Annotated Bibliography of Sources Related to the Natural Values of the Mackenzie River

Photo credit: Ingrid Kritsch, GSCI.

Point Separation on the Mackenzie River

Prepared for:
GNWT Dept. of Resources, Wildlife and Economic Development

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January 2004

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About this Bibliography

The enclosed bibliography is a partially annotated listing of authoritative studies and documents containing information about the Natural Values of the Mackenzie River. This bibliography is not an exhaustive document and was compiled as a first step in assisting regional working groups in the Mackenzie Valley interested in nominating the Mackenzie River as a Canadian Heritage River.

There are a total of 711 references in the bibliography and they are presented according to the list of Natural Value themes listed below. References referring to the southern part of the Beaufort Sea have been included, as this region is strongly influenced by the flow from the Mackenzie River. However, references about rivers that feed into the Mackenzie River were generally not included. Reports that are technological or industrial in nature were omitted unless they contained information relevant to this bibliography. For example, a high volume of references exist about winter road construction, and granular material for roads, and was not included here.

Many of the references are reports that were not published in scientific journals. Libraries where hard copies of books and reports can be found have been listed. Preliminary and intermediate reports were included only if the final reports were not accessible. The annotations included are based largely on those provided in the Arctic Science and Technology Information System (ASTIS) database.

Bibliographic Resources

- Arctic Science and Technology Information System (ASTIS) available on-line through the University of Calgary Library: http://www.aina.ucalgary.ca/scripts/minisa.dll?HOME
- Aurora Research Institute Library, Inuvik
- Entre-pubmed, available on-line through the National Center for Biotechnology Information (US) http://www.ncbi.nlm.nih.gov/entrez/query.fcgi
- The Mackenzie River Basin Board, Yellowknife

Natural Value Themes and Search Values

The Natural Value themes represented in this bibliography are listed below. Under each theme, the search values used in searching are recorded. All search values were searched using an advanced search in conjunction with the word Mackenzie. The themes Climate Change, Contaminants and Natural Resources were not searched separately, but contain references that emerged during other searches.

Natural Value theme: **Biotic (B)**

Search value: Biotic, environment, environmental, ecosystem/s,

Natural Value theme: **Climate Change (CL)**

Natural Value theme: **Contaminants (C)**

Natural Value theme: **Fauna (F)**
Search value: Fauna, animal population/s, significant animal, rare animal, species

Natural Value theme: **Hydrology (H)**
Search value: Hydrology, seasonal variation, water content, river size, drainage

Natural Value theme: **River Morphology (M)**
Search value: Morphology, valley types, channel, fluvial

Natural Value theme: **Natural Resources (N)**

Natural Value theme: **Physiography (P)**
Search value: Physiography, physiographic, geological, hydrography, topography

Natural Value theme: **Vegetation (V)**
Search value: Vegetation, flora, significant plant/s, rare plants, plant communities, plant community.

Library Abbreviations Used in Bibliography

AEECW = Environment Canada Library, Prairie and Northern Region, Headquarters
ACSP = Natural Resources Canada, Geological Survey of Canada, Library
ACU = University of Calgary
ARI = Aurora Research Institute, Inuvik
MWFW = Fisheries and Oceans Canada, Eric Marshall Aquatic Research Library
NFSMO = Memorial University of Newfoundland, C-CORE Information Centre
NSDB = Fisheries and Oceans Canada, Bedford Institute of Oceanography, Library, Dartmouth, NS
NWYGI = Northwest Territories Legislative Assembly, Legislative Library of the N.W.T.
NWYWNH = Prince of Wales Northern Heritage Centre, Library, Yellowknife, NT
OONE = National Energy Board, Library, Ottawa, ON
OORD = Indian and Northern Affairs Canada, Departmental Library

