NLCA (e.g. Bell, 2003).

Despite these efforts to be more representative of Nunavut society, particularly of Inuit society, tensions between Inuit and government persist in Nunavut's wildlife management. Polar bear management in particular, seems to have been the centre of the conflict (e.g. Clark et al., 2008, George, 2009). To aid the wildlife management system, Kotierk (2010) attempted to provide the wildlife management system in Nunavut with an understanding and information specifically about polar bear management in Nunavut and the importance of human dimensions. In this introduction, some of those understandings are reiterated, background is provided on the western Hudson Bay polar bear population, and the study objectives are detailed.

## People are Important in Nunavut Wildlife Management

The Nunavut Land Claims Agreement provides a clear indication of the wildlife management system that will exist in Nunavut. For example, the objective of the NLCA is to create a wildlife management system that:

- is governed by, and implements, principles of conservation,
- fully acknowledges and reflects the primary role of Inuit in wildlife harvesting,
- serves and promotes the long-term economic, social and cultural interests of Inuit harvesters,
- as far as practical, integrates the management of all species of wildlife,
- invites public participation and promotes public confidence, particularly amongst Inuit, and
- enables and empowers the Nunavut Wildlife Management Board to make wildlife management decisions pertaining thereto.

Thus, through the NLCA, a number of human dimensions have been included in wildlife management. First, public participation for example has to be invited. According to the British Columbia Office of the Auditor General (2008), governments engage in public participation when they "reach out to private or public organizations or directly to the public to seek their participation in the decision-making process". Further, public participation could take on a range of forms, such as, informing or educating, gathering information, discussing, engaging or partnering.

A second human dimension is that public confidence has to be promoted. Public confidence in the wildlife management context is not often researched, but it has been researched in other governance systems [e.g. Health (Saskatoon Health Region, 2009); financial institutions (Office of the Superintendent of Financial Institutions, 2005); Food safety (Agriculture and Agri-Food Canada, 2006)]. Another human dimension seems to be the need to serve economic, social and cultural interests. Since the NLCA

indicates that Government is ultimately responsible for wildlife management, and that the NWMB is the primary instrument of wildlife management, Government and the NWMB have to consider human dimensions in their decision-making.

The Canadian federal government has made some progress in how they integrate human and scientific input in decision making [For example, see the federal science advice (Government of Canada, 2000) and application of precaution frameworks (Government of Canada, 2003)]. Further, the federal government recently made some progress in documenting the socio-economic and cultural interests of Canadians as part of their decision making regarding the listing of polar bears on the *Species at Risk Act* (Environment Canada, 2011).

### **Western Hudson Bay Polar Bears**

The management of the western Hudson Bay polar bear population has been controversial for quite some time now. In 2005, the Government of Nunavut increased the total allowable harvest based on *Inuit qaujimajatuqangit*. Following scientific evidence of a declining population, the total allowable harvest was decreased, despite input from local Hunters and Trappers Organizations, the regional wildlife organization and from Nunavut Tunngavik Inc. that opposed the proposed reduction in the total allowable harvest.

Recently, the Government of Nunavut again raised the total allowable harvest for the western Hudson Bay polar bear population as a temporary measure while the results of an aerial survey were prepared (Government of Nunavut, 2012). In order that public input can be considered along with the scientific input, we undertake a study of Nunavut communities that harvest from the western Hudson Bay polar bear population.

Other human dimension studies have been conducted for the western Hudson Bay polar bear population. For example, Bath (1994) conducted a public opinion poll of residents and visitors of Churchill, Manitoba. Nunavut Tunngavik Inc. (2007) was also conducted to inform the decision making processes when the western Hudson Bay polar bear total allowable harvest was being reconsidered in 2007. Further, Tyrell (2006) and Arviat HTO (2011) have conducted research focussed largely on elders and hunters in Arviat, Nunavut. The Rankin Inlet HTO has also conducted a study of other affected western Hudson Bay communities.

### **Study Goals and Objectives**

Here, we conduct a public opinion poll of residents of Arviat, Baker Lake, Chesterfield Inlet, Rankin Inlet and Whale Cove, communities in Nunavut that harvest from the western Hudson Bay polar bear population, about:

- their priorities for the Government of Nunavut, Department of Environment, and wildlife managers;
- polar bears, including determining preferred polar bear population levels
- wildlife management performance and trust; and,
- participation through the Department of Environment.

## Materials and Methods

### Survey Context

This project was conducted from February to March 2012 in the communities of Arviat, Baker Lake, Chesterfield Inlet, Rankin Inlet and Whale Cove, the Nunavut communities that harvest from the Western Hudson Bay polar bear population.

### Survey Instrument Design

The survey instrument was created by adapting questions from a 2006/2007 Environment Canada poll (Environment Canada 2007), the work of Peter Bull and R. Peyton on social carrying capacity (e.g. Peyton *et al.*, 2001), the United States Environmental Protection Agency's Superfund community involvement program (Charnley and Engelbert, 2005) and the Canadian census. The final survey instrument is included in Appendix I.

### Sampling Frame Creation

To create a sampling frame, community maps obtained from the Department of Community and Government Services were used to make a list of all the buildings in each community. This list would then be verified by walking or driving through the community and checking each building to see if it is an occupied residential unit and how many units are in the building. The verified list was then used to randomly select houses to be asked to participate in the survey.

### Interview Set-Up and Interviews

To ask for people's participation, homes were approached on weekday evenings and on Saturday during the day and evening. Householders that were initially unable to participate or not at home were approached again on subsequent days and asked again.

To invite participation in the survey, the canvassers introduced themselves and who they worked for, explained that the polar bear population size in their area was being estimated, and asked to anonymously interview them so that Inuit knowledge could also be used in polar bear management. After householders indicated that they were willing to participate, we requested permission to audio record the interview for accuracy and quality control. In eleven cases, the written questionnaire was simply left with non-Inuit respondents and subsequently collected.

Interviews were conducted either in English or Inuktitut. Interviews had an average duration just below half an hour. The duration of interviews conducted primarily in English were similar in duration to interviews conducted primarily in Inuktitut.

### Characteristics of the Respondents

A total of 106 northerners were interviewed with 52, 2, 7, 35, and 10 people from Arviat, Baker Lake, Chesterfield Inlet, Rankin Inlet and Whale Cove, respectively. Compared to the 2011 census data (Statistics Canada, 2012), this survey seems to over-represent those from Arviat and seems to under represent those from Baker Lake.

Seventy-nine males and twenty-seven females were interviewed. This proportion of sexes appears to over represent males in comparison to the 2006 Census (Statistics Canada, 2007) for the five communities.

Ninety-three Inuit and thirteen non-Inuit were interviewed. Compared to the 2006 census results, this suggests that Inuit are slightly over-represented in this survey.

Comparison of the ages of the respondents (Figure 1) to the 2006 Census data, suggests that younger members of the public (20-34 years old) were under-represented.

Most respondents (84%) indicated that Inuktitut is their mother tongue and the remainder reported English. Most respondents also had some or less than high school in terms of educational level (Figure 2).

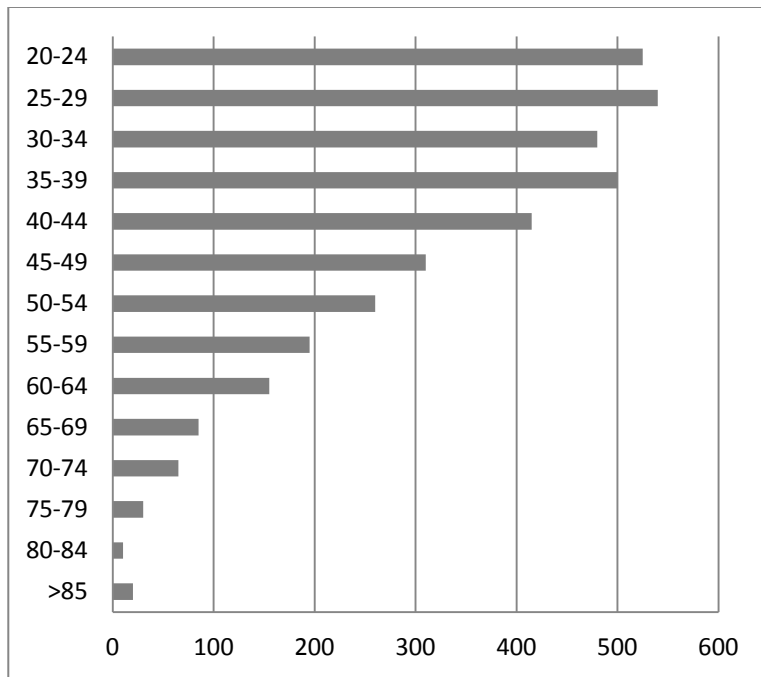
Most people had some form of employment (Figure 3), and the most reported income category was under \$30,000 (Figure 4).

Seventy two respondents described themselves as hunters and thirty two respondents described themselves as non-hunters. Two respondents did not respond to this question

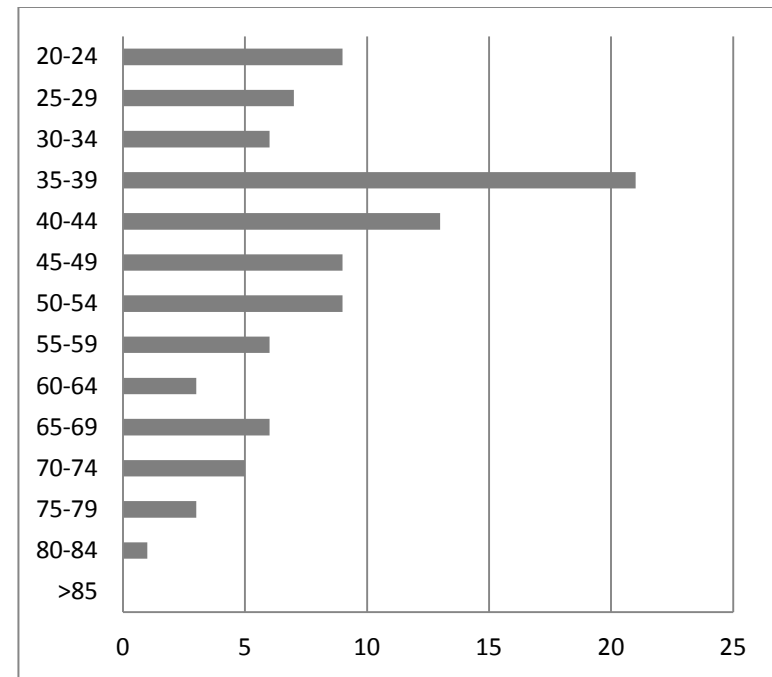
### **Response Analysis**

The survey data were compiled into an Excel spreadsheet and maintained for analysis. Responses for close-ended questions were entered as one of the possible responses, and tallied using a conditional formula in the program.

