



Arctic Borderlands Database of Information Sources

Assessment of the available literature
pertaining to
the Yukon Coastal Zone

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INTRODUCTION

The Arctic Borderlands Database of Information Sources is an informal, annotated internet database of references, including reports, series of reports, file sets, map series, and data sets (www.taiga.net/borderlands). The database was developed and is maintained as a joint project between the Arctic Borderlands Ecological Knowledge Co-op and the Wildlife Management Advisory Council (North Slope). The geographic focus of the database is primarily the Canadian range of the Porcupine Caribou Herd, with key references from adjacent areas.

In 2002/2003, the database was expanded to include literature that is of relevance and utility to management planning in the Yukon coastal zone. The Yukon coastal zone includes the near and offshore waters of the Yukon North slope as well as the zone of influence on the Yukon North Slope where the ecological processes of the coastal plain and the Beaufort Sea affect one another. A review was conducted of all the documented information that could be found about the Yukon North slope and coastal plain. Information sources included journal articles, conference proceedings, databases, ongoing monitoring and research work, research licence compendia, internet sites, and experts from governments, universities and local communities. The information collected focused on improving the understanding of the conservation requirements of the Yukon's coastal zone and improving the planning and management of future development activities, including tourism and hydrocarbon exploration and development, in the offshore. References added to the database included baseline conditions, impacts, and additional information that could assist in environmental assessment and planning.

Given time constraints some areas of knowledge were not adequately researched. The literature review did have a bias towards information from scientific sources. More work should be put towards summarizing and assessing both the documented and informal sources of local and traditional knowledge about the Yukon coastal zone. These direct observations of people living on the land would add an important dimension to our understanding of the Yukon coastal zone. Likewise, a more extensive search of the internet could reveal more information which is on and relevant to the Yukon coastal zone.

This literature review summarizes and assesses the information available on the Yukon coastal zone, indicating where coverage is good as well as where little information exists. It also looks to other geographical areas which are of relevance to the Yukon coastal zone (e.g. Alaskan coastal zone) and assesses where such information may be available in related regions and the strengths and weaknesses in the kinds and range of information available. The literature review was conducted by reviewing each heading in the Database of Information Sources and looking at both the **number of entries**, **average date of when publication was done**, **relevance to Yukon coastal zone**, and **extensiveness of the information**.

SUMMARY OF DATABASE - MAY 2003

SUBJECT	NUMBER OF RECORDS
Air quality	3
Archeology	9
Biodiversity	14
Birds	94
Climate	96
Coastal	104
Contaminants	77
Culture	25
Fire	2
Fish	78
Forests	29
Geology	23
Health	14
Human Activity	214
Invertebrates	12
Lakes	18
Land	123
Marine	178
National Parks	34
Permafrost/Ice	38
Plants	73
Streams	51
UV Radiation	1
Water	40
Water quality	33
Water quantity	11
Wildlife	257

Note: Many entries fall within more than one category

REGION	NUMBER OF RECORDS
Arctic National Wildlife Refuge	54
British Barn Mountains	64
Coastal Plain	176
Herschel Island	29
Ivvavik National Park	49
Mackenzie Basin	28
Mackenzie Delta	58
Marine/coastal	268

Note: Many entries fall within more than one category

AIR QUALITY

Given that there are only 3 references in this section, very little research has been done on air quality specific to the Yukon North Slope. All three references are not specific to the Yukon coastal plain. Most information in this area is found within general environmental studies and compilations of information. One reference which may provide some good information on this subject is: Oil and Gas Development on the Coastal Plain of the Arctic National Wildlife Refuge, Major Environmental Issues. 1991.

Level of information: poor.

ARCHAEOLOGY

There are 9 references in the database under archeology with four specific to the Yukon coastal zone. The majority of the information for the Yukon coastal zone is specific to Ivvavik National Park. A number of research projects have been conducted in the Park, along with an ongoing coastal cultural resource monitoring program. Furthermore, work has been done in this area on Herschel Island along with the Alaskan coastal plain.