Natural Value Theme: Biotic Environments

B1

Author(s) Allison, L. Nielsen, W.
Title **Sensitive areas : literature review, WATDOC references**
Affiliations Mackenzie River Basin Committee (Canada) [Sponsor]
Publication (1981)
Lib. code ASTIS 8837
Libraries ACU
Summary This supplement contains the results of two studies undertaken as part of the **Mackenzie River Basin** Study program. The first section contains the "Sensitive Areas: Literature Review" report, which provides a summary of the available information on thirty seven areas within the **Mackenzie Basin** that could be expected to suffer in biologic productivity and cultural or social value if changes occurred in the hydrologic regime (for example, river flows and levels, water quality and sedimentation). The list of areas examined is not exhaustive. Each area summary contains a description of the hydrologic characteristics; natural resources (wildlife, fisheries, vegetation); socio-economic considerations; sensitivity to hydrologic change; knowledge gaps or data deficiencies; and concludes with a select bibliography. ... The second section is a user guide to searching the Canadian Environment bibliographic data base containing some 45.000 references to Canadian literature concerned with water resources and related environmental material. This includes the 1600 references and abstracts relating to the **Mackenzie River Basin** added during the study program. It is accessible throughout Canada on the QL Shared Information Service.

B2

Author(s) Bengeyfield, W.
Title **1973-1974 winter benthic and oceanographic surveys, offshore Mackenzie Delta, N.W.T.**
Affiliations F.F. Slaney & Company, Imperial Oil Limited [Sponsor]
Publication (1974)
lib. code ASTIS 4385
Libraries ACU
Summary Conducted in late winter of 1973 and 1974, this study provides data on winter conditions within the estuarine environment as an aid to identifying environmental concerns and predicting possible impact. Specific objectives of the program were to: 1. Sample the winter benthic faunal communities in various sectors of the estuary. 2. Determine certain physical and chemical parameters of any free water. 3. Collect substrate samples from the uppermost layer.

B3

Author(s) Berger, Thomas R.
Title **Northern frontier, northern homeland : the report of the Mackenzie Valley Pipeline Inquiry**
Affiliations Mackenzie Valley Pipeline Inquiry (Canada)
Publication (1977)
lib. code ASTIS 6402
Libraries ACU OONE
Summary Berger recommends that no pipeline be built or energy corridor established across the Northern Yukon along either of the routes proposed by Arctic Gas. He considers a more favourable option to be the proposed Alaska Highway Route. Berger recommends against the construction of either an oil or gas pipeline across the **Mackenzie Delta**, which is environmentally sensitive and highly important to native people. Berger sees no compelling environmental reasons why an energy transportation corridor could not be established along the **Mackenzie Valley**.

Author(s) Berger, T.R. B4
Title **Mackenzie Valley Pipeline Inquiry : synopsis of volume two = Enquête sur le pipeline de la vallée du Mackenzie : resumé du volume deux**
Affiliations
Publication Ottawa : Mackenzie Valley Pipeline Inquiry (1977) [English and French]
lib. code ASTIS 47668; FC 4194.7 .M35 N67 1977
Libraries ACU; ARI
Summary … A pipeline along either the Dempster route or the Mackenzie Valley Route will affect that area. … Thus in Volume Two, I seek to distill the evidence on a wide range of social, environmental and economic subjects.

Author(s) Blanchet, G.H. B5
Title **Keewatin and northeastern Mackenzie : a general survey of the life, activities, and natural resources of this section of the Northwest Territories, Canada**
Affiliations
Publication (1930)
lib. code ASTIS 37751
Libraries NWYWNH
Summary This report includes seven major sections covering: physical characteristics of the country; mineral explorations in the Northwest Territories; the aeroplane; climate; fauna; the Eskimo; and a list of useful words of the Sonatomiut dialect.

Author(s) Bliss, L.C. B6
Title **A biologist explains why we must plan now to protect the Arctic**
Affiliations
Publication *Science forum* 15, v. 3, no. 3, (June 1970), p. 3-8
lib. code ASTIS 3025
Libraries ACU NFSMO
Summary Briefly reviews the environmental problems associated with oil and gas exploration in the Canadian Arctic: the possibility of oil spills from supertankers, heated oil pipelines in permafrost, fragility of tundra ecology, the Mackenzie Valley pipeline, and land use patterns and wildlife resources.