For open-ended questions, the responses were either examined on the questionnaires or the audio recording listened to. Key phrases were identified in their response that would be used as a code to categorize their response. During scoring of subsequent respondents, efforts were made to categorize the response into codes that had been previously created. When this was not possible, new key phrases were used as codes.



a)



b)

Figure 1: Age distribution of a) the 2006 Statistics Canada Census for Arviat, Baker Lake, Chesterfield Inlet, Rankin Inlet and Whale Cove and b) respondents to this survey.

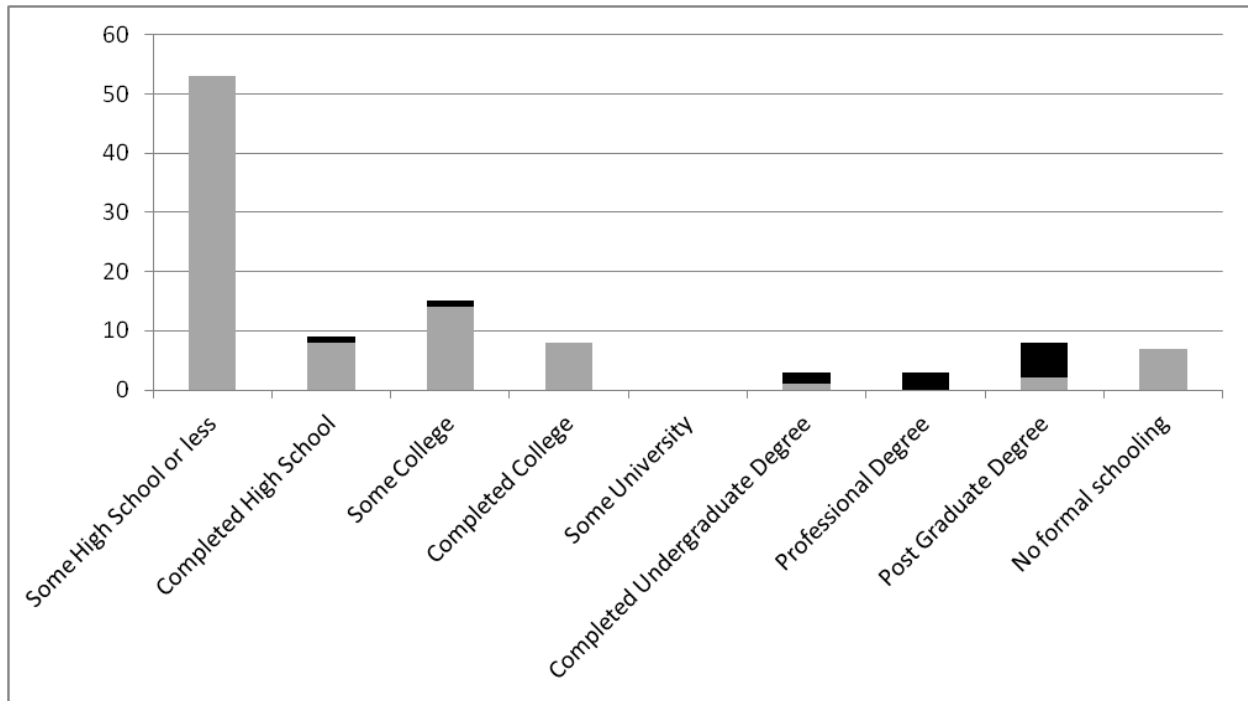


Figure 2: The educational level attained of Inuit (grey) and non-Inuit (black) respondents.

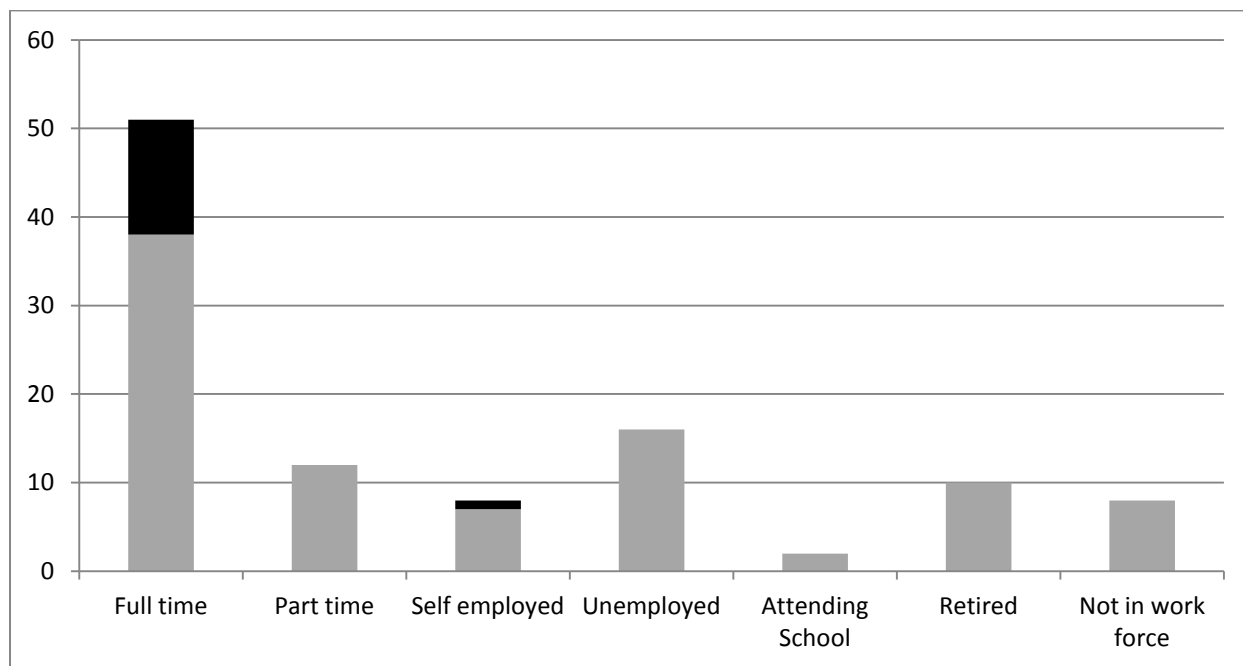


Figure 3: The employment status of Inuit (grey) and non-Inuit (black) respondents.



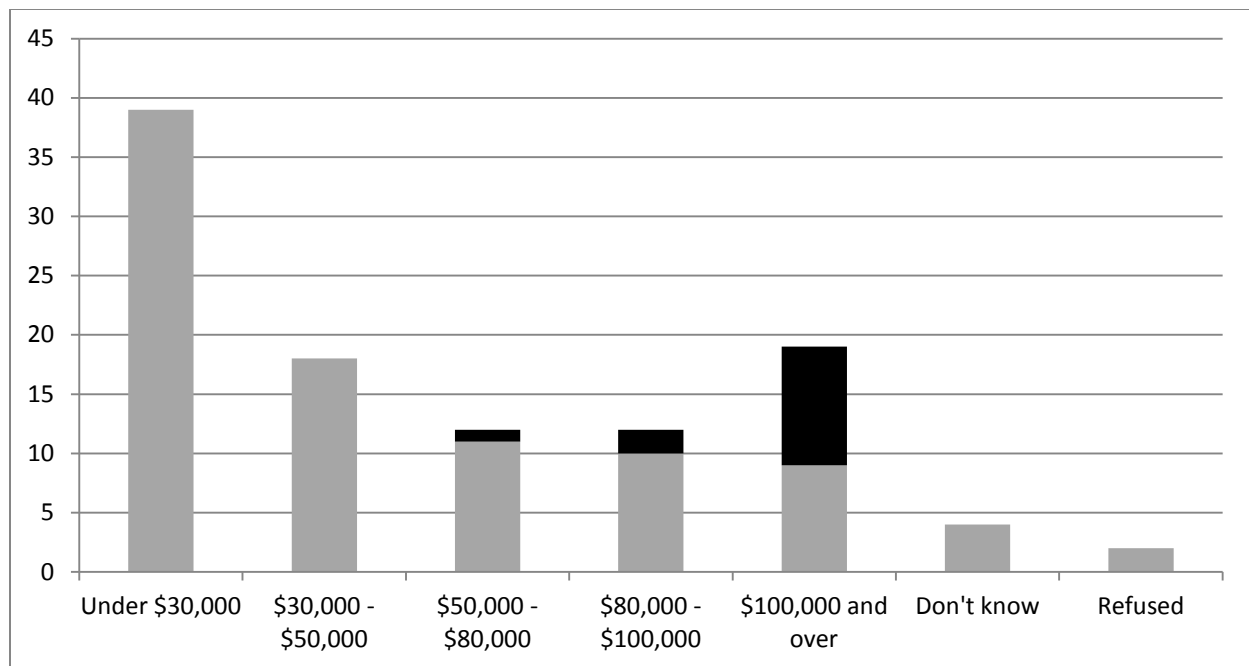


Figure 4: The income categories of Inuit (grey) and non-Inuit respondents (black).

## Results

### Priorities for the Government of Nunavut

People identified a number of issues that they thought the Government of Nunavut should focus on (Table 1). Housing was the issue raised most often. Education and employment were also issues that people often thought the Government of Nunavut should focus on.

In terms of environmental issues, wildlife management and the environment were lower in overall priority. Polar bears specifically, and the need to raise or update the total allowable harvest were mentioned by those that raised wildlife management as an issue to focus on. Mining was one of the specific environment issues that was raised as well.