Work in this area is relatively recent and much of it is ongoing. **Level of information: good.**

BIODIVERSITY

There are 14 references in the database under biodiversity of which two are specific to the Yukon coastal zone area. There are three references which are specific to the Beaufort Sea. Most of the references are general in nature in that they speak to biodiversity in the Arctic. One good reference which would lead a researcher to a vast body of work is: Arctic Environmental Strategy: annotated bibliography. 1997. There are also five references which are specific to Alaska but which would be relevant to the Yukon coastal zone. The majority of the Alaskan references are related to oil and gas development and its relationship to biodiversity. **Level of information: fair.**

BIRDS

There are 94 references in the database under birds of which 35 are for the coastal plain, 14 are for the Arctic National Wildlife Refuge, 6 for Ivvavik National Park, and 33 are for marine/coastal. The majority of the work in the database is on monitoring (population and distribution). Ducks and geese are the most common species where there has been work done with some work on loons and ptarmigans. Furthermore, some long term work has been done on raptors (mostly within Ivvavik National Park). A lot of work is concentrated in Ivvavik National Park with most of the work being long-term. Wildlife cards have been filled out for Ivvavik National Park (which record bird sightings) and the NWT-Nunavut Bird Checklist Survey is also being done in Ivvavik National Park. Other than the ongoing monitoring work, most of the studies were done in the late 1980's and the early 1990's.

The work done in the Arctic National Wildlife Refuge is almost entirely on Tundra Swans and Snow Geese. There has also been work done on the impacts of human disturbance and oil and gas development on birds. The majority of this work was conducted in the early 1990's.

A lot of work has been done on Beaufort Sea waterfowl. There are both Canadian and Alaskan references in this area. The majority of this work is on distribution and abundance of waterfowl. **Level of information: good.**

CLIMATE

There are 96 references in the database under climate of which 12 are specific to the coastal plain, 2 are for Herschel Island, 8 are for Ivvavik National Park, and 25 are for marine/coastal. The information on climate for the Yukon coastal zone is very general in nature. Information on climate is usually part of a larger environmental study of the coastal zone. There is some work on climate change related to the Yukon coastal zone. Most of this work is related to storm surge monitoring, coastal erosion and changes in permafrost. There is ongoing monitoring through the weather stations on Herschel Island and in Ivvavik National Park. Furthermore, there has been ongoing monitoring of storm surges (since 2001), coastal erosion, and plant productivity (since the mid-1990s). All of this monitoring is related to climate change.

Work has also been done on the influences of climate change on birds in the Mackenzie basin and polar bears and seals in the Beaufort Sea region which would be of relevance to the Yukon coastal zone area. Furthermore, there has been work done on the relationship between climatic changes and sea ice in Greenland and Labrador which would be relevant to the Beaufort Sea/Yukon coastal zone. **Level of information: good.**

CONTAMINANTS

There are 77 references in the database under contaminants of which 7 are specific for the Arctic National Wildlife Refuge, 14 for the coastal plain, 4 for Ivvavik National Park, and 27 for marine/coastal. Almost all of the references for ANWR are related to oil and gas development. A few of these studies explore the effects of oil and gas development on wildlife. There is no other information in the database on other kinds of contaminants in ANWR.

One study in particular, the Northern Contaminants Program through DIAND produced some good reference material regarding contaminants in arctic wildlife and the effects on potential food sources. This would be relevant to the Yukon coastal zone area. Other references for the coastal zone refer to oil and gas development, clean up of DEW Line sites, and clean up of other contaminated sites, specifically fuel caches. Most of this work was done in Ivvavik National Park. Ongoing monitoring of contaminants is being done for Komakuk and Stokes Point DEW Line sites in Ivvavik National Park.

Specifically, there is ongoing water quality monitoring for the Firth River in Ivvavik National Park since 2000.

There are references for the Beaufort Sea which focus on the effects of oil and gas development and potential spills. One key study can be found in the database on contaminants in Beluga whales (ongoing since 2000 for 5 years). There has been limited work done on contaminant levels in polar bears in this region. **Level of information: good.**

CULTURE

There are 25 references in the database on culture. Most of the specific studies (i.e. archeology and cultural resources monitoring) are for Ivvavik National Park and Herschel Island. There are a few references for tourism development (as it relates to culture) in the arctic which would be relevant for tourism development for the Yukon coastal zone. There is also a report on traditional land use on the north slope of Alaska which may be relevant for land use planning on the Yukon coastal zone.