Author(s) Bliss, L.C. B7
Title **The Report of the Mackenzie Valley Pipeline Inquiry, Volume One : an environmental critique**
Affiliations
Publication *Musk-ox*, no. 21, (1978), p. 28-33
lib. code ASTIS 797
Libraries ACU
Summary [Review of B# ASTIS 6402] ... In reviewing the Report, it became evident that Justice Berger developed several scenarios to support his case. These were based on incorrect or inadequate interpretations of much of the data presented, the use of scientific opinion rather than substantiated scientific data, and statements made that were often backed with no data or reference to facts presented to the Inquiry.

Author(s) Bocking, S. Healey, M. Mysak, L. James, W. Sherstone, D. Stager, D. Thompson, D. B8

Title **Royal Society evaluation of aquatic activities in the Mackenzie Basin**

Affiliations Royal Society of Canada. Committee for Evaluation of Research [Affiliation]

Publication (1994)

lib. code ASTIS 38776

Libraries

Summary All available literature on **Mackenzie Basin** aquatic science and environmental management was catalogued and reviewed in order to identify appropriate criteria for the evaluation of aquatic science activities in the region. The results of this study will assist in coordinating existing and future research activities as well as identifying means to enhance local involvement.

Author(s) Bunch, J.N. B9

Title **A series of four reports on the marine ecology of the Mackenzie Delta and Tuktuyaktuk Penisula Region**

Affiliations Environmental-Social Committee

Publication (1974)

lib. code QH 541.5 .S3 S47 1974

Libraries ARI

Summary Marine ecology. Beaufort sea, NT

Author(s) Bush, D. B10

Title **Summer vegetation, forestry and soil surveys in the Inuvialuit Settlement Region : biophysical baseline studies in support of the Mackenzie Delta gas feasibility study**

Affiliations Kavik-Axys Environmental Consulting Ltd. [Affiliation]

Publication (2001)

lib. code ASTIS 51397

Libraries

Summary Detailed vegetation studies in the Inuvialuit Settlement Region were conducted in the summer of 2001. A total of 13 detailed ground inspections, 50 quick ground inspections and 72 visual checks were performed. Identification of vegetative species and estimate cover was recorded. Pits were also dug to determine the depth of the permafrost and organic layer along with soil conditions.

Author(s) Canada. Transportation Development Agency (Zoltai, S. C.?) B11

Title **Voyageur ACV trials on the Mackenzie Delta environmental effects two years later, October 1976**

Affiliations Canada. Transportation Development Agency

Publication (1977)

lib. code ASTIS 19588

Libraries ACU

Summary On the **Mackenzie Delta** in 1973, environmental tests were carried out in lowland and upland tundra with the Voyageur 002 air cushion vehicle. Results were reported in the TDA report "Environmental Assessment, Bell Voyageur 002", July 1975. To assess possible permanent damage, TDA provided funds and requested that Environment Canada re-examine the terrain over which the initial tests had been conducted. This was done in the summer of 1975 by Mr. S.C. Zoltai, Environment Canada. In the following report, the state of the vegetation as observed immediately after the 1973 tests is compared with the condition of the vegetation as observed two years later.

Author(s)	Card, J.D. B12
Title	**Permafrost in the Mackenzie Delta : a detailed study around the SUN BVX et al UNARK L-24A wellsite**
Affiliations	
Publication	Proceedings - Symposium on Permafrost Field Methods, 3 October 1977, and Permafrost Geophysics, 4 October 1977, Saskatoon, Canada / Prepared by W.J. Scott and R.J.E. Brown. Technical memorandum - Associate Committee on Geotechnical Research (Ottawa), no. 124, (1979), p. 125-145
lib. code	ASTIS 6139
Libraries	ACU
Summary	A study was carried out to investigate permafrost in the vicinity of an exploratory well drilled in the **Mackenzie Delta** area of Northern Canada. The study served two purposes. To confirm a model of the permafrost regime; a model which assumed a degrading environment with permafrost thinning by melting on both top and bottom surfaces, and to confirm that permafrost is not constant across the study area. This paper will describe the techniques and results of the study and include discussion of the permafrost model.

Author(s)	Collard, T. B13
Title	**Alaska Gas Producers Pipeline Team environmental studies for the portion of the proposed Mackenzie Valley pipeline route within the Gwich'in Settlement Area**
Affiliations	ExxonMobil Resources Ltd. [Affiliation] Alaska Gas Producers Pipeline Team [Sponsor]
Publication	(2001)
lib. code	ASTIS 51400
Libraries	
Summary	The field research program within the GSA included the following general areas of study: freshwater aquatics; terrestrial wildlife; vegetation and soils; archaeology; and noise. Methods employed involved standard environmental survey techniques and did not involve any new technology.