### Priorities for the Department of Environment

A number of issues were identified that people thought the Department of Environment should focus on (Table 2). Mining was the main issue that people thought the Department of Environment should focus on. Wildlife in general was the second most common issue brought up. Climate change and polar bears were the next most frequent issues brought up.

Amongst those that raised mining as the appropriate focus for the Department of Environment, two frequent themes were: the care of wildlife and the land, as well as the monitoring and enforcement of mine operations.

Amongst those that raised wildlife as the appropriate focus for the Department of Environment, that wildlife are food to Inuit and should be properly cared for was the main theme.

### Priorities for Wildlife Managers

A number of issues were identified that people thought that wildlife managers should focus on (Table 3). Polar bears were the main issue that people raised. Caribou was the second most common issue brought up.

Amongst those that raised polar bears as the appropriate focus for wildlife managers, two frequent themes were: the prevalence of polar bears and the need to reconsider, increase or remove the total allowable harvest on polar bears.

Amongst those that raised caribou as the appropriate focus for wildlife managers, themes included: that caribou aren't doing as well as they have in the past, the need to care for caribou and that caribou are food for many.

### Polar Bear Abundance

Respondents were asked several questions about their opinion of polar bears. Most respondents indicated that there are currently the 'most' polar bears (Figure 5a). That there are 'some' polar bear was the most preferred level of polar bear abundance (Figure 5b). Most respondents indicated that the fewest polar bears that they could tolerate was if there were 'some' polar bears (Figure 5c). The number of people that indicated the most polar bears that they could tolerate was similar between 'some', 'many' and the 'most' polar bears (Figure 5d).

Table 1: The public and Inuit harvesters' priorities for the Government of Nunavut should focus on.

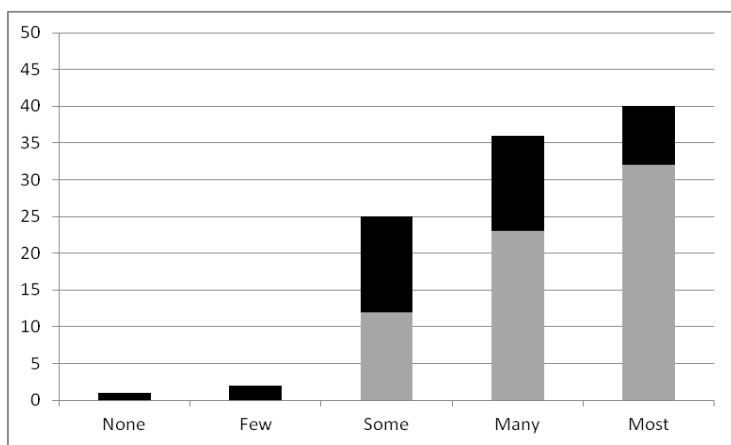
<b>Priority</b>	<b>Public</b>	<b>Inuit Harvesters</b>
Housing	21	15
Education	14	7
Employment/Unemployment	13	8
Inuit	9	7
Wildlife Management/Polar Bears	8	4
Social Issues	8	4
Don't Know	6	5
Health	6	4
Nunavut Residents	4	4
Youth	4	3
Environment	3	2
Inuit Culture	2	2
Poverty	2	1
Infrastructure	2	1
Inuit qaujimajatuqangit	1	1
Creating Opportunities	1	0
Northern Living Allowance	1	0
Record Elder's Knowledge	1	0

Table 2: The public and Inuit harvesters' priorities for the Department of Environment.

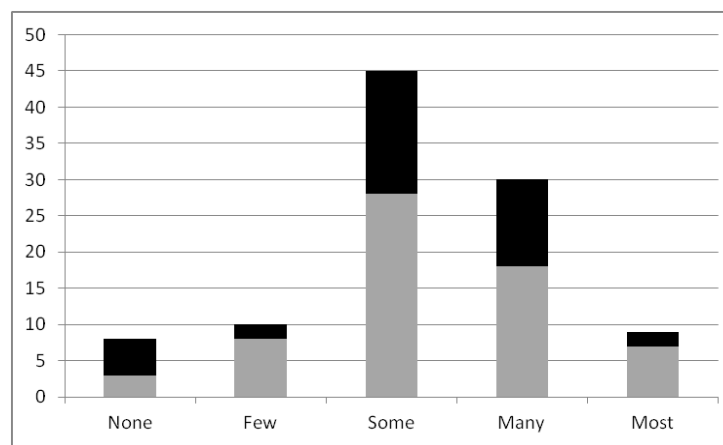
<b>Priority</b>	<b>Public</b>	<b>Inuit Harvesters</b>
Mining	23	15
Wildlife	14	7
Don't know	13	11
Climate Change	7	4
Polar bears	7	3
Environmental Protection	5	3
Waste Management	4	2
Selling of Wildlife	3	3
No Priority	3	3
Education	3	1
Pollution	2	2
Employment	2	2
Resource Development	2	0
Wolves	1	1
Respect for Environment	1	1
Park development	1	1
Youth	1	1
Conduct Research, but limit restrictions	1	1
Hunters and Trappers Organizations	1	1
Intra-community communications	1	1
Safety	1	1
Land monitoring	1	1
Economic development	1	1
Be supportive	1	1
The land	1	1
Shipping	1	0
Federal Government	1	0
Hunter Support	1	0
Governance	1	0
Oil industry	1	0
Alternative energy	1	0

Table 3: The public and Inuit harvesters' priorities for wildlife managers.

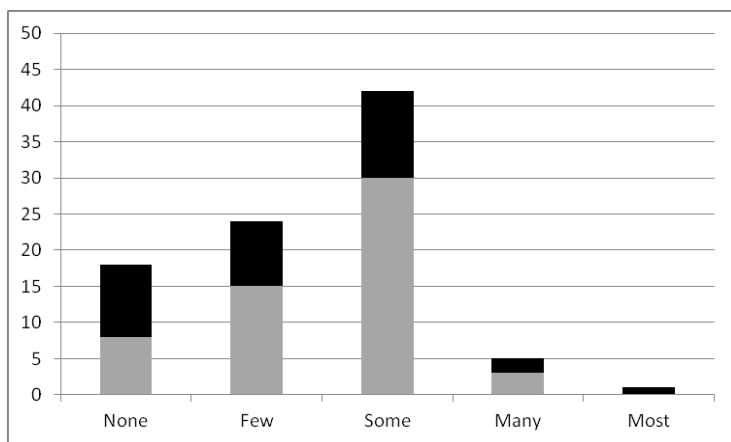
<b>Priority</b>	<b>Public</b>	<b>Inuit Harvesters</b>
Polar bears	31	26
Caribou	16	10
Don't know	5	3
No priorities	4	3
Elders/Hunters	4	2
Wildlife	4	2
Mining	3	1
Selling of wildlife	2	2
Research	2	2
Care of Wildlife	2	2
Inuit	2	1
Quotas	2	1
Beluga/Narwhal	2	1
Wildlife Maintenance	2	1
Human impacts on wildlife	2	0
Sustainable Harvest	2	0
Inuit Foods	2	0
Consult with the common person on how the wildlife are doing	1	1
Make wildlife managers even	1	1
Dog team owners	1	1
Harvesting	1	1
Inuit traditional management	1	1
Inuit qaujimajatuqangit	1	1
Grizzly bears	1	1
Nunavut issues	1	1
Ringed seals	1	1
Wildlife health	1	1
Poaching	1	1
Environment	1	0
Animal wastage	1	0
Climate Change	1	0
Habitat	1	0
To be open	1	0
Enforcement	1	0
Environmental protection	1	0
Resource Development	1	0



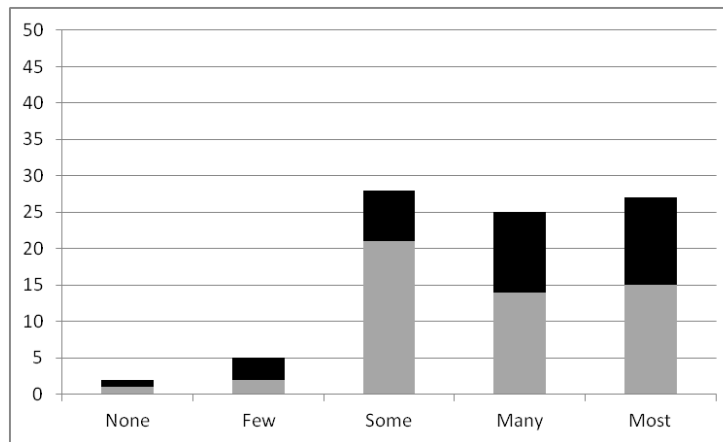
a) Current population size



b) Preferred population size



c) Fewest tolerated population size



d) Most tolerated population size

Figure 5: The responses of Inuit harvesters (grey) and the rest of the public (black) about the polar bear abundance a) currently; b) preferably; c) the fewest tolerated; and d) the most tolerated.

Personal observations, town sightings and the sightings of other community members were the main basis for people describing the current polar bear population as they did (Table 4).

A variety of reasons were provided for why people preferred the polar bear population size that they did (Table 5). Those that preferred 'no' or 'few' polar bears cited that they were afraid of polar bears most often. Those that preferred that 'there are' polar bears tended to cite the benefits of having polar bears. Other reasons that people preferred that 'there are' polar bears were that polar bears are part of nature or their lives, and that polar bears are scary. Amongst those that preferred 'many' polar bears, the benefits of having polar bears was the most common reason. Other reasons that people preferred 'many' polar bears were that polar bears are part of nature or need to exist. Amongst those that preferred the 'most' polar bears, so that Inuit can harvest many polar bears was one of the more common reasons. Other reasons for wanting the 'most' polar bear were because of the benefits of having polar bears, and for future generations.

Most respondents, Inuit harvesters and the rest of the public, seemed to believe that the polar bear population was above their preferred polar bear population level (Figure 6a). This question was not explicitly asked, but was derived by comparing their responses to the questions regarding their preferred polar bear population level to the level they felt the polar bear population to be at currently. Most respondents, Inuit and non-Inuit, also seemed to believe that the polar bear population level was within their tolerance (Figure 6b). This seems to suggest that quite a few people were willing to tolerate polar bear population levels that are not at their preferred level.

