

Yukon North Slope Long Term Research and Monitoring Plan

Issues and Actions

January 2000

Coastal Ecosystem Research and Monitoring:

Issue:

1.1 Lack of information about the structure and function of coastal and marine ecosystems

At present, there is little understanding of many aspects of coastal and marine ecosystems. It is important to develop an understanding of the ecosystems' structure and function to make it possible to identify ecosystem parts and mechanisms that need to be maintained and protected. Such information will also aid in understanding how human activity might impact these ecosystems and in predicting changes to them.

Target:

There will be a better understanding of marine and coastal ecosystems. Research projects on coastal and marine ecosystems will fully employ both traditional/local knowledge and scientific methods. Existing data (e.g. oceanographic conditions) will be accessed and incorporated into ecosystem research. Critical and sensitive ecosystem processes will be identified and protected.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	1.1.1 ☐ Continue to collect oceanographic, ice distribution and atmospheric data	1.1.1 DND, NOAA, DOE	1.1.1 Underway
	1.1.2 ☐ Begin collecting data on waves, currents and the distribution of permafrost along the nearshore of the Yukon North Slope		
Mid-term (2001-2006)	1.1.3 ☐ Examine influence of oceanographic and atmospheric conditions on ice conditions		
	1.1.4 ☐ Examine influence of atmospheric and oceanographic conditions on contaminant pathways and nutrient flows		
	1.1.5 ☐ Examine linkages between fish distributions/migration patterns and oceanographic and atmospheric conditions		

	<p>(e.g. Arctic Cisco distribution and summer prevailing winds)</p> <p>1.1.6 <input type="checkbox"/> Examine relationships between ringed seal reproductive output/condition and oceanographic/ice conditions</p> <p>1.1.7 <input type="checkbox"/> Examine relationships between polar bear distributions and oceanographic/ice conditions</p> <p>1.1.8 <input type="checkbox"/> Examine relationships between oceanographic/ice conditions and whale distributions</p> <p>1.1.9 <input type="checkbox"/> Study structure and function of our coastal lagoon ecosystems and determine their importance to fish</p>		
Long-term (Beyond 2006)	<p>1.1.10 <input type="checkbox"/> Use existing data to study the role of variability in coastal zone ecosystems</p> <p>1.1.11 <input type="checkbox"/> Examine influence of oceanographic/atmospheric conditions on primary and secondary productivity - identify the driving forces behind productivity</p> <p>1.1.12 <input type="checkbox"/> Determine the role of lower trophic levels (benthic invertebrates, bacteria) in coastal ecosystems</p>		

Coastal Ecosystem Research and Monitoring:

Issue:

1.2 Lack of adequate protection for coastal zone ecosystems

Sensitive and important coastal areas along the North Slope are not adequately protected from development such as offshore oil and gas drilling. Many coastal areas are very important for a diversity of wildlife species and the people who hunt them.

Target:

Land/water interface will be mapped with sensitive and critical coastal habitat areas identified. North Slope coastal areas will be mapped periodically and information on sensitive and critical areas updated. Representative, critical and sensitive coastal areas will have adequate protection from development. A coastal zone management plan will be in place.

WHEN	WHAT	WHO	STATUS
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Ongoing (Multi-term Actions)	1.2.1 ☐ Update information regarding sensitive and critical ecosystem components & mechanisms and ensure that they are protected 1.2.2 ☐ Update Oil Spill Atlas 1.2.3 ☐ Coordinate research and habitat protection with Alaska and NWT		
Short-term (Up to 2000)	1.2.4 ☐ Investigate ways to increase awareness of the importance of habitat protection 1.2.5 ☐ Include land/water interface in transboundary North Slope habitat map 1.2.6 ☐ Determine options for developing marine protected areas off the North Slope 1.2.7 ☐ Cooperate with DFO to develop a pilot marine protected area along the Yukon North Slope and recognize coastal protection requirements in the Yukon Protected Areas Strategy	1.2.6 WMAC (NS) 1.2.7 WMAC (NS)	1.2.6 Underway 1.2.7 Underway
Mid-term (2001-2006)	1.2.8 ☐ Use information to support the establishment of a marine protected area on a pilot basis 1.2.9 ☐ Develop a coastal zone management plan		

Coastal Ecosystem Research and Monitoring:

Issue:

1.3 Need to determine past condition of North Slope coastal ecosystems

In order to better understand human impact on Yukon North Slope coastal ecosystems, their condition before European settlement should be determined. This will provide a baseline with which to compare the present and future conditions of coastal ecosystems.

Target:

Using methods developed elsewhere, a reasonable understanding of the condition of coastal ecosystems before European arrival in the Arctic can be achieved. Comparisons will be made between past and present conditions. This will yield a better understanding of the changes that have taken place since the European arrival.

WHEN	WHAT	WHO	STATUS
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Ongoing (Multi-term Actions)	1.3.1 <input type="checkbox"/> Interview elders and the communities on the past conditions of coastal ecosystems	1.3.1 HTCs, IGC, GRRC	1.3.1 Underway
Mid- and Long-term (2001 - 2006+)	1.3.2 <input type="checkbox"/> Utilize scientific methods such as ice core analysis to determine the past conditions of ecosystems 1.3.3 <input type="checkbox"/> Cooperate with circumpolar countries on research into past conditions of Arctic ecosystems		

Coastal Ecosystem Research and Monitoring:

Issue:

1.4 Changes to the health and functioning of coastal and marine ecosystems

Human-induced global environmental stresses such as increased atmospheric carbon dioxide concentrations are likely having negative effects on the health and functioning of coastal and marine ecosystems. Changes brought about by these stresses are often gradual and difficult to detect. Monitoring programs will detect and track changes to both biotic and abiotic elements of these ecosystems.

Target:

Establish a simple, inexpensive and effective monitoring program to detect and track changes to the health and functioning of coastal and marine ecosystems. Indicators will be established and monitored regularly. This should result in a better understanding of how environmental stresses are changing these ecosystems.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	1.4.1 <input type="checkbox"/> Continue and expand the Arctic Borderlands Ecological Knowledge Co-op	1.4.1 ABEKC	1.4.1 Underway
	1.4.2 <input type="checkbox"/> Continue to establish and refine effective, simple and inexpensive abiotic and biotic baseline indicators	1.4.2 ABEKC	1.4.2 Underway
	1.4.3 <input type="checkbox"/> Continue support for existing monitoring programs	1.4.4 ABEKC	1.4.4 Underway
	1.4.4 <input type="checkbox"/> Continue and refine monitoring of resource availability		
	1.4.5 <input type="checkbox"/> Produce periodic community reports on the status of ecosystem health and functioning		
	1.4.6 <input type="checkbox"/> Deliver existing monitoring information in support of ecosystem health assessment and decision making		
Short-term	1.4.7 <input type="checkbox"/> Expand use of IHS as a tool for ecosystem monitoring and refocus it to ensure a better monitoring function		

(Up to 2000)			
Mid-term (2001 - 2006)	1.4.8 <input type="checkbox"/> Incorporate Ringed Seal reproductive output and condition as an indicator of ecosystem health 1.4.9 <input type="checkbox"/> Determine thresholds of acceptable change in plant and animal populations 1.4.10 <input type="checkbox"/> Incorporate the monitoring of the Black Guillemot colony on Herschel Island into ecosystem monitoring 1.4.11 <input type="checkbox"/> Re-establish a tide gauge in the Canadian Beaufort Sea for sea-level monitoring		

Coastal Ecosystem Research and Monitoring:

Issue:

1.5 Rate of coastal erosion along the North Slope

Coastal erosion is occurring at a rapid rate along some parts of the North Slope's coastline. Spits and lagoons are constantly changing and there is concern that some spits and coastal land-forms may completely erode into the ocean. This includes areas that contain cultural resources of the Inuvialuit, important hunting and fishing areas and summer settlements.

Target:

Shoreline erosion monitoring will occur once every five years. This will provide a good indication of the rate of erosion along the Yukon North Slope and result in estimates of the rate of change over time. Areas that are threatened by coastal erosion will be identified.