Author(s)	Crampton, C.B. B14
Title	**Studies of vegetation, landform and permafrost in the Mackenzie Valley : Landscape survey in the upper and central Mackenzie Valley**
Affiliations	Canadian Forestry Service Environmental-Social Program, Northern Pipelines (Canada) [Sponsor]
Publication	Environmental-Social Committee Northern Pipelines, Task Force on Northern Oil Development report, no. 73- 8 (1973)
lib. code	ASTIS 27413; GB 648 .15 .C73 1973
Libraries	ACU OORD; ARI
Summary	Frozen ground – Landforms – Ecology of polar regions. **Mackenzie River**, NT

Author(s) Darkers, S. B15
Title **Northern frontiers, northern homeland: the report of the Mackenzie Valley pipeline inquiry by T. Berger – Volume 1: a synopsis**
Affiliations
Publication Lorimer: Toronto, ON (1977)
lib. code FC 4194.7 .M35 N67 1977
Libraries ARI
Summary Natural gas – **Mackenzie Valley** pipeline inquiry, NT

Author(s) Davey, C.J. B16
Title **The impact of seismic lines on biota in the Mackenzie Valley, NWT**
Affiliations Carleton University. Institute of Canadian Studies [Affiliation]
Northern Scientific Training Program (Canada) [Sponsor]
Publication (1989)
Lib. code ASTIS 30661
Libraries
Summary Objective: to visually determine relative subsidence of seismic lines in the Yellowknife area and relative biodiversity of the lines; to gain understanding of the significance of seismic lines upon the biotic environment and upon the lives of native people utilizing the environment.

Author(s) DeLancey, D. B17
Title **Summary of conclusions of the Mackenzie Environmental Monitoring Project**
Affiliations Fee-Yee Consulting Ltd. Northwest Territories. Dept. of Renewable Resources [Sponsor]
Publication Yellowknife, N.W.T. : Dept. of Renewable Resources, (1987). ii, 37 p.
lib. code ASTIS 29256
Libraries NWYGI OORD
Summary The Mackenzie Environmental Monitoring Project (MEMP) was established to identify research and monitoring needs regarding environmental impacts of oil and gas development in the **Mackenzie Valley** and come up with a practical, flexible monitoring/research program. The results of the MEMP project and final report are summarized and reorganized here. This summary was produced for translation and distribution to the northern communities.

Author(s) Dickson, H.L. Barry, T.W. McCormick, K.J. Prach, R.W. B18
Title **Areas of interest to the Canadian Wildlife Service (within the Beaufort Sea hydrocarbon production zone and associated transportation corridors)**
Affiliations Canadian Wildlife Service. Beaufort Sea Resource Team
Publication Canadian Wildlife Service, Western & Northern Region, (1983). v, 222
lib. code ASTIS 42824
Libraries ACU
Summary The areas defined in this report have been selected primarily on the basis of their importance to birds or mammals, although a few areas are of botanical importance. Four additional sites which CWS has noted as areas of historical interest or as areas possessing a number of rare plants have been included. …This document is not intended to be, and should not be interpreted as, a document defining all of the areas of biological, historical or botanical interest, etceteras; but rather only as a flagging mechanism to industry to areas within the study region which the CWS knows are of importance and which could be affected. The area write-ups are presented within three regional contexts, these being: 1) the **Mackenzie River valley**; 2) the Beaufort Sea; and 3) the Northwest Passage and Canada's east coast north of 60 N latitude.

Author(s) Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc. B19

Title **Environmental impact statement for hydrocarbon development in the Beaufort Sea, Mackenzie Delta region - volume 3A : Beaufort Sea - Delta setting**

Affiliations

Publication (1982)

lib. code ASTIS 9220

Libraries ACU NFSMO NSDB

Summary Volume 3A of the Environmental Impact Statement covers the marine region extending from the Bering Strait in the west through the Beaufort Sea to Amundsen Gulf in the east, and the onshore coastal area from the Yukon-Alaska border through the **Mackenzie Delta** to Cape Parry. The various aspects of the marine and terrestrial physical environments and marine and terrestrial plants and animals are discussed, presenting an overview of the ecology of this region.