### **Polar Bear Concern**

People were asked if they were concerned about the future of the western Hudson Bay polar bear population and a variety of responses were given (Figure 7). Most people indicated that they were not concerned about the future of the western Hudson Bay polar bear population. The second most common response was that they were concerned about the polar bear population.

A variety of reasons were provided for why people were or were not concerned about the western Hudson Bay polar bear population (Table 6). Those that were not concerned most often cited that there are many polar bears. Those that were concerned about the western Hudson Bay polar bear population indicated that they were concerned because people may be endangered by the polar bears in the future. Climate change seemed to be another reason that people cited for why they were concerned about the future of the western Hudson Bay polar bear population.

### **Confidence in Wildlife Management**

#### ***Performance of the Wildlife Management System***

The performance of different groups involved in wildlife management was a subject that we enquired about (Figure 8). The highest ranked groups were elders and conservation officer, followed by local Hunters and Trappers Organizations. The performance of Regional Wildlife Organizations and the Nunavut Wildlife Management Board were also highly ranked, but a high proportion of the public also did not know about their performance. The Government of Nunavut was the next highest ranked group.

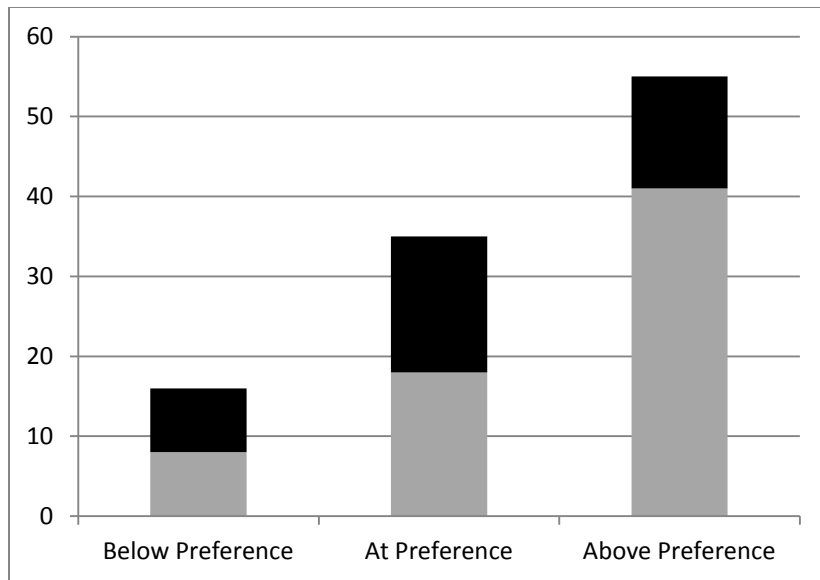
Table 4: The reasons for public and Inuit harvesters’ perceptions of the current polar bear population abundance.

There are no polar bears		There are few polar bears		There are polar bears		There are many polar bears		There are the most Polar bears	
Reason	Public	Reason	Public	Reason	Public	Reason	Public	Reason	Public
Personal observation	1	Other community member sighting	1	Personal observation	11	Town sighting	14	Personal observation	13
		Polar bear management	1	Town sighting	4	Other community member sighting	7	Town sighting	12
				Other community member sighting	4	Personal observation	5	Polar bear management	3
				Personal sighting outside community	1	Polar bear management	3	Other community member sighting	2
				From Inuit	1	Personal sighting outside community	2	Personal sighting outside community	2
				I know it	1	Because of sea ice	1	Because of sea ice	2
						Polar bears are breeding	1	Climate change	2
						From Hunters	1	From Inuit	1
						Don't know	1	Not coded	1

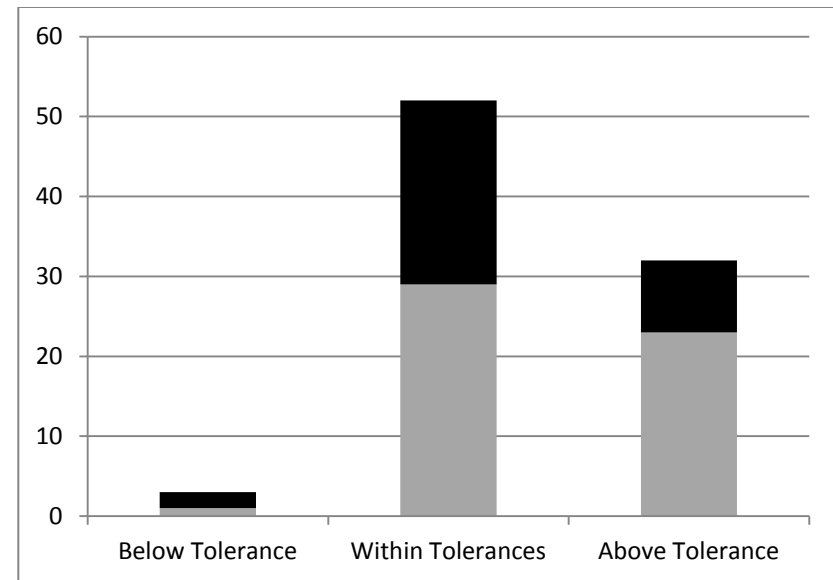


Table 5: The reasons for public and Inuit harvesters’ preferred polar bear abundance.

There are no polar bears		There are few polar bears		There are polar bears		There are many polar bears		There are the most Polar bears	
Reason	Public	Reason	Public	Reason	Public	Reason	Public	Reason	Public
Polar bears are scary	4	Public safety	3	Polar bear benefits	6	Polar bear benefits	9	So Inuit can hunt	3
Public safety	1	Polar bears are scary	2	Polar bears are part of nature	5	Polar bears are part of nature	4	Polar bear benefits	2
Personal safety	1	Balanced	1	Polar bears are scary	4	Polar bears need to exist	4	For the future	2
Polar bear costs	1	So Inuit can hunt	1	Polar bears are part of our lives	4	Polar bears are not managed by man	2	Polar bears are part of nature	1
So it will be less scary	1	Want polar bears, but not too many	1	Want polar bears, but not too many	3	Public safety	1	Polar bears are endangered	1
		Personal safety	1	Balanced	3	Balanced	1		
		So it will be less scary	1	Public safety	2	So Inuit can hunt	1		
				Polar bears need to exist	2	Polar bears are part of our lives	1		
				Polar bears are not managed by man	2	Want polar bears, but not too many	1		
				There are polar bears	2	I like to see them	1		
				Too many polar bears are uncomfortable	2	Polar bear costs	1		
				Polar bears not malicious	2	Polar bear management	1		
				I like to see them	1	If seals overpopulate, they’d get disease	1		
				Polar bears are too protected, even though our quota’s gone down	1				
				Polar bears have not changed	1				
				Polar bears are fewer	1				
				Polar bears follow seals	1				



a)



b)

Figure 6: Comparison of the current polar bear population abundance to the a) preferred polar bear population abundance and to b) the polar bear population abundance tolerances of Inuit harvesters (grey) and the rest of the public (black).

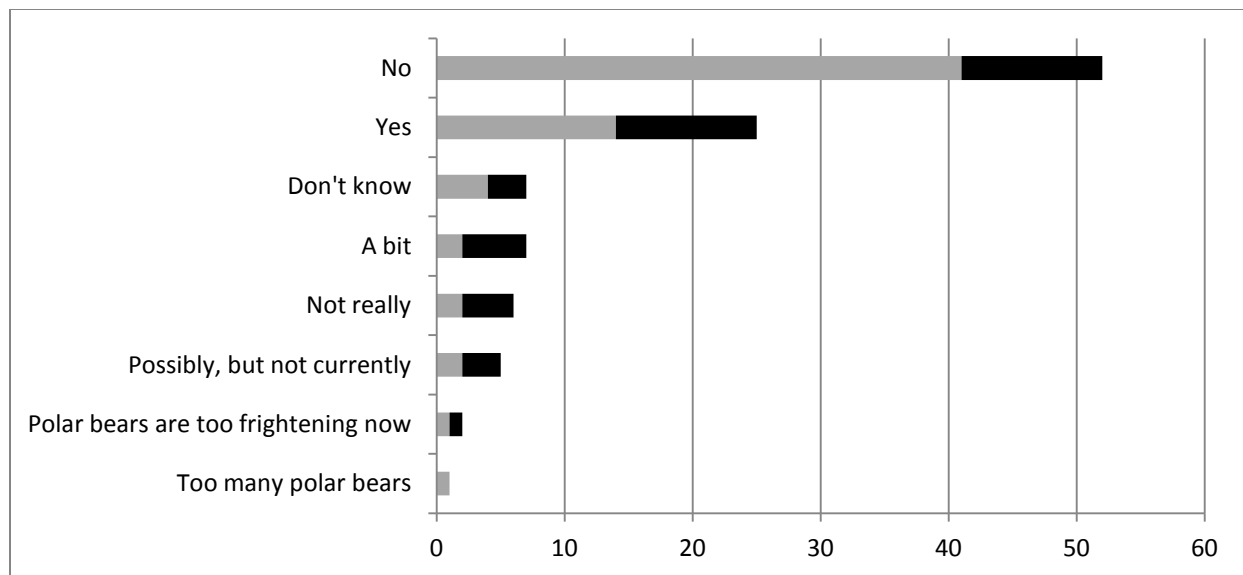
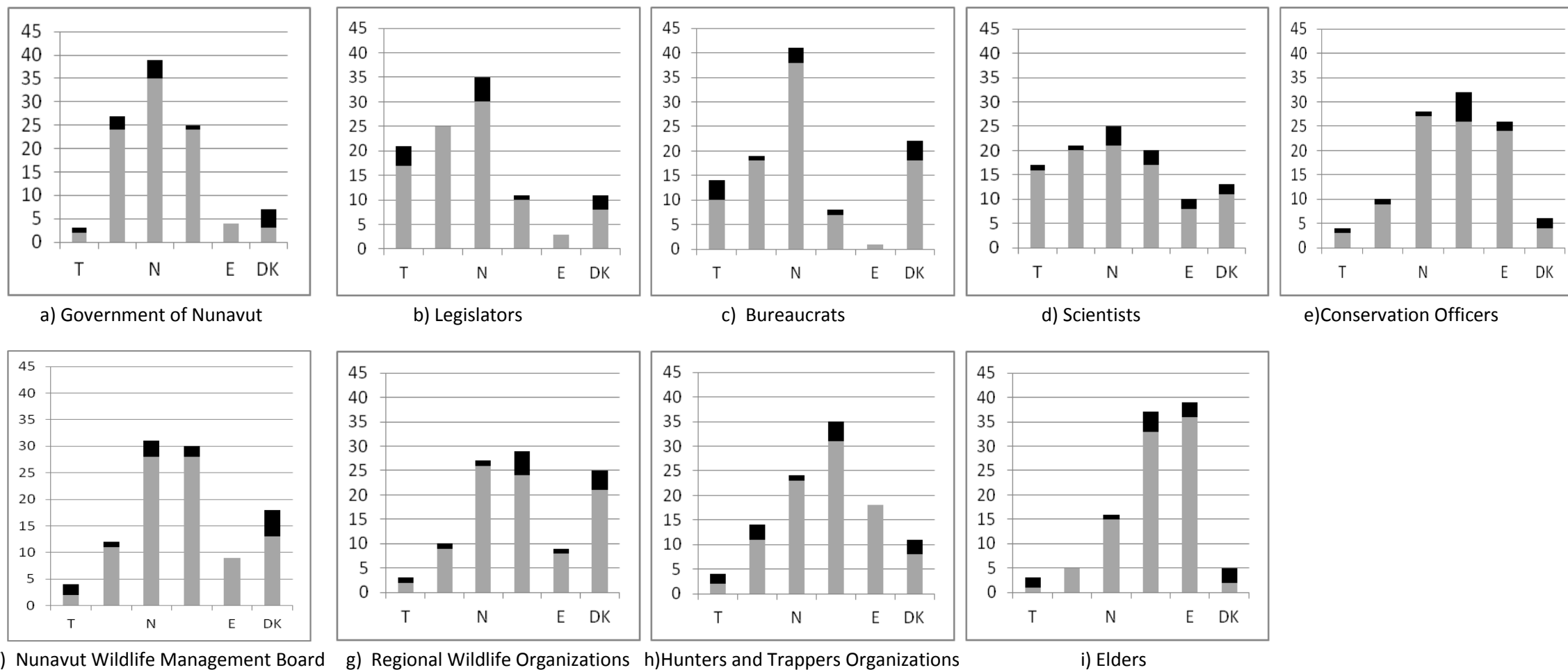