WHEN	WHAT	WHO	STATUS
Mid and Long-term (2001 - 2006+)	1.5.1 <input type="checkbox"/> Conduct coastal stability mapping (sediment texture, ice content coastal morphology) and storm surge prediction 1.5.2 <input type="checkbox"/> Continue periodic coastal erosion monitoring (once every 5 years) 1.5.3 <input type="checkbox"/> Monitor storm frequency and strength and relate to coastal erosion processes 1.5.4 <input type="checkbox"/> Produce 5-year coastal erosion reports for the communities		
Mid-term (2001 - 2006)	1.5.5 <input type="checkbox"/> Expand coastal erosion monitoring to include Herschel		

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Coastal Ecosystem Research and Monitoring:











Issue:

1.6 Climate change and its impacts on coastal zone and marine ecosystems

There is general concern that high-latitude regions of the world will be most affected by climate change. A warmer climate may have dramatic impacts on Yukon coastal and marine ecosystems. At present, there is a poor understanding of how climate warming may impact coastal ecosystems and the organisms found there. There is a need to monitor the climate along the North Slope to help determine whether the climate is changing and how such change might be related to changes in ecosystems.

Target:

Establish a systematic coastal and marine climate monitoring system on the North Slope. Local knowledge and science will be utilized in monitoring coastal and marine climate conditions. This information can be used to determine if and how the climate is changing and how it may be affecting coastal and marine ecosystems. Climate change impacts on the North Slope will be relevant to global reporting on climate change.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	1.6.1  Maintain and upgrade existing meteorological	1.6.1 Parks Canada, DOE, WMAC(NS) 1.6.3 ABEKC	1.6.1 Underway
	1.6.2  Determine opportunities for adding meteorological		
	1.6.3  Continue and expand community monitoring of		1.6.3 Underway
	1.6.4  Produce periodic reports, in plain language, on		
	1.6.5  Consider/predict potential impacts of climate change		
	1.6.6  Inject North Slope issues related to climate change		
	1.6.7  Support existing monitoring programs		
	1.6.8  Consider climate change when developing wildlife		
	1.6.9  Coordinate climate monitoring with Alaska and NWT		
	1.6.10  Link climate monitoring to national and international		

	initiatives		
Short-term (Up to 2000)	1.6.11 ☐ Utilize and incorporate past and present oceanographic data such as ocean temperature into climate monitoring 1.6.12 ☐ Fully address climate change at the 2000 North Slope conference 1.6.13 ☐ Incorporate climate change into the school curriculum		
Mid-term (2001 - 2006)	1.6.14 ☐ Address potential changes to Environmentally Sensitive and Protected Areas resulting from climate change 1.6.15 ☐ Encourage the development of the North Slope as an international site for climate change monitoring 1.6.16 ☐ Link climate change threats to the North Slope to global climate change monitoring and reporting 1.6.17 ☐ Conduct workshops on climate change in communities		
Long-term (Beyond 2006)	1.6.18 ☐ Relate climate data to observed changes in coastal and marine ecosystems (e.g. animal health)		

Land and Freshwater Ecosystems Research and Monitoring:

Issue:

2.1 Poor understanding of how terrestrial and aquatic ecosystems function

At present, there is little understanding of many aspects of the functioning of terrestrial and aquatic ecosystems. It is important to understand how they work so that critical ecosystem parts and mechanisms can be identified for protection. Such information will also aid in understanding how human activity might impact these ecosystems and in predicting changes to them.

Target:

Terrestrial and aquatic ecosystem processes will be better understood. Critical ecosystem processes and components will have been identified and protected. Research projects on coastal and marine ecosystems will employ both traditional/local knowledge and

scientific methods. Existing data will be accessed and incorporated into ecosystem research.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	2.1.1 <input type="checkbox"/> Ensure that information on Yukon North Slope species can be used to examine ecosystem relationships		
Mid and Long-term (2001 - 2006+)	2.1.2 <input type="checkbox"/> Examine relationships between the physical/biological/chemical attributes of aquatic systems (nutrients, flow, temperature, and substrate) and fish distributions (spawning areas, etc.)		
	2.1.3 <input type="checkbox"/> Promote research on the role of lower trophic levels (microorganisms) and non-game species in terrestrial ecosystems		
	2.1.4 <input type="checkbox"/> Examine linkages between vegetation characteristics and wildlife distribution - use mapping technology		
	2.1.5 Monitor flow of a small, interior mountain stream that is part of the Firth or Babbage drainage to estimate the effects of precipitation and temperature on flow		
Mid-term (2001 - 2006)	2.1.6 <input type="checkbox"/> Identify driving forces behind productivity (terrestrial nutrient cycles)		
Long-term (Beyond 2006)	2.1.7 <input type="checkbox"/> Use existing data to examine the role of variability in terrestrial ecosystems		

Land and Freshwater Ecosystems Research and Monitoring:

Issue:

2.2 Poor understanding of important environmental variables related to winter range of species

Past North Slope research has rarely focused on the winter ecology of game and non-game species that use the North Slope for part or all of their life histories. It is important to achieve a better understanding of the limits that various North Slope species encounter during the winter. Such an understanding will aid in wildlife management decisions and help identify critical habitats on species' winter range.

Target:

Critical winter habitats of important North Slope species will be identified and protected. Wildlife managers will have the tools necessary to make practical decisions regarding the conservation of North Slope wildlife and their habitats.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	2.2.1 ☐ Continue to collect information pertaining to the conditions experienced during winter on the North Slope (e.g. temperature, snow depth, etc.)	2.2.1 YTGRR, DOE, HTCs, Parks Canada, DIAND, ANWR	2.2.1 Underway
	2.2.2 ☐ Utilize and link traditional/local knowledge with scientific approaches for determining winter conditions and their influence on species' winter range		
	2.2.3 ☐ Coordinate and cooperate with Alaska and NWT towards collecting information on winter conditions		
Mid-term (2001 - 2006)	2.2.4 ☐ Access and utilize existing data to examine linkages between winter temperature and snow-depth, freeze-thaw cycles, freezing rain events		
	2.2.5 ☐ Examine relationships between winter variables and species' winter range		
	2.2.6 ☐ Catalogue and describe fish over-wintering habitat		
	2.2.7 ☐ Examine relationship between winter temperature and available over-wintering habitat for fresh-water fish		

Land and Freshwater Ecosystems Research and Monitoring:

Issue:

2.3 Need to determine the past condition of Land and Freshwater ecosystems to allow for comparisons with its present and future conditions

In order to better understand impacts on Yukon North Slope terrestrial and aquatic ecosystems, ecosystem condition before European arrival in the Arctic must be determined. This will provide a baseline with which to compare the present and future conditions of these terrestrial ecosystems.

Target:

Using methods developed elsewhere, there will be a reasonable understanding of the condition of Yukon North Slope ecosystems before European arrival in the Arctic. Comparisons will be made between the North Slope's past condition and the present. This will yield a better understanding of the changes that have taken place since the European arrival.

WHEN	WHAT	WHO	STATUS
Ongoing	1.3.1 ☐ Interview elders and the communities on the past	1.3.1	1.3.1

(Multi-term Actions)	conditions of ecosystems	HTCs, GRRC, GRRB	Underway
Mid and Long-term (2001 - 2006+)	<p>2.3.1 ☐ Utilize scientific methods such as lake sediment coring and ice core analysis to determine the past conditions of Yukon North Slope ecosystems</p> <p>1.3.3 ☐ Cooperate with circumpolar countries on research into past conditions of Arctic ecosystems</p>		

Land and Freshwater Ecosystems Research and Monitoring:

Issue:

2.4 Changes to the health and functioning of Land and Freshwater ecosystems

Human-induced global environmental stresses such as increased atmospheric carbon dioxide concentrations and ozone depletion are likely having negative effects on the health and functioning of Yukon North Slope ecosystems. Changes brought about by these stresses are often gradual and difficult to detect. Monitoring programs need to be in place to allow for the detection and tracking of changes to both biotic and abiotic elements of these ecosystems.