Author(s) Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc. B20

Title **Environmental impact statement for hydrocarbon development in the Beaufort Sea, Mackenzie Delta region - volume 3C : Mackenzie Valley setting**

Affiliations

Publication Cover title: Hydrocarbon development in the Beaufort Sea - **Mackenzie Delta** region: Environmental impact statement. Volume 3C: **Mackenzie Valley** setting. (1982)

lib. code ASTIS 9222

Libraries ACU

Summary Volume 3C of the Environmental Impact Statement provides the environmental setting for the **Mackenzie River Valley** pipeline corridor. The **'Mackenzie Valley** corridor' extends from the **Mackenzie Delta** to the Northwest Territories-Alberta border. It includes the **Mackenzie River** and lands on the adjacent east bank generally 30 to 100 km wide .... The **'Mackenzie River Valley**' is generally used to describe lands drained by the **Mackenzie River**. Emphasis has been placed on those subjects deemed most relevant for the purposes of assessing possible impacts of pipelining operations on the environment

Author(s) Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc. B21

Title **Environmental impact statement for hydrocarbon development in the Beaufort Sea, Mackenzie Delta region - volume 4 : biological & physical effects**

Affiliations

Publication (1982)

lib. code ASTIS 9635

Libraries ACU NFSMO NSDB

Summary The purpose of this volume is to assess the possible physical and biological impacts associated with proposed **Beaufort Sea-Mackenzie Delta** hydrocarbon developments... To transport the oil from the region to markets, two modes of transportation, namely icebreaking tankers and overland pipelines, are under active consideration. Since both have merit, and eventually both may actually be employed, the possible impacts of each are examined. As suggested in the Environmental Assessment and Review Panel (EARP) guidelines, this volume discusses the potential impacts by region ...: the Offshore Beaufort Sea Production Region (Chapter 2), the Onshore **Mackenzie Delta** Production Region (Chapter 3), the Northwest Passage Transportation Region (Chapter 4) and the **Mackenzie Valley** Overland Pipeline Region (Chapter 5).

Author(s)	Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc. B22
Title	**Beaufort Sea - Mackenzie Delta environmental impact statement : response to deficiencies, environmental and technical issues**
Affiliations	
Publication	[Calgary : Dome Petroleum Limited], (1983). 13 p.
lib. code	ASTIS 11679
Libraries	ACU NFSMO
Summary	The Beaufort Sea Environmental Assessment Panel has reviewed the Environmental Impact Statement (EIS) for hydrocarbon development in the **Beaufort Sea-Mackenzie Delta Region** and has identified major deficiencies in the EIS in each of the following categories: 1. Assessment of Socio-Economic Effects, 2. Assessment of Environmental Effects, 3. Oil Spills, 4. Zone summaries, 5. Further information requirements (Discussion Papers). This document responds to items 2, 3, and 5.

Author(s)	Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc. B23
Title	**Beaufort Sea - Mackenzie Delta environmental impact statement : zone summary, Beaufort Sea - Mackenzie Delta region**
Affiliations	
Publication	[Calgary : Dome Petroleum Limited], (1983). iii, 76 p
lib. code	ASTIS 11678
Libraries	ACU
Summary	A seven-volume Environmental Impact Statement was published by the three companies in 1982. ... To ensure that everyone can participate successfully in the community discussions, a summary for each region or zone studied in the statement has been prepared, in clear, non-technical language .... This report is the summary for the **Beaufort Sea-Mackenzie Delta** region or zone.

Author(s)	Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc. B24
Title	**Beaufort Sea - Mackenzie Delta environmental impact statement : zone summary, Mackenzie Valley region**
Affiliations	
Publication	[Calgary : Dome Petroleum Limited], (1983). 68 p.
Year	1983
Contents	ill., maps
lib. code	ASTIS 11677
Libraries	ACU
Summary	A seven-volume Environmental Impact Statement was published by the three companies in 1982. ... To ensure that everyone can participate successfully in the community discussions, a summary for each region or zone studied in the statement has been prepared, in clear, non-technical language .... This report is the summary for the **Mackenzie Valley** region or zone.