Figure 7: The concern Inuit harvesters (Grey) and the rest of the public (black) have about the future of the western Hudson's Bay polar bear.

Table 6: The reasons for people's concern levels.

<b>Not concerned</b>	
<b>Reason</b>	<b>Public</b>
There are many polar bears	15
Polar bears are capable	4
Polar bears naturally shift distribution	3
Polar bears will still exist	3
I believe Inuit	3
Personal observation	2
Polar bear quota	2
See polar bears more often	2
Not concerning	2
Peoople may be endangered	1
Polar bears are the highest of animals	1
They have enough to eat	1
Polar bears are not distinct populations	1
There is still sea ice	1
Manitoba is changing them	1
Polar bears are scary	1
Climate change	1
If polar bears can just bypass the community, it is fine	1
From 1962-2011, polar bears have been around	1
Polar bears can swim	1
Polar bears are seen in surprising places	1
Polar bears are breeding	1
I'm not a hunter	1
It doesn't really affect me	1
Polar bears are adaptable	1
<b>Concerned</b>	
<b>Reason</b>	<b>Public</b>
People may be endangered	4
Climate change	3
Sea ice is forming later	2
Polar bears need to exist for our benefit	2
Hear they are diminishing	2
Pollutants may contaminate the environment	1
They get lured to town and killed	1
Polar bears are scary	1
Polar bears will starve	1
Current uncertainty about polar bears	1
Polar bears are not growing in number	1
Polar bears are part of Inuit culture	1
Would like to know there is a sensible plan	1
Personal observation	1
Want polar bears close	1
Sea ice is breaking earlier	1
If quota is increased, it would likely decrease the population	1
<b>Don't know</b>	
<b>Reason</b>	<b>Public</b>
Polar bears are not distinct populations	1
Polar bears will starve	1

Polar bears are not managed by man	1
None	1
<b>A bit</b>	
<b>Reason</b>	<b>Public</b>
Climate change	3
Pollutants may contaminate the environment	1
Sea ice is forming later	1
Polar bears need to exist for our future	1
Polar bears may be hungry	1
<b>Not Really</b>	
<b>Reason</b>	<b>Public</b>
Polar bear quota	1
I'm not a hunter	1
It doesn't really affect me	1
Other animals are more important	1
People would be less impacted	1
Don't know	1
<b>Possibly, but not currently</b>	
<b>Reason</b>	<b>Public</b>
They have enough to eat	1
Polar bear quota	1
Shipping	1
Polar bears are breeding	1
Don't know	1
<b>Polar bears are too frightening now</b>	
<b>Reason</b>	<b>Public</b>
If polar bears can just bypass the community, it is fine	1
People would be less impacted	1
<b>Too many polar bears</b>	
<b>Reason</b>	<b>Public</b>
People may be endangered	1



Figures 8: Performance of groups involved in wildlife management according to Inuit (grey) and the rest of the public (black). T=Terrible; N=Neither, E=Excellent, DK=Don't know

Scientists were the next highest ranked group. The performance of bureaucrats and legislators were rated lowest amongst the groups involved in wildlife management. Further, a large proportion of the public did not know about the performance of bureaucrats in wildlife management.

### ***Trust in the Wildlife Management System***

The public trust and confidence of different groups involved in wildlife management was also a subject that we enquired about (Figure 9). The most trusted groups were elders and conservation officer, followed by local Hunters and Trappers Organizations. Regional Wildlife Organizations and the Nunavut Wildlife Management Board were also trusted. A high proportion of the public did not know about Regional Wildlife Organizations. The Government of Nunavut was the next most trusted group. After the Government of Nunavut, scientists were the next most trusted group. Bureaucrats and legislators were the least trusted group involved in wildlife management.

### **Department of Environment Participation Ratings**

We asked the public to rate their participation with the Department of Environment (Figure 10). The Department of Environment was rated highly for 'courteous treatment' and 'providing understandable information'. The next highest rated category was the 'accuracy of information', followed by 'explanation of decisions'. The 'ease of involvement' was the next highest rated category followed by 'understanding concerns'. The Department of Environment was rated poorly for 'earning trust', 'providing information' and having a 'fair decision making process'. The lowest ranked categories were the 'use of input' and 'response to concerns'.

### **Information Sources**

We enquired about how respondents learnt about the work of the Department of Environment (Table 7). The top information source was radio or TV news, followed by newspaper articles or community members, family or friends.

We enquired about how respondents preferred to learn about the work of the Department of Environment (Table 8). The top preferred information source was radio or TV news and the second most preferred information source was newspaper articles.

### **Participation**

We enquired about how respondents preferred to provide input to the Department of Environment (Table 9). The top preferred participation mechanism was through a community group that discusses issues with the Department of Environment. Opportunities to speak with a Department of Environment staff member and public meetings also rated highly.

We asked participants if they have ever provided input to the Department of Environment (Figure 11). Most respondents indicated that they did not in all different input varieties.

We asked respondents that never provided input to the Department of Environment why they do not participate (Table 10). The most common reason that people provided was that they were not concerned with the Department of Environment.

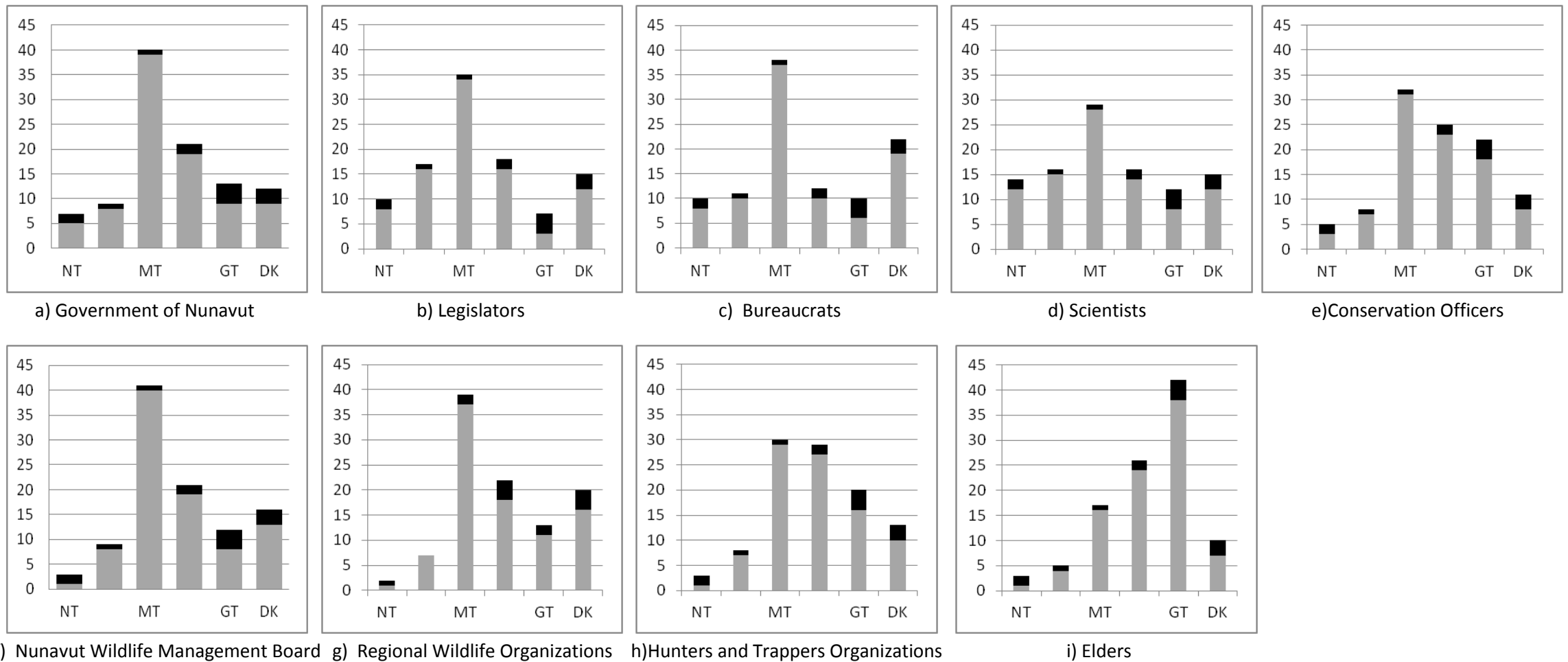


Figure 9: Trust of groups involved in wildlife management according to Inuit (grey) and the rest of the public (black). NT=No Trust; MT=Moderate Trust; GT=Great deal of Trust; DK=Don't know.