Quite a bit of work has been done on traditional place names through the Inuvialuit Oral History Project for the Yukon coastal plain. Peter Usher's work "Inuvialuit Use of the Beaufort Sea and its Resources, 1960 - 2000" is an important work for the region. The Arctic Borderlands Ecological Knowledge Co-op has done ongoing community interviews on changes to the environment for the past 7 years in Old Crow, Fort McPherson, and Aklavik. Interviews have also been conducted in Kaktovik and Arctic Village for the past few years. This program may be moved into Tuktoyaktuk in the future. This work is relevant for the Yukon coastal zone especially those interviews done in Aklavik. **Level of information: good.**

FIRE

There are only 2 references in the database on fire. There is one report done in 1976, entitled "Frequency and Characteristics of Arctic Tundra Fires" which is relevant to the Yukon coastal zone. **Level of information: poor.**

FISH

There are 78 references in the database on fish, of which 4 references are for ANWR, 19 are for the coastal plain, 10 are for Ivvavik National Park, and 24 are for coastal/marine. Specific information on the Yukon North Slope is only available for charr and grayling. Other information on fish is found in more general studies and plans. Lois Harwood (Department of Fisheries and Oceans, Inuvik) is the main researcher in the area. There has been extensive work done on Dolly Varden Charr in Ivvavik National Park. More general information on fish can be found in the Resource Description and Analysis for Ivvavik National Park. **Level of information: good.**

FORESTS

There are 29 references in the database on forests. There is general information in the database which may be relevant to the Yukon coastal zone that is available through the NOGAP Program on forests. This program relates to northern hydrocarbon development and its affects on the environment. **Level of information: poor.**

GEOLOGY

There are 23 references in the database on geology. There are two main categories of information in the geology section. The first are general studies on the geology of the coastal zone area and the second focuses on the oil and gas potential (as it relates to geology) in the coastal plain area. Most of these references are on Alaska (specifically for ANWR). **Level of information: good.**

HEALTH

There are 14 references in the database on health. Most of the references in the health section focus on contaminants in traditional foods in the arctic. Information on the Yukon coastal zone area is specific to the health of muskoxen and caribou. There are also water quality studies related to Stokes Point. **Level of information: fair.**

INVERTEBRATES

There are 12 references in the database for invertebrates. There is general information on invertebrates within the Resource Description and Analysis for Ivvavik National Park. **Level of information: poor.**

LAKES

There are 18 references in the database on lakes. There is only general information available for the Yukon coastal zone. The majority of the information can be found in the Resource Description and Analysis for Ivvavik National Park. There has been limited water quality work done for Stokes Point. **Level of information: poor.**

NATIONAL PARKS

There are 34 references in the database on National Parks. The majority of these references are for Ivvavik National Park and the Arctic National Wildlife Refuge. There has been extensive research and monitoring done in Ivvavik National Park since its establishment in 1984. A compilation of research and monitoring work has been done for all of the parks in the Western Arctic, including Ivvavik, which is entitled "Annual report of Parks Canada Research and Monitoring in the Western Arctic". This annual report exists for 1999, 2000, and 2001. Work specific to the coastal zone in Ivvavik focuses primarily on the effects of climate change (coastal erosion, storm surges) and cultural resource monitoring and management. **Level of information: good.**

PERMAFROST / ICE

There are 38 references in the database on permafrost/ice. Most of the work done in this area is general in nature and is relevant to the Yukon coastal zone. Much of the work on permafrost/ice is related to climate change. **Level of information: good.**

STREAMS

There are 51 references in the database on streams of which 10 are for the coastal zone. There is some information on water quality and sedimentary processes specific to the Yukon coastal zone. There is also general information on streams that is relevant to the coastal zone found in the Resource Description and Analysis for Ivvavik National Park. **Level of information: fair.**

UV RADIATION

There is 1 reference in the database under UV radiation. This reference is on weather and permafrost monitoring in Ivvavik National Park which is ongoing and started in 1995. **Level of information: poor.**

WATER

There are 40 records in the database for water. Most of the literature which is specific to the Yukon coastal zone is related to water quality, water quantity, and sea temperature. General reports exist on water with a focus on environmental impact assessments.

Level of information: good.

WATER QUALITY

There are 33 records in the database for water quality. There is extensive information on water quality monitoring for the Firth and Babbage rivers. The information for the Babbage stopped in 1995 due to cutbacks. The monitoring still takes place for the Firth River in Ivvavik National Park administered by Parks Canada. There is also information on water quality for the DEW Line site at Stokes Point and baseline data exists for coastal waters near Stokes Point. **Level of information: good.**

WATER QUANTITY

There are 11 records in the database on water quantity. There is ongoing water quantity monitoring data for the Firth and Babbage Rivers (this program was stopped for the Babbage River in 1995 due to cutbacks). **Level of information: fair.**

WILDLIFE

There are 257 records in the database on wildlife.