Target:

Establish a simple, inexpensive and effective monitoring program to detect and track changes to Yukon North Slope ecosystem health and functioning. Indicators will be established and regularly monitored. There will be a better understanding of how environmental stresses are changing these ecosystems.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	1.4.1 ☐ Continue and expand the Arctic Borderlands Ecological Knowledge Co-op throughout the region	1.4.1 ABEKC	1.4.1 Underway
	1.4.2 ☐ Continue to establish and refine effective, simple and inexpensive abiotic and biotic baseline indicators	1.4.2 ABEKC	1.4.2 Underway
	1.4.3 ☐ Continue support for existing monitoring programs	1.4.4 ABEKC,	1.4.4 Underway
	1.4.4 ☐ Continue and refine monitoring of resource availability	HTCs,	
	1.4.5 ☐ Produce periodic community reports on the status of ecosystem health and functioning	UBC,	
	1.4.6 ☐ Deliver existing monitoring information in support of ecosystem health assessment and decision making	UAF	

Short-term (Up to 2000)	1.4.7 <input type="checkbox"/> Expand use of IHS as a tool for ecosystem monitoring and refocus it to ensure a better monitoring function		
Mid-term (2001 - 2006)	2.4.1 <input type="checkbox"/> Build Grizzly Bear, Dall Sheep, Moose and raptors (Gyrfalcons) into ecosystem health monitoring 2.4.2 <input type="checkbox"/> Develop long-term habitat monitoring (net primary productivity, plant-animal interactions) 1.4.9 <input type="checkbox"/> Determine thresholds of acceptable change in plant and animal populations		

Land and Freshwater Ecosystems Research and Monitoring:

Issue:

2.5 Climate change and its impact on Land and Freshwater ecosystems

There is general concern that higher-latitude regions of the world will be most affected by climate change. A warmer climate may have dramatic impacts on these ecosystems. At present, there is a poor understanding of how climate warming might impact Yukon North Slope ecosystems. There is a need to monitor the climate along the North Slope to determine changes and to determine how they might be related to ecosystem change.

Target:

Establish a systematic climate monitoring system along the Yukon North Slope. Local knowledge and science will be utilized in monitoring climate conditions. This information will be used to determine if and how the climate is changing and how it may be impacting these ecosystems. Climate change and its impacts on the Yukon North Slope will be linked to global climate change monitoring.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	1.6.1 <input type="checkbox"/> Maintain and upgrade existing meteorological stations	1.6.1 Parks Canada, DOE, WMAC(NS)	1.6.1 Underway
	1.6.2 <input type="checkbox"/> Determine opportunities for adding meteorological stations		1.6.3 Underway
	1.6.3 <input type="checkbox"/> Continue and expand community monitoring of climate conditions	1.6.3 ABEKC	1.6.4 Underway
	2.5.1 <input type="checkbox"/> Continue UV monitoring at Sheep Creek	1.6.4 Parks Canada	
	1.6.4 <input type="checkbox"/> Produce periodic reports, in plain language, on climate conditions for communities and decision makers		
	1.6.5 <input type="checkbox"/> Consider/predict potential impacts of climate change		

	<p>(e.g. species movements, changes in plant communities) at local level whenever possible</p> <p>2.5.2 ☐ Support long-term research on ecosystem mechanisms that are sensitive to climate change (including aquatic systems)</p> <p>1.6.6 ☐ Inject North Slope issues related to climate change into ongoing meetings/conferences</p> <p>1.6.7 ☐ Support existing monitoring programs (e.g. LTER, GCTE, ARCSS)</p> <p>1.6.8 ☐ Consider climate change when developing wildlife management plans</p> <p>1.6.9 ☐ Coordinate climate monitoring with Alaska and NWT</p> <p>1.6.10 ☐ Link climate monitoring to national and international initiatives</p>		
Short-term (Up to 2000)	<p>2.5.3 ☐ Access, utilize and incorporate past climate data in support of climate monitoring</p> <p>1.6.12 ☐ Fully address climate change at the 2000 Yukon North Slope conference</p> <p>2.5.4 ☐ Incorporate permafrost and soil temperature into climate monitoring</p> <p>1.6.13 ☐ Incorporate climate change into the school curriculum</p>		
Mid-term (2001 - 2006)	<p>1.6.14 ☐ Address potential changes to Environmentally Sensitive and Protected Areas resulting from climate change</p> <p>1.6.15 ☐ Encourage the development of the North Slope as an international site for climate change monitoring</p> <p>1.6.16 ☐ Link climate change threats to the North Slope to global climate change monitoring</p>		
Long-term (Beyond 2006)	<p>2.5.5 ☐ Relate climate data to observed changes in North Slope ecosystems (e.g. animal health and distribution; biophysical data)</p>		

Land and Freshwater Ecosystems Research and Monitoring:

Issue:

2.6 Changes to water quality and quantity on the Yukon North Slope

There is considerable concern over present and future water quality and quantity on the Yukon North Slope. At present, water quality and quantity monitoring is sparsely and unevenly distributed along the Yukon North Slope. Human-caused stresses to Yukon North Slope ecosystems may cause considerable changes to the aquatic systems. There is a very limited understanding of how these aquatic systems might be affected by such stresses as climate change. These systems support important populations of fish and are important sources of water for Yukon North Slope users and residents. There is need for an effective and systematic monitoring regime that detects and tracks changes to these systems and determines their causes.

Target:

Establish a broad and systematic water quality and quantity monitoring system on the Yukon North Slope. Data collection will be coordinated with both Alaska and the Northwest Territories. Local and traditional knowledge will be utilized in monitoring. The information collected will be used to determine if and how aquatic systems are changing and what may be causing these changes.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	2.6.1 <input type="checkbox"/> Continue and expand water quality/quantity monitoring on the Yukon North Slope - upgrade existing water stations	2.6.1 DIAND Water Resources, WMAC(NS), Parks Canada	2.6.1 Underway
	2.6.2 <input type="checkbox"/> Determine opportunities for adding water stations on the Yukon North Slope		
	2.6.3 <input type="checkbox"/> Establish long-term funding for existing and future water stations		
	2.6.4 <input type="checkbox"/> Coordinate water quality/quantity monitoring with Alaska and NWT		
Mid and Long-term (2001 - 2006+)	2.6.5 <input type="checkbox"/> Utilize remote sensing information for monitoring water quality and quantity		
Short-term (Up to 2000)	2.6.6 <input type="checkbox"/> Determine past condition of Yukon North Slope aquatic systems - interview elders		
Long-term (Beyond 2006)	2.6.7 <input type="checkbox"/> Access and utilize historic and recent data on water quality to examine linkages between hydrological conditions on the Yukon North Slope and climate change		

Traditional Knowledge:

Issue:

3.1 Oral history is being lost before it can be documented

Communities are losing many of their elders before their oral history and accumulated knowledge can be documented. If this information is not documented or passed down as oral history, it is permanently lost. It is critical that this oral history is documented before it is lost. This knowledge includes past and present information on animal behaviour, distribution, numbers, seasonal movements, and relationships to the environment.

Target:

Communities will have designed and developed a system for collecting local and traditional knowledge. Communities will have comprehensive documentation of their oral history and this knowledge will have been passed down to their younger generations. Elders will be interviewed by the community to ensure that their knowledge is passed along to the community.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	3.1.1 ☐ Train community members on how to interview elders, collect both local and traditional knowledge, and document the information	3.1.1 HTCs, GRRC, GRRB	3.1.1 Underway
	3.1.2 ☐ Continue and expand interviews of elders in the communities	3.1.2 HTCs, GRRC, GRRB	3.1.2 Underway
	3.1.3 ☐ Continue to interview elders about place names and the locations of cultural sites and resources	3.1.3 HTCs, Parks Canada	3.1.3 Underway
Short-term (Up to 2000)	3.1.4 ☐ Design a system for collecting and documenting local and traditional knowledge held in the communities		

Traditional Knowledge:

Issue:

3.2 Much of the existing documented oral history is not easily accessible or usable

Although there exists a large amount of documented oral history (e.g. COPE tapes), the majority of it is not easily accessed, not easily located and is in a form that is unusable. Much of this oral history regarding the Yukon North Slope is likely to contain valuable

information on such things as animal movements and distributions. It is important that the existing sources of traditional and local knowledge be identified, catalogued, synthesized and delivered.