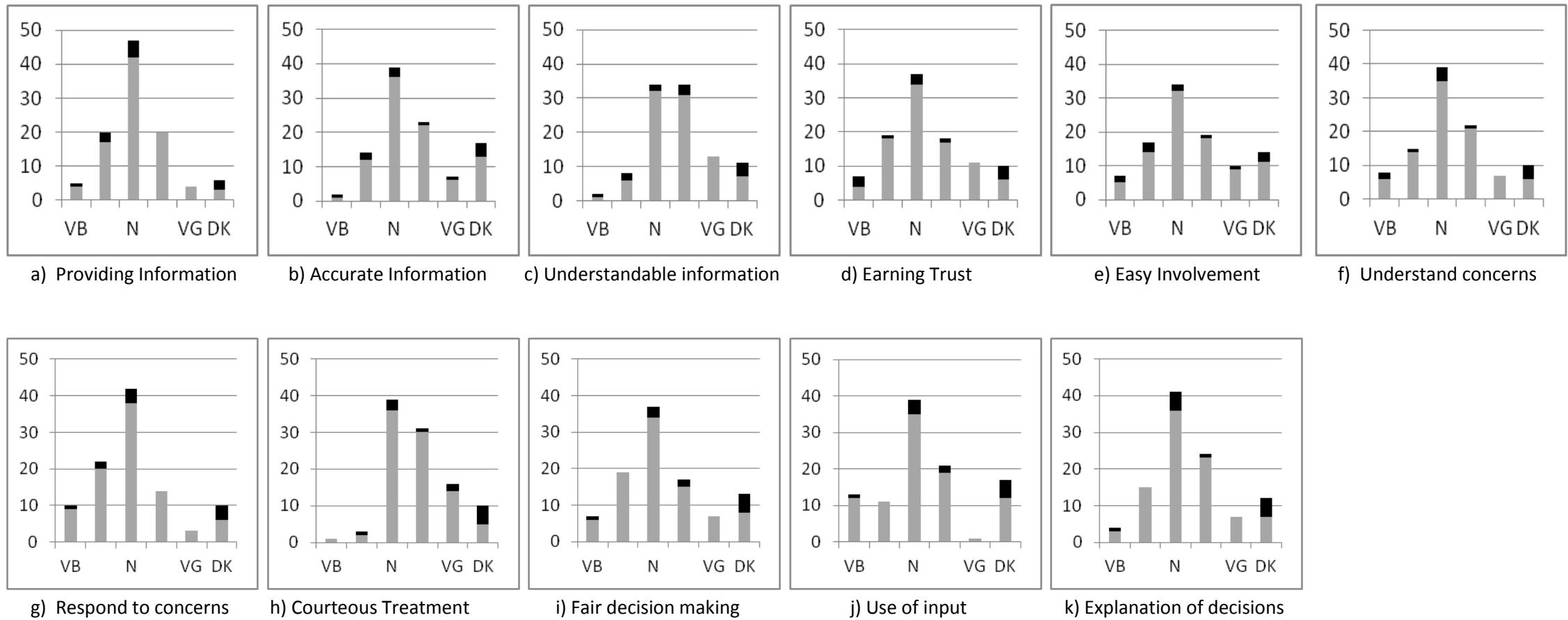


Figure 10: Participation through the Department of Environment amongst Inuit (grey) and the rest of the public (black). VB=Very Bad; N=Neither Good nor Bad; VG=Very Good; DK=Don't know.

Table 7: Information sources for Department of Environment work.

<b>Information Source</b>	<b>Public</b>
Radio or TV news	81
Newspaper articles	44
Community members, family or friends	41
Participation on one or more citizens groups (e.g. HTOs)	26
Public meeting or information session held by the Department of Environment	17
Direct conversation with someone from the Department of Environment, or someone who worked at the Department of Environment.	17
Information from DoE is “common knowledge”	14
Department of Environment’s webpage	8
Mailings	5
From one or more citizen groups (e.g. HTOs)	4

Table 8: Preferred Information Sources

Information Source	Public
Radio or TV news	58
Newspaper article	25
Other	20
A knowledgeable person in your community	16
Presentations at local clubs and organizations (such as HTOs)	13
A direct conversation with a DoE representative	13
Monthly “News Briefs”	13
Short, focused newsletters	9
The Department of Environment website	8
Longer, general mailings	7
Longer, general meetings	5
Short, focused meeting	5

Table 9: Best way to get participation.

<b>Participation mechanism</b>	<b>Public</b>
Through a community group which discusses issues and concerns with DoE (such as HTOs).	23
Through opportunities for you to meet and talk informally with DoE staff.	21
Through public meetings where you can voice your comments.	20
Through opportunities for you to give written comments.	15
Other	15
Through opportunities for you to talk with independent experts.	11
Through a web site for you to communicate with us.	10
Through a toll free telephone number you can call with your comments	6

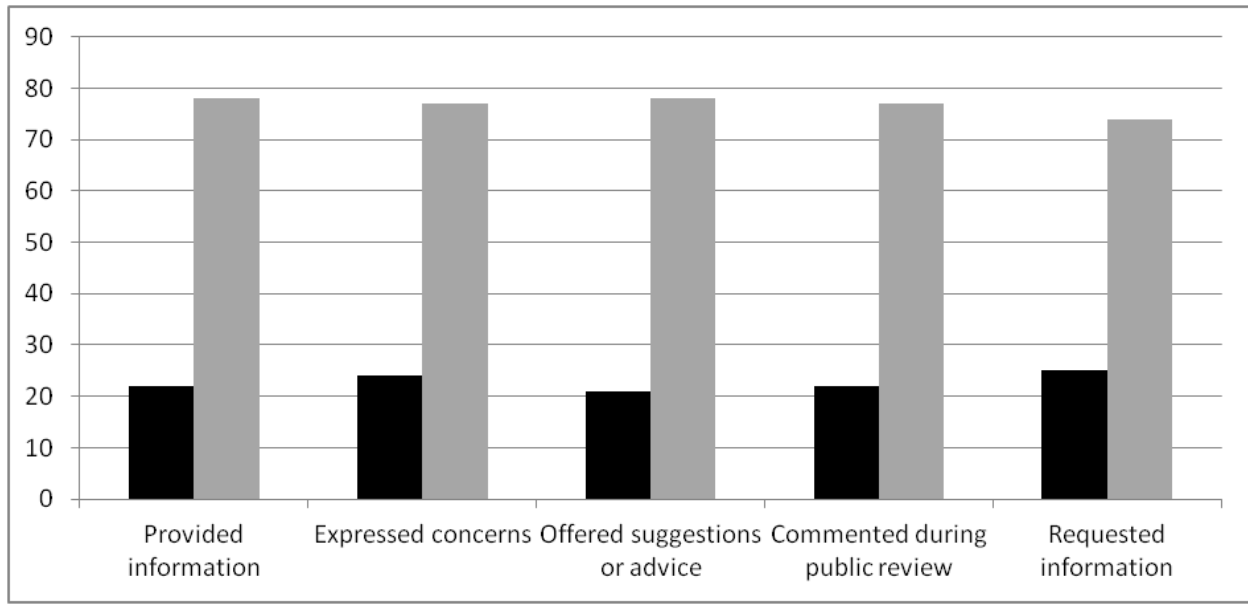


Figure 11: Information provision to the Department of Environment (Yes=Black, No=Grey)

Table 10: Reasons why people do not provide input to the Department of Environment.

<b>Reason</b>	<b>Public</b>
Not concerned	16
No reason	13
Don't know	5
Don't really know about the department	3
Too busy	3
Don't use the Department	3
I don't become aware	2
Don't know when they have meetings	2
New in Nunavut	2
Not involved	2
They are not concerned about me	2
Don't go to meetings	2
Don't hear from them	2
No opportunity to	1
My input would not be valuable	1
I'm too quiet	1
We don't really meet with the Department of Environment	1

## Discussion

In this report, we document public, Inuit and Inuit harvester perspectives in order to inform decision making processes related to the Western Hudson Bay polar bear population. We elicited input from the five communities that harvest from the Western Hudson Bay polar bear population on:

- their priorities for the Government of Nunavut, Department of Environment and wildlife managers
- western Hudson Bay polar bear abundance and concern
- performance and trust of wildlife management
- participation with the Department of Environment

## Public Priorities

### *Government of Nunavut*

Overall, the highest priority that the public had for the Government of Nunavut was housing. This was followed by education and employment. This suggests that legislators were aligned with the public interests when they included 'Increase housing options' while trying to train and employ Nunavummiut as one of their priorities during 2009-2013 (Government of Nunavut, 2009). Environmental issues were a lower priority overall.

The responses obtained may be a good indication of public priorities overall, particularly since the Government of Nunavut is involved in most aspects of Inuit lives. However issues that are important may still not have been mentioned if the public does not feel that the Government of Nunavut should be involved. For example, religion is an important aspect of many people's lives in some Nunavut communities, but it does not seem to appear as an issue that the Government of Nunavut should be involved in. Alternately, some issues may appear to be higher priorities than they are because of the focus of the survey. For example, knowing that this survey would be part of the information provided to decision makers, people may have raised wildlife management as the issue they think the Government of Nunavut should focus on the most. Despite these possible biases in the responses obtained, the approach of actively asking the public for their perspectives about a variety of issues may provide decision makers with more representative information about public perspectives.