Caribou: Almost all of the information on caribou in the database is on the Porcupine Caribou herd. This work is on the management of the herd along with ongoing monitoring of population, distribution, herd movement, calving rates, and habitat use. There has been some work done on the effects of oil and gas exploration and caribou in Alaska.

Muskox: Work done on muskox is in the area of range expansion, movements of muskox, population, interactions between muskox and caribou, habitat use, and ongoing monitoring on the Yukon North Slope.

The database also contains general references for polar bears, grizzly bears, fox, lemming, wolverine, and Dall's sheep. The Yukon Territorial Government has produced a summary document on Yukon North Slope wildlife studies between 1984 - 1994. There has been a lot of work done on wildlife in Ivvavik National Park. The database contains references for ongoing monitoring of sightings of wildlife in Ivvavik National Park. There is also a general description of the wildlife in the Park found in the Resource Description and Analysis. There have been specific studies on caribou and grizzly bears in the Park.

The database also contains quite a few general wildlife management documents including the Inuvialuit Community Conservation Plans, management plans for the Porcupine caribou herd and muskox, and Gwich'in and Inuvialuit harvest studies.

There are 31 records in the database for wildlife in the Arctic National Wildlife Refuge. The majority of this work is for the Porcupine caribou herd. There has been some work done on muskox, polar bears, and grizzly bears. **Level of information: good.**

PLANTS

There are 73 records in the database on plants. There has been vegetation mapping done on the coastal plain to determine important wildlife habitats along with satellite monitoring of plant productivity in Ivavik National Park to determine the effects of climate change. There is also one ongoing study being conducted on the coastal plain to determine if there have been changes in the vegetation and terrain on the coastal plain in the past 15 years. **Level of information: good.**

HUMAN ACTIVITY

There are 214 records in the database on human activity. There has been extensive work done on the effects of human activity in the Arctic National Wildlife Refuge especially as it relates to oil and gas development. There has been limited work on the effects of human activity on the Yukon coastal plain as it relates to oil and gas development. Extensive work has been conducted on oil and gas activity in the Beaufort Sea. This work is mostly Environmental Impact Statements dating back to the early 1980's. **Level of information: good.**

DATABASES OF INFORMATION

There are databases/literature reviews of information that already exist that are useful in any discussion on the coastal zone of the Yukon North Slope (please see database for more details). These are:

- The natural and cultural resources of Northern Yukon National Park and adjacent areas: a summary of the literature and annotated bibliography.
- Birds of the Yukon database.
- Database of special wastes generated in the Yukon.
- Effects of fire in Alaska and adjacent Canada: a literature review.
- Bibliography of reports presenting data and results obtained through investigations carried out in the Mackenzie Valley and northern Yukon under the Environmental-Social Program Northern Pipelines of the Government of Canada.
- The Beaufort Sea, Mackenzie Delta, Mackenzie Valley, and northern Yukon: a bibliographical review.
- Vuntut National Park paleoenvironmental database.
- Permafrost: a bibliography.
- Bibliography on Yukon geology.
- The Porcupine Caribou Herd and its range: an annotated, cross-referenced bibliography.
- Herschel Island: an annotated bibliography.
- The marine environment of the Beaufort Sea: a textual review and annotated bibliography of the climatic and oceanographic literature pertinent to avifaunal studies.

- A bibliographic database for coastal zone planning in the Cumberland Sound and Yukon North Slope areas of arctic Canada.
- A database for environmental contaminants in traditional food in northern Canada.

CONCLUSION

The goal of this project is to provide a broad overview of what information is available from past and ongoing studies. Each of the topic areas will need to be critically examined to determine if the information available is adequate for the purposes of coastal zone planning. For example, although there is a good level of existing information on wildlife, it may not cover the key species or aspects of wildlife ecology needed for this purpose. For some topics, such as air quality and UV radiation, the small amount of information available may be adequate for planning purposes.

One of the main gaps is that much of the information in the database is not specific to the Yukon coastal zone. While it is still relevant, it focuses on other areas in the Yukon or the arctic or specifically on the Arctic National Wildlife Refuge. Most of the information specific to the Yukon coastal zone was written for Ivvavik National Park. The main geographical gap in the database is that there is very little information on the coastal zone east of the Babbage River. Thus, there are strong regional trends for compiled information, with some regions of the coastal zone well studied and others barely touched.