Target:

Establish a directory of traditional and local knowledge sources for the Yukon North Slope. Existing knowledge pertaining to Yukon North Slope ecosystems will be synthesized into forms that can be used by communities, researchers and managers.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	3.2.1 <input type="checkbox"/> Identify, catalogue and periodically update the existing traditional/local knowledge sources for the Yukon North Slope	3.2.1 HTC's, GRRB, WMAC(NS), GRRC	3.2.1 Underway
	3.2.2 <input type="checkbox"/> Compile and synthesize traditional and local knowledge on various species found within the Inuvialuit Settlement Region		
Short-term (up to 2000)	3.2. <input type="checkbox"/> Review, catalogue and translate the COPE tapes		
Mid-term (2001 - 2006)	3.2.4 <input type="checkbox"/> Begin work on a book that summarizes the knowledge compiled and synthesized on various species within the ISR		
	3.2.5 <input type="checkbox"/> Begin developing a searchable database on traditional/local knowledge in the Inuvialuit Settlement Region		
Long-term (Beyond 2006)	3.2.6 <input type="checkbox"/> Complete book summarizing traditional/local knowledge on species within the ISR		
	3.2.7 <input type="checkbox"/> Complete the searchable database on traditional/local knowledge in the ISR		

Traditional Knowledge:

Issue:

3.3 The use of Traditional and Local Knowledge can be enhanced in research and monitoring

There is room to incorporate traditional and local knowledge more fully into Yukon North Slope research and monitoring. At present, this knowledge is not being adequately utilized. Communities that use the Yukon North Slope want to become more directly involved in research, monitoring and wildlife management. There is a need to

acknowledge the value of traditional and local knowledge through its use in Yukon North Slope projects.

Target:

Traditional and local knowledge will be utilized and partnered with scientific methods for research and monitoring projects on the Yukon North Slope. Local communities will be involved in research and monitoring projects utilizing both traditional and scientific methods.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	3.3.1 ☐ Examine opportunities for effectively incorporating traditional and local knowledge in research, monitoring and resource management on the Yukon North Slope (e.g. through permitting process) 3.3.2 ☐ Look for examples of partnerships between traditional knowledge and science in other jurisdictions 3.3.3 ☐ Promote the use of traditional and local knowledge in research and monitoring on the Yukon North Slope 3.3.4 ☐ Make documented and synthesized traditional and local knowledge available for research and monitoring needs 3.3.5 ☐ Provide traditional knowledge to schools and encourage its use in school curricula		
Short-term (up to 2000)	3.3.6 ☐ Create a directory of elders and experts with specific areas of knowledge within in each community		
Long-term (Beyond 2006)	3.3.7 ☐ Make newly-created searchable database and book on traditional and local knowledge on the Yukon North Slope available for research and monitoring projects		

Traditional Knowledge:

Issue:

3.4 Traditional Knowledge use and misuse

There is concern that traditional knowledge could be misused, if the public is given access to it. Some traditional and local knowledge is considered sensitive information by the holders of that knowledge. While communities want to see their traditional and local knowledge used in research projects, they are concerned that confidential information

might be made public. Government agencies that conduct research are accountable to the public and therefore must make available, on demand, any information that they use in research and wildlife management. This creates a dilemma for both the communities, who want to see their knowledge applied in research and management, and the government agencies, who are asked to use the information but keep it confidential.

Target:

Establish agreements regarding how traditional and local knowledge may be used in research and management. Communities will have identified their confidential knowledge and will know how to deal with that knowledge. Governments will know how they can apply the knowledge that is made available to them for research and management.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	3.4.1 <input type="checkbox"/> Monitor and address any problems or conflicts resulting from the use or misuse of traditional/local knowledge		
Short-term (up to 2000)	3.4.2 <input type="checkbox"/> Hold a workshop and meetings to determine how governments and Aboriginals should handle and use traditional/local knowledge		
	3.4.3 <input type="checkbox"/> Determine what information is considered confidential and determine how this information should be treated		
	3.4.4 <input type="checkbox"/> Establish an agreement between governments and Aboriginals on the use of traditional/local knowledge		

Human Use and Impacts - Research and Monitoring:

Issue:

4.1 Lack of understanding of the patterns and impacts of human use on the Yukon North Slope

At present, there is a poor understanding of how human use on the Yukon North Slope may develop and change and what the impacts are and will be. It is important that the current levels of human use on the Yukon North Slope be determined, and that scenarios for future development and increased human use be developed. This will enable the forecasting of current and future impacts of human use on Yukon North Slope ecosystems and will provide an opportunity to avoid scenarios which might do harm.

Target:

There will be a good understanding of past, present and future levels of human use on the Yukon North Slope and their impacts on the environment. This information will be used to determine acceptable levels of use, and informed decisions regarding development will be made.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	4.1.1 <input type="checkbox"/> Continue studies on human use patterns (tourism) and impacts in Ivvavik National Park and Herschel Island Territorial Park	4.1.1 Parks Canada, YTG Parks, HTCs	4.1.1 Underway
	4.1.2 <input type="checkbox"/> Determine human use patterns and impacts on both the land and sea outside Ivvavik and Herschel Island parks		
	4.1.3 <input type="checkbox"/> Access and utilize existing data on human use and its impacts (e.g. wildlife harassment by aircraft and drill rigs)		
Short and Mid-term (Up to 2006)	4.1.4 <input type="checkbox"/> Extrapolate and build on the NSF Sustainability of Arctic Communities program		
Short-term (Up to 2000)	4.1.5 <input type="checkbox"/> Continue research into the impact and potential of an increased harvest on caribou	4.1.5 PCMB, DOE, GNWT, YTGRR	4.1.5 Underway
	4.1.6 <input type="checkbox"/> Invite industry representatives to the next Yukon North Slope conference		
Mid-term (2001 - 2006)	4.1.7 <input type="checkbox"/> Model future development scenarios and predict their impacts on the Yukon North Slope - generate models using baseline biological data and impact data; determine cumulative impacts		
	4.1.8 <input type="checkbox"/> Determine acceptable thresholds for industrial/tourism development on the Yukon North Slope and its coastal areas		

Human Use and Impacts - Research and Monitoring:

Issue:

4.2 Problems with human-animal interactions

There has been a steady increase in the number of problem encounters between humans and animals on the Yukon North Slope. This includes human-bear conflicts as well as wildlife harassment by people in planes, helicopters, boats and on foot. As tourism and other uses on the Yukon North Slope are likely to increase, there needs to be some understanding of how these negative interactions occur and how they can be prevented.

Target:

There will be improved knowledge about how human-animal interactions can be avoided on the Yukon North Slope. Human-bear interactions will be reduced to a minimum and strict usage guidelines will be in place and enforced for visitors to the Yukon North Slope and operators of aircraft and boats.

WHEN	WHAT	WHO	STATUS
Short and Mid-term (Up to 2006)	4.2.1 <input type="checkbox"/> Study human-animal interactions on the Yukon North Slope	4.2.3 DRWED, HTC	4.2.3 Underway
	4.2.2 <input type="checkbox"/> Access and utilize existing data on human-animal interactions (e.g. flight disturbance data)	4.2.4 DRWED, HTC	4.2.4 Underway
	4.2.3 <input type="checkbox"/> Examine human-bear encounters on the Yukon North Slope to determine the causes	4.2.5 DRWED	4.2.5 Underway
	4.2.4 <input type="checkbox"/> Develop programs (guidelines) and enforcement policies that address the causes of human-bear interactions and minimize their incidence	4.2.6 DRWED	4.2.6 Underway
	4.2.5 <input type="checkbox"/> Continue the development of an effective reporting system for the monitoring of human-bear encounters		
	4.2.6 <input type="checkbox"/> Encourage the use of portable incinerators and electric fences at camps to reduce bear problems		

Human Use and Impacts - Research and Monitoring:

Issue:

4.3 Potentially increasing levels and impacts of human use

The amount and type of human use on the Yukon North Slope continues to change as the socioeconomics of communities, access to resources, and development pressures change. It is important to monitor changes in the levels and impacts of human use on the Yukon North Slope. Identifying problems with human use levels and patterns will allow an opportunity to provide solutions.

Target:

Establish a systematic monitoring program that tracks human use patterns and impacts, community demographics, and community socioeconomics. The monitoring program will allow for informed decisions regarding present and future land-use on the Yukon North Slope.