Author(s) Dressler, W. Joe, D. B25
Title **Nature-based tourism in the Mackenzie Delta region : potential and pitfall. An analysis of stakeholder perceptions**
Affiliations University of Manitoba. Natural Resources Institute [Affiliation]
Publication (1998)
lib. code ASTIS 46776
Libraries
Summary The overall purpose of this study was to provide a comprehensive review of the positive and negative social, economic and environmental impacts of nature-based tourism within the communities of **Inuvik**, **Tuktoyaktuk**, and **Aklavik**, in the **Beaufort-Delta Region**, of the Northwest Territories. The study was based on structured and unstructured interviews with Inuvialuit elders, tour operators and institutional representatives. The study also used a questionnaire survey targeting non-resident visitors at Inuvik.

Author(s) Dyke, L.D. Brooks, G.R. B26
Title **The physical environment of the Mackenzie Valley, Northwest Territories : a base line for the assessment of environmental change**
Affiliations
Publication Ottawa : Geological Survey of Canada, (2000). 208 p.
lib. code ASTIS 48922; QE 185 .B9 1998 DRAFT
Libraries ACU; ARI
Summary If the CO_2 content of the atmosphere continues to rise and the predicted response of climate to this increase is correct, then the **Mackenzie Valley** will experience one of the highest rises in mean annual air temperature for any region in Canada. This possibility calls into question the response of permafrost and the behaviour of ice-rich sediments which typify this region. Although ice-rich permafrost inherently resists climate warming, the potential for thawing to disrupt communities and industrial and economic activity warrants an evaluation of terrain sensitivity so that the consequences of climate warming in the **Mackenzie Valley** can be anticipated. This report is divided into five sections that provide a basis for understanding how climate change will physically affect the **Mackenzie Valley**. ... [These sections, consisting of 20 papers, include the following: Physical setting of the **Mackenzie Valley**, Indicators of past climate, Permafrost and ground temperature, Landscape processes, and Effects of climate change on permafrost.]

Author(s) Envirocon Limited B27
Title **Mackenzie Valley Pipeline Inquiry review**
Affiliations
Publication (1976)
lib. code ASTIS 30217
Libraries ACU
Summary This report consists of a short synopsis of each significant or contentious environmental issue identified in the **Mackenzie Valley** Pipeline Inquiry, held under the authority of Mr. Justice Thomas Berger. These synopses resulted from a review of transcripts of the Inquiry proceedings (Volumes XV through 129), community hearings and pertinent material tabled as evidence during the period March 11, 1975 through February 19, 1976. The Cross-Delta portion of hearings held in Inuvik from January 20, 1976 through February 19, 1976 is also included.

Author(s) Environment Protection Board B28
Title **Towards an environmental impact assessment of the portion of the Mackenzie Gas Pipeline from Alaska to Alberta**
Affiliations
Publication (1973)
lib. code ASTIS 6341
Libraries ACU SSU
Summary Since 1971 the Environment Protection Board has gathered baseline data for assessing potential environmental impact along major northern portions of the proposed gas pipeline from Prudhoe Bay to southern markets. Major areas of concern are caribou, birds, other wildlife, fish, surficial materials and permafrost, water, revegetation, winter roads, fire and training of construction personnel. ... This report summarizes findings in these areas of concern and outlines further research needs. It offers some preliminary recommendations to eliminate or ameliorate pipeline construction and operation impact on the environment. The report also sets forth the Board's philosophy of environmental protection and sets the stage for impact assessment of this project.

Author(s) Environment Protection Board B29
Title **Environmental impact assessment of the portion of the Mackenzie Gas Pipeline from Alaska to Alberta : Volume 4 : Research reports**
Affiliations
Publication (1974)
lib. code ASTIS 30220
Libraries ACU
Summary Volume IV, entitled "Research Reports", lays the groundwork for the first three volumes of the assessment. It comprises 11 scientific reports presenting the results of previously unpublished field and office studies carried out for the Environment Protection Board. Each chapter reports the research conducted on one aspect of the environment: terrain, winter roads, vegetation, mammals, caribou, birds, water, fish, recreation, archaeology, and native use of resources; and each presents an assessment of impact on that component and recommendations to alleviate that impact.