Another important point to note is that there is relatively little of the local and traditional knowledge about the Yukon coastal zone documented, with most of the documented knowledge coming from scientific research.

In terms of information, the areas which are most lacking in information are (rated as poor or fair in the text):

- air quality
- biodiversity
- fire
- forests
- health
- invertebrates
- lakes
- streams
- UV radiation
- water quantity

The information areas which have the most in depth level of information are (rated as good in the text):

- archeology
- birds
- climate
- contaminants
- culture
- fish
- geology
- national parks
- permafrost/ice
- water
- water quality
- wildlife
- plants
- human activity

The database of information sources remains a work in progress. It does however provide managers, local residents, and researchers with a firm understanding of where the state of knowledge sits for the Yukon coastal zone. This understanding will ultimately lead to better management decisions and a research emphasis on filling the gaps of information that currently exist.

APPENDIX: SCREEN SHOTS OF THE DATABASE


These illustrations are from the web site, www.taiga.net/borderlands.

- [Figure 1](#) is the home page, with a brief introduction, a link to this report, and selections of search criteria.
- [Figure 2](#) shows the results of a search for information on birds, related to coastal zone planning.
- [Figure 3](#) shows the details of one of the records retrieved by this search.

Figure 1: Home Page with Search Criteria

The screenshot shows the homepage of the Arctic Borderlands Database of Information Sources. The page has a vertical navigation bar on the left with the text "Arctic Borderlands". The main content area is titled "Database of Information Sources" and includes a description of the database as a joint project of the Arctic Borderlands Ecological Knowledge Co-op and the Wildlife Management Advisory Council (North Slope). A search form is prominently displayed, allowing users to search by Title, Agency, Contact, Subject, and Region. The search form includes radio buttons for "and", "or", and "exact phrase" search options. A dropdown menu for "Subject" is set to "birds". A dark blue overlay box on the right side of the search form contains a checked checkbox for "Search only records related to Coastal Zone Planning" and a "Display 10 results per page" option. Below the search form is a "Search hints" link. At the bottom of the page, there are logos for the Borderlands Co-op, WMAC North Slope, and Taiga Net, along with text indicating the last content update was in Nov 2003 and the site was redesigned in Nov 2003. The database was upgraded and updated from July 2002 to May 2003. An email address, coop@taiga.net, is provided for additions, comments, and corrections.

Figure 2: First Page of Listing of Results



Arctic Borderlands Database of Information Sources

Search results

We've found 22 records that match your search criteria.

Now displaying: 1-10

- [Aklavik Community Conservation Plan; Inuvik Community Conservation Plan](#)
- [Yukon Archives Beaufort Sea Collection](#)
- [The marine environment of the Beaufort Sea: a textual review and annotated bibliography of the climatic and oceanographic literature pertinent to avifaunal studies.](#)
- [Monitoring the impact of oil development on birds in the Beaufort Sea region: interim report](#)
- [The arctic coastal environment of Alaska, Vol. 2: A compilation and review of scientific literature of the arctic marine environment.](#)
- [Canadian Beaufort Sea Conference 2000](#)
- [Areas of interest to the Canadian Wildlife Service \(within the Beaufort Sea hydrocarbon production zone and associated transportation corridors\)](#)
- [The Arctic National Wildlife Refuge, Its People, Wildlife Resources and Oil and Gas Potential](#)
- [The Natural History fo an Arctic Oilfield - Development and the Biota](#)
- [Aerial Surveys for Snow Geese on the Arctic Coastal Plain of Northeast Alaska, 1992](#)

Next 10 records



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Figure 3: Details of One Record



Arctic Borderlands Database of Information Sources

Record Details

Title: Areas of interest to the Canadian Wildlife Service (within the Beaufort Sea hydrocarbon production zone and associated transportation corridors)

Contact: Dickson, H.L., Barry, T.W., McCormick, K.J., Prach, R.W.

Agency: Canadian Wildlife Service, Western and Northern Region

Data Format: report

Start Date:

Finish Date: 1983

Sample Frequency:

Subject(s):

- birds
- human activity
- wildlife

Region(s):

- coastal plain
- Mackenzie Delta
- marine/coastal

Objective: To identify those areas within the study region which the CWS knows are of importance (to birds or mammals and botanical importance) and which could be affected by hydrocarbon production and transportation corridors.



Results: This report should be used as a flagging mechanism to industry.

Comments:

Related to Coastal Zone Planning? yes

Date Entered: December 3, 2002

Date Last Updated: December 3, 2002



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