WHEN	WHAT	WHO	STATUS
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Ongoing (Multi-term Actions)	1.4.1 ☐ Continue and expand the Arctic Borderlands Ecological Knowledge Coop 4.3.1 ☐ Continue monitoring community population size 4.3.2 ☐ Select, implement and refine indicators for monitoring human use levels and impacts on the Yukon North Slope 4.3.3 ☐ Select, implement and refine indicators for monitoring the socioeconomics of communities and access to resources	1.4.1 ABEKC 4.3.1 Stats Can 4.3.2 ABEKC, HTC's, Parks Canada 4.3.3 ABEKC	1.4.1 Underway 4.3.1 Underway 4.3.2 Underway 4.3.3 Underway
Short-term (Up to 2000)	4.3.4 ☐ Examine issues related to access to resources on the Yukon North Slope		
Mid-term (2001 - 2006)	4.1.8 ☐ Determine acceptable thresholds for industrial/tourism development on the Yukon North Slope and its coastal areas		

Human Use and Impacts - Research and Monitoring:

Issue:

4.4 Shoreline waste and waste disposal methods

Oil and gas exploration activities have created a significant amount of garbage, which has been accumulating along the Yukon North Slope's shoreline. There is concern about the amount of garbage that has accumulated and solutions are needed for its removal. Companies operating in the Beaufort Sea need to take responsibility for the accumulated waste and develop a program for its removal.

There is also concern about how garbage on the Yukon North Slope is being disposed of. There are no existing adequate waste disposal facilities. Waste disposal needs to be centralized on the Yukon North Slope to limit the impacts.

Target:

Establish periodic shoreline waste surveys, and companies operating in the region will be made to take responsibility for the waste that has accumulated. Guidelines for waste management on marine vessels will be in place to reduce the amount of waste that ultimately ends up on the Yukon North Slope's coastline. A waste disposal scheme will be in place for the Yukon North Slope and waste disposal will be centralized.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	4.4.1 ☐ Conduct periodic shoreline waste surveys (once every 5+ years) 4.4.2 ☐ Lobby companies operating in the Beaufort to pay for cleanup and monitoring of shoreline waste		
Short-term (up to 2000)	4.4.3 ☐ Develop and implement stricter guidelines for the handling of waste on marine vessels operating in the Beaufort Sea		
Mid-term (2001 - 2006)	4.4.4 ☐ Develop and implement a waste management strategy for the Yukon North Slope		

Cultural Resource Research and Monitoring:

Issue:

5.1 Many cultural resources and sites have yet to be located and identified

Many cultural resources and sites have still not been identified. In the face of increasing human activity (e.g. tourism) on the Yukon North Slope, it is important that these resources be identified so that they can be protected.

Target:

Cultural resources and sites along the Yukon North Slope will have been identified and measures will be in place for their protection.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	5.1.1 ☐ Continue historical and archaeological research along the Yukon North Slope including the shoreline and Herschel Island 5.1.2 ☐ Monitor cultural resources and sites along the Yukon North Slope (inside and outside Ivvavik Park) and ensure they have adequate protection	5.1.1 Parks Canada, HTCs, YTG Parks	5.1.1 Underway
Short-term (up to 2000)	5.1.3 ☐ Conduct coastal multi-beam bathymetry surveys and analyze rates of sea level change to permit the identification of former shorelines and possible cultural sites that have been submerged	3.1.3 HTCs, Parks Canada	3.1.3 Underway

	3.1.3 <input type="checkbox"/> Continue to interview elders about place names and the locations of cultural sites and resources		
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Contaminants Research and Monitoring:

Issue:

6.1 Contaminant levels in animals and food

Communities that harvest animals on the Yukon North Slope are deeply concerned about the levels of contaminants found in their traditional foods and in all animals of the Yukon North Slope. As the majority of their diet comes from wildlife found there, there is great concern about the unseen health risks that may be associated with eating these animals. Periodic monitoring of contaminant levels in animals and food is needed to determine if people and animals of the Yukon North Slope are remaining healthy.

Target:

Establish a systematic, standardized contaminant monitoring program. Marine mammals, fish and terrestrial mammals will all be monitored for their contaminant levels. Communities will be fully involved in the coordination and implementation of the monitoring programs.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	6.1.1 <input type="checkbox"/> Continue periodic baseline monitoring of contaminant levels in marine mammals fish and caribou	6.1.1 DIAND, DOE, HTCs, YTGRR 6.1.4 HTCs, GRRC, GRRB, DIAND, YTGRR	6.1.1 Underway
	6.1.2 <input type="checkbox"/> Continue broad contaminant-level monitoring in traditional foods - once every 5 years		6.1.4 Underway
	6.1.3 <input type="checkbox"/> Measure contaminant levels in unhealthy animals whenever possible		
	6.1.4 <input type="checkbox"/> Continue and expand community program for sending in samples of animals and food for testing		
	6.1.5 <input type="checkbox"/> Involve schools in monitoring programs		
	6.1.6 <input type="checkbox"/> Contaminant workshops should include a Health Canada representative and representatives of territorial		
	6.1.7 <input type="checkbox"/> Assess every 5 years whether increased frequency of monitoring, further research and more education are		
	6.1.8 <input type="checkbox"/> Coordinate monitoring and exchange of information with the rest of Canada, Alaska, NWT, communities, and		
	6.1.9 <input type="checkbox"/> Keep communities informed about contaminant levels in animals and food - produce a flier explaining current		

	<p>in animals and food - produce a flyer explaining current knowledge</p> <p>6.1.10 <input type="checkbox"/> Communities to provide feedback to government regarding their concerns</p>		
Short-term (up to 2000)	<p>6.1.11 <input type="checkbox"/> Develop a contaminant research plan</p> <p>6.1.12 <input type="checkbox"/> Convene a workshop on contaminants with maximum community participation</p> <p>6.1.13 <input type="checkbox"/> Form a Contaminants Committee for the Inuvialuit Settlement Region</p>		
Mid-term (2001 - 2006)	<p>6.1.14 <input type="checkbox"/> Establish acceptable contaminant levels in key species</p>		

Contaminants Research and Monitoring:

Issue:

6.2 Rate at which contaminants are being deposited on the Yukon North Slope

Communities and researchers are concerned that the rate at which contaminants enter Yukon North Slope ecosystems may rise as a consequence of increased contaminant release in other parts of the world. To have a gauge on the rate of contaminant deposition on the Yukon North Slope, programs should be established to track the deposition rate over time. This will make it possible to determine if contaminant input is increasing or decreasing.

Target:

The rate of contaminant deposition will be tracked regularly on the Yukon North Slope.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	6.2.1 <input type="checkbox"/> Establish snow sampling stations and periodically	6.2.1 DOE, HTCs	6.2.1 Underway
	6.1.5 <input type="checkbox"/> Involve schools in monitoring programs		
	6.1.8 <input type="checkbox"/> Coordinate monitoring and exchange of information		
	6.1.9 <input type="checkbox"/> Keep communities informed on sources and deposition		

Short-term (up to 2000)	6.1.11 <input type="checkbox"/> Develop a contaminant research plan 6.1.13 <input type="checkbox"/> Form a Contaminants Committee for the Inuvialuit Settlement Region		

Contaminants Research and Monitoring:

Issue:

6.3 Effects of contaminants on animals are largely unknown

There is a lack of information on the effects on animals of contaminants at different concentrations. It is important to achieve a better understanding of these potential effects, especially at low levels, so that it can be determined if the contaminant levels currently being found threaten Yukon North Slope wildlife.

Target:

A better understanding of the impacts, at different concentrations, of contaminants on wildlife will be achieved. This information will be used to determine acceptable levels of contaminants.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	6.1.6 <input type="checkbox"/> Ensure that a Health Canada representative and representatives of territorial health departments attend contaminant workshops 6.1.9 <input type="checkbox"/> Keep communities informed on the effects of contaminants on Yukon North Slope species 6.1.10 <input type="checkbox"/> Communities to provide regular feedback to government regarding their concerns 6.1.8 <input type="checkbox"/> Coordinate and exchange information with other jurisdictions including Alaska, NWT, rest of Canada and overseas		
Short and Mid-term (up to 2006)	6.3.1 <input type="checkbox"/> Access and utilize existing data on the effects of contaminants on animals to determine areas that need further study		
Short-term (up to 2000)	6.1.11 <input type="checkbox"/> Develop a contaminant research plan		

	6.1.13	☑ Form a contaminants committee for the Inuvialuit Settlement Region		
Mid-term (2001 - 2006)	6.3.2	☑ If contaminant levels warrant, conduct research into the effects of contaminants on key species on the Yukon North Slope		
	6.1.14	☑ Establish acceptable contaminant levels in key Yukon North Slope species		

Contaminants Research and Monitoring:

Issue:

6.4 Yukon North Slope contaminant issues are not being addressed adequately at a national or international level

It is important that national and international governments and peoples be made aware of the contaminant problems threatening the Yukon North Slope. It is important that other governments are made aware of the problems and urged to take action towards stopping the major contaminant sources.