### *Department of Environment*

The public expressed an overall concern with mining and its effects on the environment. Some of these reported that some of the current explorations are already having an impact including fuel spills and wildlife disturbance.

### *Wildlife Managers*

Overall, the public raised polar bears as the issue that wildlife managers should focus on. It appears from the public perspective that polar bears are abundant and that the total allowable harvest needs to be reconsidered. This is mirrored in the questionnaire designed to gauge the polar bear population relative to the social carrying capacity.

## Polar Bear Abundance and Concern

Most of the public indicated that they thought that currently there are many polar bears (Figure 5a). Most people indicated that they preferred a medium-level of polar bear abundance and not the highest polar bear abundance possible (Figure 5b). Those that think the polar bear population size is at their preferred level are fewer than those that think the current polar bear abundance is above their preferred level.

As discussed in Kotierk (2010), this information can be used in setting measureable management goals. For example, decision makers can ask if having a large proportion of society feeling that the current polar bear population size is above their preferred population abundance level (Figure 12a) is satisfactory or not. If decision makers are not satisfied with that, they can then create other management goals – for example, decision makers may decide to have a management objective of a balanced society where most people feel the polar bear population is at their preferred population size and an equal proportion of society feel that the polar bear population size is below or above their preference (Figure 12b). Regardless of the management objective, decision makers can then work to reach those goals by taking management action, such as public education, development and implementation of community bear plans, harvest management and other tools. The effectiveness of the actions in reaching the societal goals can then be measured by subsequently determining societal perceptions again. Depending on the subsequent survey, corrections can be made or actions can be maintained as necessary.

In terms of polar bear concerns, our results seem similar to those found by the Arviat HTO (2011) and Tyrell (2006). Most people were not concerned about the future of the western Hudson Bay polar bear population and amongst those that were, there were a significant number that were concerned because they felt that people were now endangered by polar bears. Tyrell (2006), for example, writes:

“Many Inuit believe they are the ones at risk from bears rather than the other way around. Bear numbers would appear to be on the increase, and Inuit feel threatened by the increasing numbers of skinny, hungry bears in their community.”

The Arviat HTO (2011) study also indicated that “all persons interviewed stated there are too many polar bears in today’s day.”

### **Performance and Confidence in Wildlife Managers**

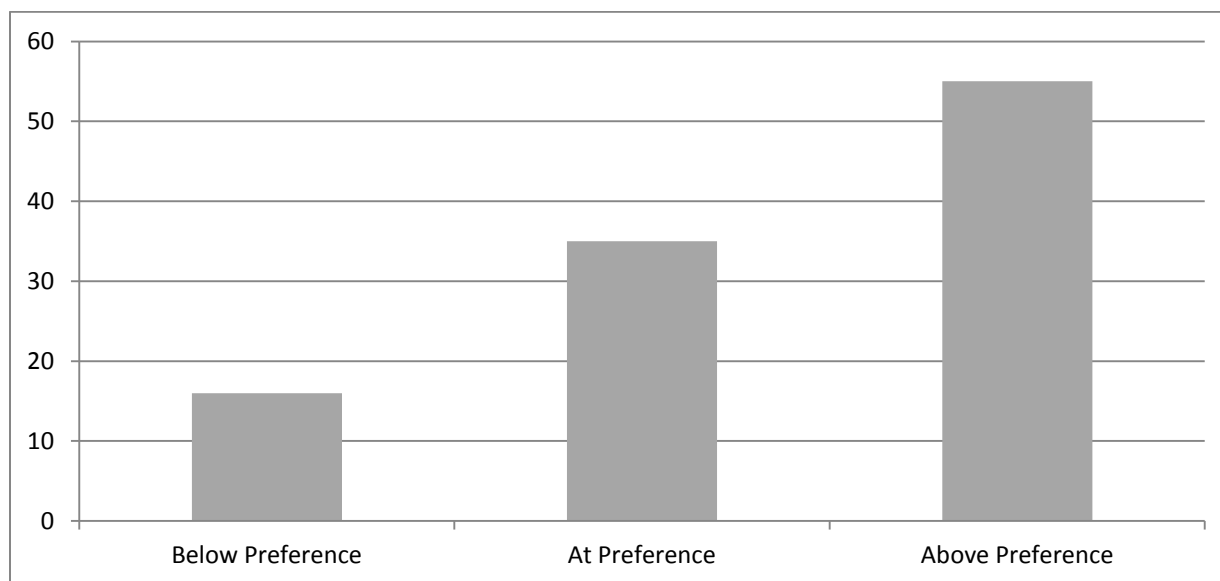
There were two noticeable patterns in the performance and trust ratings of the different groups. One pattern seemed to be that local groups seemed to be rated higher than groups that might be considered to be farther away – for example, elders, the Hunters and Trappers Organizations and local conservation officers are generally located in particular communities compared to scientists, bureaucrats, and legislators.

Another pattern is the close similarity in the order of rankings between the performance of a group and the trust of a group. It may be that good performance leads to good trust or that good trust leads to positive views of performance. Alternately, there may be a third variable that may lead to these correlations. For decision makers, it may be useful to look at how other groups try to manage public confidence and learn from them.

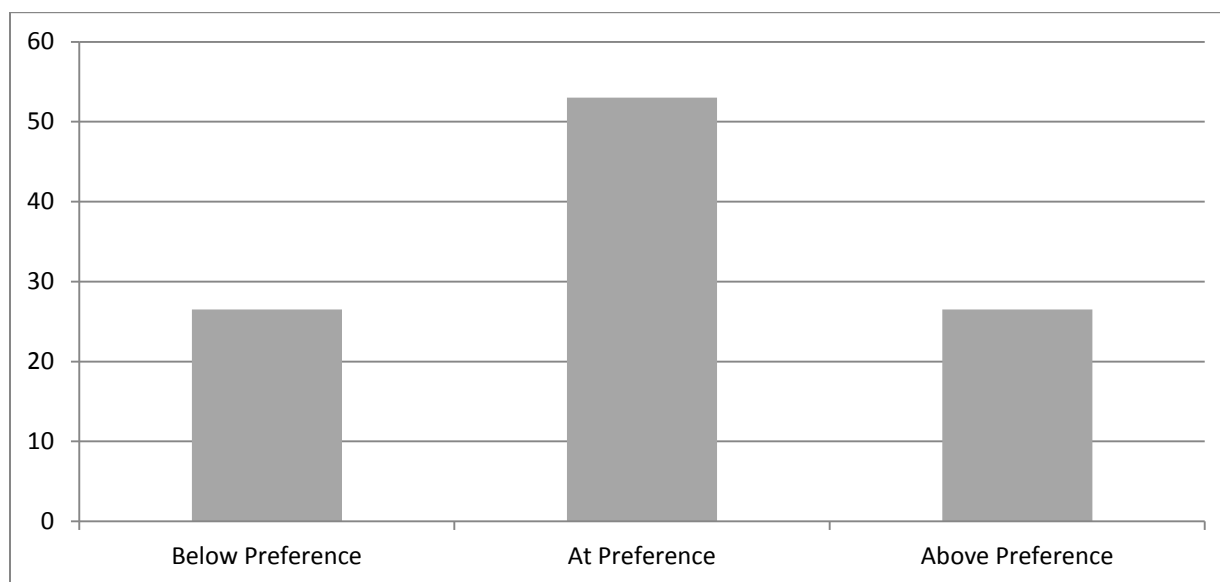
### **Participation in Department of Environment**

For the most part, people felt that the Department of Environment was “neither good nor bad” at various aspects of public participation. Amongst those with negative or favorable opinions, the Department of Environment was most highly rated for ‘courteous treatment’, ‘providing understandable information’, and ‘accuracy of information’. The Department of Environment was rated poorly for ‘fair decision making processes’, ‘use of input’ and ‘response to concerns’. This is similar to the Tyrell (2006) finding of Inuit “feeling that they have little or no control over how they live their lives in relation to their own environment.”





a)



b)

Figure 12: The (a) public sentiment with respect to the current polar bear abundance and a possible management goal, (b) where the public is balanced, with some feeling like there are too few or too many polar bears, and more feel like the polar bear abundance is at their preferred abundance level.

It may be helpful for the Department of Environment to emphasize to the public and to Inuit the ways their decision making works, how public input is used, particularly with respect to scientific input, and how they respond to public concerns. How other jurisdictions undergo decision making – such as through the federal government’s framework for science advice (Government of Canada, 2000) may be helpful with respect to these issues.

## Summary

In summary, a public opinion poll conducted in Arviat, Baker Lake, Chesterfield Inlet, Rankin Inlet and Whale Cove solicited the public perspective regarding people’s priorities for the Government of Nunavut, Department of Environment and wildlife managers; western Hudson Bay polar bears; wildlife management performance and trust; and public participation efforts. Compared to other studies that have focussed on the viewpoints of elders and hunters, this is the first quantitative effort to represent the entire public perspective.

Regarding people’s priorities:

- The Government of Nunavut should focus on housing, education and employment.
- The Department of Environment should focus on mining and wildlife.
- Wildlife managers should focus on polar bears and caribou.

Regarding polar bears, most respondents indicated that:

- There are currently 'the most' polar bears.
- They prefer that there are 'some' polar bears.
- The polar bear abundance level is above their preference.
- The polar bear abundance level is within their tolerance.
- they were not concerned about the future of the western Hudson Bay polar bear population.

Regarding wildlife management:

- The performance of elders, conservation officers, and hunters and trappers organizations received the highest ratings.
- The performance of bureaucrats, legislators and the Government of Nunavut received the lowest ratings.
- Elders, conservation officers and Hunters and Trappers Organizations were the most trusted wildlife management groups.
- Bureaucrats, legislators, and scientists were the least trusted wildlife management groups.