Author(s) Erickson Associates B30
Title **Environmental atlas for Beaufort Sea oil spill response - human use sensitivity categories : summary report on a workshop conducted in Inuvik, January 1987**
Affiliations
Publication NOGAP project no. H.04 : Renewable resources hydrocarbon development impact and planning guidelines (1987)
lib. code ASTIS 29257
Libraries NWYGI OORD
Summary This workshop was sponsored by COPE, NOGAP and the Beaufort Mackenzie Delta DIZ Society to develop maps of areas and species used in renewable resources harvesting activities. The data has been compiled in atlas form by Environment Canada to facilitate oil spill clean-up activities. This workshop was sponsored by COPE, NOGAP and the Beaufort Mackenzie Delta DIZ Society to develop maps of areas and species used in renewable resources harvesting activities. The data has been compiled in atlas form by Environment Canada to facilitate oil spill clean-up activities.

Author(s) Esso Resources Canada B31
Title **Additional environmental data, Mackenzie Valley and Beaufort Sea regions : submitted to Beaufort Sea Environmental Assessment Panel**
Affiliations
Publication (1982)
lib. code ASTIS 10589
Libraries ACU
Summary This report provides additional environmental information for the **Beaufort Sea** onshore and **Mackenzie Valley** regions. Literature concerning disturbances to the various natural resources is also included as a basis for impact assessment. The first chapter discusses the sensitivity to disturbance of specific resources. Resource categories (eg. Soils, Vegetation, Mammals, Birds, Aquatic Resources) are discussed in the same order and general format as in the E.I.S. itself. The second (and last) chapter provides detailed information on the distribution, abundance and life histories of birds in the Canadian Beaufort Sea coastal region and the **Mackenzie Valley**.

Author(s) Fast, H. Berkes, F. B32
Title **Native land use, traditional knowledge and the subsistence economy in the Hudson Bay bioregion**
Affiliations University of Manitoba. Natural Resources Institute [Sponsor] Canadian Arctic Resources Committee [Sponsor] Rawson Academy of Aquatic Science [Sponsor] Environmental Committee of Sanikiluaq [Sponsor]
Publication (1993)
lib. code ASTIS 33809
Libraries ACU
Summary This report summarizes some 15 land use studies from all major parts of the bioregion. The dominant land use is aboriginal harvesting of wildlife (hunting, fishing, trapping), and this activity shapes the relationship between human societies and the environment. Use of the land is based on traditional ecological knowledge (or indigenous knowledge) and environmental management systems of the people, examples of which are provided from the bioregion. The main product of the indigenous use of land at present is meat; land also produces wood for fuel, fur for commerce, some plant products as food and medicinal ingredients, and raw materials for the production of handicrafts. Based on seven regional studies, the subsistence production of bush meat falls in the range of 50 kg to 350 kg potential food weight per person per year, and there is little evidence that it has been declining in recent years. Even in the most recent studies in the Mushkegowuk region, northern Ontario, the bush harvest of meat was comparable to the values reported from the **Mackenzie Valley** in 1975.

Author(s) Fenco Consultants Limited B33
Title **Safety and reliability analysis of Arctic petroleum production and transportation systems : preliminary study**
Affiliations Fenco Consultants Limited Canada. Environment Canada [Sponsor] Canada. Supply and Services Canada [Sponsor]
Publication (1982)
lib. code ASTIS 49497
Libraries ACU
Summary This report presents a preliminary assessment of the risks to the Arctic environment due to oil spills from petroleum production and transportation activities. The study has used probability analysis techniques to identify environmental risks for the proposed Arctic resource development projects. The study area has been divided into four regions: Beaufort Sea, Shallow Water; Beaufort Sea, Deep Water; Arctic Islands; Labrador Sea. The transportation system assumed for this production is base on a fleet of eight tankers each of 200,000 DWT with double hulls, ice reinforced. In production, the causes of oil spills were classified in to the following categories: Blowouts, Rig Spills, Other System Spills, Pipeline Spills. In transportation, the causes of spills were identified in the following categories: Collision, Grounding, Structural Failure, Other. For each of these causes of oil spills, available statistical data were reviewed and modified for application to arctic development. To assess the environmental impacts of the oil spills identified in the probability analyses, nine hypothetical spill sites were selected: **Mackenzie Bay, Beaufort Sea**, Armstrong Point, Viscount Melville Sound, Sverdrup Basin, Allison Inlet, Cape Liddon, Cape Hay, Cape Harrison. Potential impacts were considered at each site in each season for the following resource groups: Plankton and Invertebrates, Fish, Birds, Marine Mammals. Impacts on resource utilization, hunting and fishing were also considered. To establish the movement and maximum surface extent of the oil spills, elementary slick modelling was used with conservative assumptions to give a worst case trajectory for each site.