Target:

National and international governments will be aware of contaminant threats to the North Slope. International efforts to stop contaminant sources will be aided by the lobbying efforts of Yukon North Slope users and governments.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	6.4.1	☑ Gather information and form a strategy for lobbying governments and the Arctic Council to stop contaminant sources	
	6.4.2	☑ Support the Canadian government's lobbying efforts to stop long-range contaminants	
	6.4.3	☑ Coordinate lobbying efforts with communities and governments in Alaska and NWT	
	6.1.10	☑ Communities to provide regular feedback to the Canadian government regarding their concerns	

Contaminants Research and Monitoring:

Issue:

6.5 Cleanup of local contaminated sites

Several contaminated (PCBs) DEW Line sites exist on the Yukon North Slope. There is considerable concern over the quality of the clean-up jobs that have been done at these sites. These sites are situated along the coastline and could potentially contaminate both terrestrial and marine organisms. There needs to be an adequate cleanup of these sites, and contaminant levels need to be measured.

Target:

All contaminated sites on the Yukon North Slope will have undergone an adequate cleanup. Contaminant levels in the soils at these sites will have been measured to make sure that they do not pose a threat to humans or other animals.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	6.5.1 <input type="checkbox"/> Continue monitoring contaminant levels in soils and water at contaminated DEW Line sites (Komakuk, Shingle Point and Stokes Point)		
	6.5.2 <input type="checkbox"/> Keep communities informed on the status of these sites		
Short-term (up to 2000)	6.5.3 <input type="checkbox"/> Conduct a proper cleanup of Komakuk, Shingle Point and Stokes Point		

Coastal Wildlife Research and Monitoring:

Issue:

7.1 Important and sensitive habitats for many species have not been identified for protection

With almost no existing protection for coastal and marine areas along the Yukon North Slope, there is a need to identify important areas and critical time periods for coastal and marine species to ensure that they are protected from human impacts. To ensure the long-term survival of wildlife populations, important habitats throughout a species' range and throughout its entire life cycle must be identified and protected.

Target:

Critical habitat for most coastal and marine wildlife species will have been identified. Identified critical habitats will be protected from human impacts. All habitats of a species range will be managed through cooperative transboundary agreements.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	1.2.3 <input type="checkbox"/> Coordinate research and habitat protection with Alaska and NWT		
	7.1.1 <input type="checkbox"/> Document whole species use of coastal and marine areas off the Yukon North Slope as a baseline for determining the important and sensitive habitats		
	1.2.1 <input type="checkbox"/> Update information regarding sensitive and critical ecosystem components & mechanisms and ensure that they are protected		
	7.1.2 <input type="checkbox"/> Examine habitat used during critical time periods in species' life cycles		
	7.1.3 <input type="checkbox"/> Examine critical habitats that need protection throughout a species' range		
	7.1.4 <input type="checkbox"/> Utilize traditional/local knowledge in identifying critical areas and time periods		
	7.1.5 <input type="checkbox"/> Access and utilize existing data for the identification of critical habitats and the documentation of species use		
Mid and Long-term (2001 - 2006)	7.1.6 <input type="checkbox"/> Manage all habitats of coastal and marine animals that range beyond Yukon North Slope waters		
	7.1.7 <input type="checkbox"/> Examine the use of cooperative agreements for addressing transboundary habitat issues		

Coastal Wildlife Research and Monitoring:

Issue:

7.2 Need to identify key species and species at risk

There is a need to identify the key species and species at risk in marine and coastal ecosystems so that informed management decisions regarding these species can be made. It is critical to identify the key species essential to these systems' maintenance. The loss of such species can result in the collapse of food chains. It is also imperative to identify any species that are at risk in these ecosystems. If any are at risk, their vulnerabilities need to be determined in order to develop effective recovery programs.

Target:

Key species and species at risk in coastal and marine ecosystems of the Yukon North Slope will be identified. Management programs will be in place to ensure that these species are maintained.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	7.2.1 <input type="checkbox"/> Identify key species and species at risk in coastal and marine ecosystems		
	7.2.2 <input type="checkbox"/> Determine vulnerabilities of any species at risk		
	7.2.3 <input type="checkbox"/> Utilize traditional/local knowledge to determine which species are critical to ecosystem function and which species may be at risk		

Coastal Wildlife Research and Monitoring:

Issue:

7.3 Poor understanding of migratory fish movements and habitat use along the coastal zone

Little is known about the habits of various fish species (e.g. Arctic Char) along the coastal zone of the Yukon North Slope. There needs to be a better understanding of how some migratory fish species use these areas. Questions regarding the timing of use, early life history, and range size still need to be answered. This information is needed to make more informed decisions regarding habitat protection and management of fish species.

Target:

The ecology of migratory fish species and their use of the Yukon North Slope coastal zone will be reasonably well understood. Questions regarding the timing of use, early life history, and range size will be answered. Fish stocks will be well managed throughout all of their life stages.

WHEN	WHAT	WHO	STATUS
Mid and Long-term (2001 - 2006+)	7.3.1 <input type="checkbox"/> Study timing of movements and habitat use of migratory fish species along the near-shore of the Yukon North Slope - determine yearly variation in movements and distribution		
	7.3.2 <input type="checkbox"/> Study the early life history of some fish species and their use of the coastal zone: how far do they range; offshore or near-shore?		
	7.3.3 <input type="checkbox"/> Determine factors influencing population trends and distribution		

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Coastal Wildlife Research and Monitoring:

Issue:

7.4 Specific information needs remain for some whale species

Although extensive research has been conducted on Bowhead and Beluga whales, some aspects of their ecology still need study. Answering these questions will mean better management of these whale species and better monitoring of their populations.

Target:

More accurate information will exist on various aspects of Beluga and Bowhead biology/ecology such as movement patterns and distributions.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	7.4.1 <input type="checkbox"/> Continue research into Beluga ecology/biology (e.g. reproductive patterns, age at first maturity, calving potential, number of calves in a lifetime)	7.4.1 DFO, FJMC	7.4.1 Underway
Short and Mid-term (Up to 2006)	7.4.2 <input type="checkbox"/> Verify aging data for Beluga whales 7.4.3 Conduct studies into the diets of Beluga and Bowhead whales, and Ringed and Bearded seals		
Mid and Long-term (2001 - 2006+)	7.4.4 <input type="checkbox"/> Continue studies on whale movements in the near-shore of the Yukon North Slope - determine timing, habitat use, movement patterns 7.4.5 <input type="checkbox"/> Use information regarding variability in timing and habitat use in consideration of development scenarios		

Coastal Wildlife Research and Monitoring:

Issue:

7.5 Game populations and species-at-risk need to be monitored regularly

There is a need to continue the regular monitoring of animal populations that northern communities are dependent on. There needs to be regular monitoring of species that are

considered at risk, once they have been identified. Periodic population monitoring of these species will help establish population trends and facilitate informed management decisions.

Target:

Populations of harvested species and species at risk will be monitored regularly. This information will be used to establish population trends and health status to assist in determining appropriate species management plans.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	7.5.1 <input type="checkbox"/> Maintain existing periodic population monitoring for Beluga and Bowhead whales	7.5.1 DFO, FJMC 7.5.2 DFO, FJMC	7.5.1 Underway
	7.5.2 <input type="checkbox"/> Maintain existing periodic population monitoring for game fish species		7.5.2 Underway
	7.5.3 <input type="checkbox"/> Locate polar bear dens and monitor denning patterns		
	7.5.4 <input type="checkbox"/> Generate population estimates for any species identified as at risk		
Short and Mid-term (Up to 2006)	7.5.5 <input type="checkbox"/> Determine possible approaches for generating reasonably accurate estimates of Polar Bear and Ringed Seal populations		
Mid-term (2001 - 2006)	7.5.6 <input type="checkbox"/> Include a survey of Beluga summering range		
	7.5.7 <input type="checkbox"/> Establish thresholds of acceptable change for coastal and marine populations		

Coastal Wildlife Research and Monitoring:

Issue:

7.6 Wildlife harvest levels need continual monitoring

Harvest levels need to be monitored continually to ensure a sustainable harvest rate. Harvest monitoring will allow changes in the harvest rate, harvest locations and animal condition (health) to be tracked.