Regarding public participation with the Department of Environment:

- The Department of Environment was rated most highly for 'courteous treatment', 'providing understandable information', and 'accuracy of information'.
- The Department of Environment was rated most poorly for 'use of input', 'response to concerns', and having a 'fair decision making process'.
- 'Radio and TV news' was both the main information source and the preferred information source regarding the Department of Environment.
- The preferred mechanisms to participate with the Department of Environment were 'Through community groups that discuss issues with the Department of Environment', 'through opportunities to speak with Department of Environment staff' and 'through public meetings'.
- Most respondents indicated that they do not provide input to the Department of Environment.

These results could be used in informing decision-making in Nunavut and measuring the impacts of those decisions. It may be possible to learn more about this by examining how other jurisdictions, such as the Canadian federal government, integrate societal values and opinions into decision-making (Government of Canada, 2000).

## Acknowledgements

The Government of Nunavut, Department of Environment provided financial support for this research. Local conservation officers were of invaluable assistance in preparing and conducting this research. We would like to thank Johanne Coutu-Autut, Rankin Inlet CO; Joe Savikataaq, Arviat CO; Steve Levesque, Whale Cove CO; Rob Harmer, Baker Lake CO; and Peter Kattegatsiak, Chesterfield Inlet CO, for their assistance.

Local Hunters and Trappers Organizations also provided assistance during this research. In particular, appreciation is due to Leah Muckpah, Arviat HTO; Lisa Jones, Issatik HTO; Norm Ford, Kangiq&iniq HTO, Joan Scottie, Baker Lake HTO; and MaryAnn Issaluk, Aqigiq HTO.

Finally, we would like to thank Francis Piugattuk for his assistance in conducting this research.

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## Appendix

### Survey Instrument

Interview: \_\_\_\_\_

Interviewer: \_\_\_\_\_

Date: \_\_\_\_\_

Start Time: \_\_\_\_\_

1: DO NOT READ: Note Gender of Respondent

Male.....1

Female.....2

### Environment Questions

2: Thinking of the issues facing Nunavut today, which ONE do you think the Government of Nunavut SHOULD focus on most?

3: Thinking of the issues facing Nunavut today, which ONE do you think the Department of Environment SHOULD focus on most?

4: Thinking of the issues facing Nunavut today, which ONE do you think wildlife managers SHOULD focus on most?



## Social Carrying Capacity

5: Currently, how abundant are bears?

	Polar bear abundance	Currently, it's like this
1	There are no polar bears.	
2	There are few polar bears.	
3	There are polar bears.	
4	There are many polar bears.	
5	There are the most polar bears.	

5a. Why do you feel that there are \_\_\_\_\_?

6: Which is your preference?

	Polar bear abundance	My preference is
1	There are no polar bears.	
2	There are few polar bears.	
3	There are polar bears.	
4	There are many polar bears.	
5	There are the most polar bears.	

6a. Why is \_\_\_\_\_ your preference?

7: Which is fewest you want?

	Polar bear abundance	The fewest I want is
1	There are no polar bears.	
2	There are few polar bears.	
3	There are polar bears.	
4	There are many polar bears.	
5	There are the most polar bears.	

8: Which is the most you want?

	Polar bear abundance	The most I want is
1	There are no polar bears.	
2	There are few polar bears.	
3	There are polar bears.	
4	There are many polar bears.	
5	There are the most polar bears.	

9: Are you concerned about the future of the western Hudson's bay polar bear population?

9a: Why or why not?

## Confidence

10: Generally speaking, how would you rate the performance of the following groups in terms of wildlife management? Please respond on a 5-point scale where 1 means terrible, 5 means excellent, and 3 is neither good nor bad.

	Terrible		Neither	Excellent		Refused / DK
a. Government of Nunavut	1	2	3	4	5	9
b. Nunavut Wildlife Management Board	1	2	3	4	5	9
c. Hunters and Trappers Organizations	1	2	3	4	5	9
d. Legislators/Politicians	1	2	3	4	5	9
e. Bureaucrats	1	2	3	4	5	9
f. Scientists	1	2	3	4	5	9
g. Conservation Officers	1	2	3	4	5	9
h. Elders	1	2	3	4	5	9
i. Regional Wildlife Organizations	1	2	3	4	5	9

11: When it comes to dealing with wildlife management, how much trust do you have in the following groups to do what is right? Please rate your response on a 5-point scale where 1 is no trust at all, 5 is a great deal of trust, and 3 is moderate trust.

	No trust at all		Moderate trust	Great deal of trust		Refused /DK
a. Government of Nunavut	1	2	3	4	5	9
b. Nunavut Wildlife Management Board	1	2	3	4	5	9
c. Hunters and Trappers Organizations	1	2	3	4	5	9
d. Legislators/Politicians	1	2	3	4	5	9
e. Bureaucrats	1	2	3	4	5	9
f. Scientists	1	2	3	4	5	9
g. Conservation Officers	1	2	3	4	5	9
h. Elders	1	2	3	4	5	9
i. Regional Wildlife Organizations	1	2	3	4	5	9

## Participation

12: How do you rate the Department of Environment at each of the following?

	Very Bad			Very Good		Refused / DK
a. Providing the information you need.	1	2	3	4	5	9
b. Giving you accurate information.	1	2	3	4	5	9
c. Making the information easy to understand.	1	2	3	4	5	9
d. Earning your trust.	1	2	3	4	5	9
e. Making it easy to get involved.	1	2	3	4	5	9
f. Understanding your concerns.	1	2	3	4	5	9
g. Responding to your concerns.	1	2	3	4	5	9
h. Treating you courteously.	1	2	3	4	5	9
i. Having a fair decision making process.	1	2	3	4	5	9
j. Using your input.	1	2	3	4	5	9
k. Explaining decisions	1	2	3	4	5	9

13: How have you learned about Department of Environment work? (Check all that apply)

- ☐ mailings
- ☐ Newspaper articles
- ☐ Radio or TV news
- ☐ Community member, family or friends
- ☐ DoE's web page
- ☐ Public meeting or information session held by DoE
- ☐ Direct conversation with someone from DoE, or someone who worked at DoE
- ☐ Information from DoE is "common knowledge"
- ☐ Participation on one or more citizen groups (e.g. HTOs)

14: How would you prefer to receive information? (Check the ONE you most prefer)

- ☐ Monthly "News Brief": project updates, contacts, calendar of events, and new documents
- ☐ Short (1-2 pages), very focused (issue-specific) mailings, sent frequently
- ☐ Longer, general informational mailings, sent periodically
- ☐ Newspaper articles
- ☐ Radio or TV news
- ☐ A knowledgeable person in your community
- ☐ The DoE web site
- ☐ Short, very focused meetings, held frequently
- ☐ Longer, general informational meetings, held periodically
- ☐ A direct conversation with an DoE representative
- ☐ Presentations at local clubs and organizations (such as HTOs).
- ☐ Other \_\_\_\_\_

15: What is the best way to get your participation? (Check the ONE you most prefer)

- ☐ Through opportunities for you to give written comments.
- ☐ Through public meetings where you can voice your comments.
- ☐ Through opportunities for you to meet and talk informally with DoE staff.
- ☐ Through a toll free telephone number you can call with your comments.
- ☐ Through a community group which discusses issues and concerns with DoE (such as HTOs).
- ☐ Through opportunities for you to talk with independent experts.
- ☐ Through a web site for you to communicate with us.
- ☐ Other \_\_\_\_\_

16: Please tell us whether you have ever:

- |  |     |    |
|--|-----|----|
| a. Provided information to DoE.                                | YES | NO |
| b. Expressed your concerns to DoE.                             | YES | NO |
| c. Offered suggestions or advice to DoE.                       | YES | NO |
| d. Given DoE comments on materials available for public review | YES | NO |
| e. Requested information from DoE.                             | YES | NO |

If "no" to all of the above, why not?

17: Is there anything else you would like to tell us about wildlife management in your area?

## Demographics

18: In order to help us group your answers with those of other people in this survey and to improve future research, we would like to ask you some general questions. Please be assured that all responses will remain completely anonymous and absolutely confidential. What is your date of birth or age?

- Day/Month/Year
- REFUSE/DK

19: Are you an Inuk or a Nunavut Land Claims Agreement Beneficiary?

DK

NA

20: Would you call yourself a hunter?

- ☐ 1. YES
- ☐ 2. NO
- ☐ 8. DON'T KNOW
- ☐ 9. NA

21: Would you call yourself a polar bear hunter?

- ☐ 1. YES
- ☐ 2. NO
- ☐ 8. DON'T KNOW
- ☐ 9. NA

22: What is your current employment status? (READ LIST)

- Working full time (35 or more hours a week)
- Working part-time (less than 35 hours a week)
- Self employed
- Unemployed but looking for work
- Attending school, full time/ A Student
- Retired
- Not in the work force (full-time home maker/Unemployed but not looking for work)
- Disability
- (DO NOT READ) Other (Specify)
- Don't know
- Refused

23: Which of the following categories best describes your total household income? That is, the total income of all persons in your household combined, before taxes? [READ LIST]

- Under \$30,000
- \$30,000 to \$50,000
- \$50,000 to \$80,000
- \$80,000 to \$100,000
- \$100,000 and over
- (DO NOT READ) Don't know
- (DO NOT READ) Refused

24: What is the highest level of education that you have reached? READ - CODE ONE ONLY

- Some high school or less,
- Completed High school
- Some college/CEGEP
- Completed college/CEGEP
- Some University
- Completed Undergraduate Degree
- Completed Professional Degree (Such as Doctor, Lawyer, Engineer)
- Some or Completed a Post Graduate Degree
- - VOLUNTEERED (No schooling )
- - VOLUNTEERED Other (SPECIFY)
- - VOLUNTEERED Refused

25: What is your mother tongue? That is, the language you first learned as a child and still understand?

- Inuktitut
- English
- French
- Other (Specify)
- DK/REF.

26: Does your household own a phone?

NO

YES

- Is your phone listed in the phone book? YES NO

27: Does your household have internet?

NO

YES

28: That's all of our questions. Do you have any other comments?

29: DO NOT READ. Record Language of Survey

Inuktitut.....1

English.....2

French.....3

End Time: \_\_\_\_\_