Target:

There will continue to be a comprehensive, accurate harvest monitoring program on the Yukon North Slope. All harvest of coastal and marine animals will be monitored annually. Harvest quality and sociocultural data will be included in the harvest study.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	7.6.1 <input type="checkbox"/> Continue and expand the Inuvialuit Harvest Study	7.6.1 IGC, Joint Secretariat, HTCs 7.6.2 YTGRR, DOE, DRWED, USFWS, WMAC(NS), ADFG	7.6.1 Underway
	7.6.2 <input type="checkbox"/> Assess the sustainability of current harvest levels as new population information becomes available		
	7.6.3 <input type="checkbox"/> Coordinate harvest monitoring and maintain communication with Alaska and NWT		
Short-term (up to 2000)	7.6.4 <input type="checkbox"/> Incorporate harvest quality (animal health/condition) into the Inuvialuit Harvest Study		
	7.6.5 <input type="checkbox"/> Incorporate sociocultural data into the Inuvialuit Harvest Study		

Coastal Wildlife Research and Monitoring:

Issue:

7.7 Monitoring methods are technologically dated, producing inaccurate results; monitoring systems are sometimes inadequate to obtain the information needed

The methodology used for population monitoring of coastal and marine animals produces inaccurate results. There is a need for improved monitoring methods using more advanced technology that will yield more accurate results. There is also a need to determine whether current monitoring systems are adequate for properly monitoring population trends in animal populations.

Target:

Establish improved monitoring methods employing up-to-date technology that will yield more accurate population estimates for coastal and marine animals. Monitoring systems and schedules will have been scrutinized and adjusted to ensure that they are conducted frequently enough to provide the information sought.

WHEN	WHAT	WHO	STATUS
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Ongoing (Multi-term Actions)	7.7.1	☐ Determine opportunities for improving the technology and methods used for population monitoring		
	7.7.2	☐ Determine the accuracy of current population monitoring techniques		
	7.7.3	☐ Assess the adequacy and intensity of population monitoring systems for immediate management needs and for detecting long-term trends		
Short-term (Up to 2000)	7.7.4	☐ Establish guidelines for the review of population monitoring systems		

Land and Freshwater Wildlife Research and Monitoring:

Issue:

8.1 Important and sensitive habitats for many species have not been identified for protection

While much of the Yukon North Slope is protected, there is still a need to identify important areas and critical time periods for many species to ensure that they are protected from human impact. To ensure the long-term survival of fish and wildlife populations, important habitats for species that roam beyond the Yukon North Slope must be identified and protected - throughout a species' range and throughout a species' entire life cycle.

Target:

Critical habitat for most fish and wildlife species will have been identified and protected. All habitats throughout a species' range will be managed through cooperative transboundary agreements.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	1.2.3	☐ Coordinate research and habitat protection with Alaska and NWT	
	8.1.1	☐ Document whole species use of the Yukon North Slope as a baseline for identifying important and sensitive habitats	
	8.1.2	☐ Identify and ensure protection of important and sensitive habitats along the Yukon North Slope	
	8.1.3	☐ Conduct a gap analysis of protected critical habitats for various species throughout their range	

	7.1.2 <input type="checkbox"/> Examine habitat used during critical time periods in species' life cycles		
	7.1.4 <input type="checkbox"/> Utilize traditional/local knowledge in identifying critical areas and time periods		
	7.1.5 <input type="checkbox"/> Access and utilize existing data for the identification of critical habitats and the documentation of species use		
Mid and Long-term (2001 - 2006+)	8.1.4 <input type="checkbox"/> Manage all habitats of animals that range beyond the Yukon North Slope		
	7.1.7 <input type="checkbox"/> Examine the use of cooperative agreements for addressing transboundary habitat issues		

Land and Freshwater Wildlife Research and Monitoring:

Issue:

8.2 Concern regarding the introduction of Muskox on the Yukon North Slope

The introduction and rapid spread of Muskox on the North Slope has many concerned about their potential impacts on the Porcupine Caribou Herd. There is a perceived risk that Muskox might negatively impact the herd through competition for food resources and/or displacement.

Target:

Interactions between muskox and caribou on the Yukon North Slope will be well understood. Any impacts that muskox may be having on the caribou will be identified and appropriate management programs will be in place. The muskox population will be monitored regularly and the population trend will be known.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	8.2.1 <input type="checkbox"/> Continue periodic surveys of the Muskox population and distribution on the North Slope	8.2.1 YTGRR, HTCs, ANWR	8.2.1 Underway
Short-term (Up to 2000)	8.2.2 <input type="checkbox"/> Evaluate Caribou/Muskox behavioural interactions		
	8.2.3 <input type="checkbox"/> Examine Muskox habitat use and determine any overlap with Caribou habitat use		
	8.2.4 <input type="checkbox"/> Determine food habits of Muskox to identify any overlap with Caribou food habits		
	8.2.5 <input type="checkbox"/> Utilize existing information on Muskox and Caribou distribution, population and food habits on the North		

	<p>distribution, population and food habits on the North Slope</p> <p>8.2.6 ☐ Access and utilize studies done elsewhere on food habits and interactions</p>		
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Land and Freshwater Wildlife Research and Monitoring:

Issue:

8.3 Poor understanding of migratory fish habits

Little is known about the habits of some migratory fish species that use Yukon North Slope aquatic systems for part or all of their life cycles. There is a need for better understanding of how some migratory fish species use these areas. Questions regarding the timing of use, early life history, and range size still need to be answered for some species. This information is needed to make more informed decisions regarding habitat protection and management of fish species.

Target:

The ecology of migratory fish species and their use of Yukon North Slope aquatic systems will be reasonably well understood. Questions regarding the timing of use, early life history, and range size will be answered. Fish stocks, throughout all of their life stages, will be well managed.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	8.3.1 ☐ Continue to identify critical habitats of migratory fish along the Yukon North Slope	8.3.1 DFO, FJMC	8.3.1 Underway
Short-term (Up to 2000)	8.3.2 ☐ Identify whitefish spawning grounds on the Yukon North Slope		
Mid and Long-term (2001 - 2006+)	8.3.3 ☐ Determine factors that affect population trends in migratory fish		

Land and Freshwater Wildlife Research and Monitoring:

Issue:

8.4 Need to identify key species and species at risk

There is a need to identify key species and species at risk on the Yukon North Slope to facilitate informed management decisions regarding these species. It is critical to identify key species required by these systems and ensure they are maintained. The loss of such species can result in ecosystem collapse. It is also imperative to identify any species that are at risk in these ecosystems. If any are at risk, their vulnerabilities need to be determined in order to develop effective recovery programs.

Target:

Key species and species at risk on the Yukon North Slope will be identified. Management programs will be in place to ensure that these species are maintained.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	8.4.1 <input type="checkbox"/> Identify key species and species at risk on the Yukon North Slope		
	7.2.2 <input type="checkbox"/> Determine vulnerabilities of any species at risk		
	8.4.2 <input type="checkbox"/> Develop and update management plans for key species and species at risk		
	7.2.3 <input type="checkbox"/> Utilize traditional/local knowledge to determine which species are critical to ecosystem function and which species might be at risk		

Land and Freshwater Wildlife Research and Monitoring:

Issue:

8.5 Populations of key species and species-at-risk need to be monitored regularly

There is a need to continue regular monitoring of animal populations that are key harvested species. There is also a need to monitor regularly species that are considered at risk, once they have been identified. Periodic population monitoring of these species will help establish population trends and support informed management decisions.

Target:

Populations of harvested species and species-at-risk will be monitored regularly. This information will be used to establish population trends and health status to assist in determining appropriate species management plans.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	8.5.1 ☐ Maintain existing periodic population monitoring for caribou, moose, muskox, grizzly bear, and sheep	8.5.1 USFWS, ADFG, DOE, YTGRR, HTCs, DRWED 7.5.2 DFO, FJMC	8.5.1 Underway
	8.5.2 ☐ Determine if and where any additional population and life history studies need to be conducted		7.5.2 Underway
	8.5.3 ☐ Determine sustainable harvest rates		
	7.5.2 ☐ Maintain existing periodic population monitoring for game fish species		
	7.5.4 ☐ Generate population estimates for any species identified at risk		
Mid-term (2001 - 2006)	8.5.4 ☐ Establish thresholds of acceptable change for Yukon North Slope populations		

Land and Freshwater Wildlife Research and Monitoring:

Issue:

8.6 Wildlife harvest levels need to be monitored continually

Harvest levels need to be monitored continually to ensure a sustainable harvest rate. Harvest monitoring will also allow for changes in the harvest rate, harvest locations and animal condition (health) to be tracked.

Target:

There will continue to be a comprehensive, accurate harvest monitoring program on the North Slope. All harvest of wildlife will be monitored annually. Harvest quality and sociocultural data will be included in the harvest study.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	7.6.1 ☐ Continue and expand the Inuvialuit Harvest Study	7.6.1 IGC, HTCs, Joint Secretariat 7.6.2 YTGRR,	7.6.1 Underway
	7.6.2 ☐ Assess the sustainability of current harvest levels as new population information becomes available		7.6.2 Underway
	7.6.3 ☐ Coordinate harvest monitoring and maintain		

	communication with Alaska and NWT	DOE, DRWED, USFWS, WMAC(NS), ADFG	
Short-term (Up to 2000)	7.6.4 <input type="checkbox"/> Incorporate harvest quality (animal health/condition) into the Inuvialuit Harvest Study 7.6.5 <input type="checkbox"/> Incorporate sociocultural data into the Inuvialuit Harvest Study		

Land and Freshwater Wildlife Research and Monitoring:

Issue:


8.7 Monitoring methods are technologically dated, producing inaccurate results; monitoring systems are sometimes inadequate to obtain the information needed

The methodology used for population monitoring of North Slope animals often produces inaccurate results. There is a need for improved monitoring methods using more advanced technology that will yield more accurate results. There is also a need to determine whether our current monitoring systems are adequate for properly monitoring trends in animal populations.

Target:

Improved monitoring methods will be in place, employing up-to-date technology yielding more accurate population estimates for Yukon North Slope populations. Monitoring systems and schedules will have been scrutinized and adjusted to ensure that they are conducted frequently enough to provide the information sought.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	7.7.1 <input type="checkbox"/> Determine opportunities for improving the technology and methods used for population monitoring 7.7.2 <input type="checkbox"/> Determine the accuracy of current population monitoring techniques 7.7.3 <input type="checkbox"/> Assess the adequacy and intensity of population monitoring systems for immediate management needs and detecting long-term trends		

Short-term (Up to 2000)	7.7.4  Establish guidelines for the review of population monitoring systems		
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Data Management:







Issue:

9.1 Data and information sources need to identified, organized and made accessible

Data and information resulting from numerous research projects on the Yukon North Slope are scattered throughout various government agencies and universities in Canada and abroad. There is a need to identify all of these information sources and organize them into the Database of Information Sources. This database needs to be updated continually with new information sources relevant to the North Slope. All existing and future information sources need to be made easily accessible to the public and researchers.

Target:

Establish a comprehensive, up-to-date and searchable database detailing all relevant information sources pertaining to the Yukon North Slope. This database will be accessible to both researchers and communities. All North Slope researchers will be required to register their research with this database. All information sources identified in the database will be easily accessible.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	9.1.1  Continue to update the Database of Information Sources	9.1.1 All groups	9.1.1 Underway
Short-term (Up to 2000)	9.1.2  Expand the Database of Information Sources to include the Alaska North Slope 9.1.3  Make the Database of Information Sources accessible to all researchers and communities 9.1.4  Link circumpolar libraries to allow access to all sources of information 9.1.5  Make data from North Slope studies, and its resulting interpretation, available to the Environmental Impact Screening Committee		
Mid and Long-term	9.1.6  Continually update the circumpolar libraries holding the information sources		

(2001 - 2006+)			
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Data Management:

Issue:

9.2 Data collection is not standardized

Many research projects occurring on the North Slope are collecting similar information, but using different methodologies and formats. There is an opportunity for some standardization of methods to occur for similar research being conducted in both the Yukon and Alaska.

Target:

Where relevant, there will be standardized data collection and formats for similar research projects.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	9.2.1 <input type="checkbox"/> Coordinate strategies with all governments and universities that conduct research on the North Slope		
Short-term (Up to 2000)	9.2.2 <input type="checkbox"/> Determine opportunities for developing standardized data collection methods for research projects on the Yukon North Slope and adjacent areas		
	9.2.3 <input type="checkbox"/> Determine strategy for linking GIS projects and information		
	9.2.4 <input type="checkbox"/> Develop regional standardized databases for various species		
	9.2.5 <input type="checkbox"/> Review information on vegetation classification and develop a standardized classification method for the ISR		
Mid and Long-term (2001 - 2006+)	9.2.6 <input type="checkbox"/> Develop data collection and data format protocols for research conducted on the Yukon North Slope and in adjacent areas		

Mapping:

Issue:

10.1 Need a transboundary habitat/vegetation map for the entire North Slope

No single existing habitat/vegetation map covers the entire North Slope. At present, there are a number of vegetation maps, with different formats that only cover certain portions of the North Slope. Further, on-the-ground vegetation studies have been unevenly and sparsely distributed. It is important to combine the existing GIS data-sets to produce one map under a single format exhibiting the habitat and vegetation features of the entire North Slope.

Target:

Establish a single habitat/vegetation map that includes the entire North Slope. Areas where information was lacking will have been ground-truthed.

WHEN	WHAT	WHO	STATUS
Short-term (Up to 2000)	10.1.1 <input type="checkbox"/> Compile and disseminate North Slope databases regarding habitat attributes and produce a single, transboundary habitat/vegetation map		
	10.1.2 <input type="checkbox"/> Conduct a gap analysis to identify areas that haven't been sufficiently mapped		
Short and Mid-term (Up to 2006)	10.1.3 <input type="checkbox"/> Ground-truth the transboundary habitat/vegetation map and conduct studies in areas where information is lacking		

Mapping:

Issue:

10.2 Opportunity to further apply remote sensing technology to research and monitoring on the Yukon North Slope

There are some good opportunities to further apply remote sensing technology to both research and monitoring on the Yukon North Slope. Remote sensing technology is an economical way of monitoring large-scale patterns and processes on the Yukon North Slope and can be used to examine relationships between animal distributions and habitat characteristics.

Target:

Remote sensing technology will be fully applied in research and monitoring projects where relevant. Research involving habitat assessment and monitoring of large-scale patterns and processes will involve remote sensing technology.

WHEN	WHAT	WHO	STATUS
Ongoing (Multi-term Actions)	10.2.1 <input type="checkbox"/> Obtain remote sensing data at regular intervals for multiple applications in both coastal and terrestrial areas of the Yukon North Slope		
	10.2.2 <input type="checkbox"/> Extend application of remote sensing to more species for habitat assessment		
	10.2.3 <input type="checkbox"/> Continue and expand the use of remote sensing for monitoring physical patterns such as ice distribution in the Beaufort Sea		

Mapping:

Issue:

10.3 Need sensitive areas maps

The production of sensitive areas maps will be a useful tool in identifying and delineating sensitive habitats on the Yukon North Slope. Sensitive habitats for various species need to be identified and mapped to facilitate their proper protection.

Target:

Sensitive habitat maps for various key species on the Yukon North Slope will be completed and updated regularly.

WHEN	WHAT	WHO	STATUS
Short-term (Up to 2000)	10.3.1 <input type="checkbox"/> Begin sensitive area mapping on the Yukon North Slope		
Mid-term (2001 - 2006)	10.3.2 <input type="checkbox"/> Complete sensitive area maps for various key species on the Yukon North Slope		
Long-term (Beyond 2006)	10.3.3 <input type="checkbox"/> Update sensitive area maps		