Author(s) Freshwater Institute (Canada) B34
Title **Arctic Marine Workshop proceedings**
Affiliations Parks Canada [Sponsor]
Publication Ottawa : Dept. of Canadian Heritage, (1995) [English and French]
lib. code ASTIS 36094
Libraries
Summary … The objectives of the workshop were to map this information, identify gaps and determine marine "hot spots," or areas of high biological diversity. Nine such hot spots were recognized and rated: the **Mackenzie Delta**, the Cape Bathurst Polynya, Foxe Basin, Southampton Island/NE Hudson Bay, East Hudson Strait, Cumberland Sound, Lancaster Sound, Jones Sound and the North Water. A further 12 areas of special interest, of importance to one or a few species, were also catalogued. Participants pointed out that we still know very little about most of the Arctic marine ecosystem and what we do know is usually limited to the upper trophic levels (fish, birds and marine mammals), barely 2% of the energy flow in the Arctic. … The results of this workshop will, we hope, be of use not only to Parks Canada as it endeavours to identify candidate marine protected areas for its own purposes, but also to other departments and organizations as marine conservation takes on more and more importance.

Author(s) Gill, D. B35
Title **Some ecological and human consequences of hydroelectric projects in the Mackenzie River drainage system, northwestern Canada**
Affiliations
Publication Consequences of economic change in circumpolar regions : papers of the Symposium on Unexpected Consequences of Economic Change in Circumpolar Regions at the 34th Annual Meeting of the Society of Applied Anthropology in Amsterdam, March 21-22, 1975 / Edited by Ludger Muller-Wille. Occasional publication - Boreal Institute for Northern Studies. University of Alberta, 14, (1975), p. 73-82
lib. code ASTIS 623
Libraries ACU
Summary 1. Ecological alterations can and have already occurred below large hydroelectric projects in northern rivers; 2. Northern floodplains and deltas are most subject to downstream regulation-caused damage. Those that remain undisturbed by man create highly productive habitats that are utilized by a significant number and variety of fish and wildlife; it is argued that regulation creates a complex array of mostly detrimental alterations to alluvial habitats, and consequently to the people who still harvest species of wildlife that base their reproductive success on such habitats.

Author(s) Green, J. B36
Title **Reconnaissance surveys to select sample sites for detailed biophysical surveys in the Inuvialuit Settlement Region : biophysical baseline studies in support of the Mackenzie Delta Gas Feasibility Study**
Affiliations Kavik-Axys Environmental Consulting Ltd. [Affiliation]
Publication (2001)
lib. code ASTIS 51406
Libraries
Summary During the fall of 2001, two reconnaissance surveys were conducted in the Inuvialuit Settlement Region. The first survey conducted was for vegetation studies. General vegetation characteristics were observed and locations where detailed vegetation studies would be required were identified. The second survey was to select sample sites for fisheries and hydrology studies. Each watercourse encountered was documented using photographs and a brief description. The survey identified 17 watercourses where further aquatic studies were required.

Author(s) Hardy Associates (1978) Limited B37
Title **Norman Wells pipeline environmental assessment of borrow pits scheduled for development in winter 1983**
Affiliations
Publication [Edmonton, Alta.] : Interprovincial Pipe Line (NW) Ltd., (1982).
lib. code ASTIS 11818
Libraries ACU
Summary ... This report provides a review of predevelopment environmental conditions, ...

Author(s) Hastings, R.I. B38
Title **Soil, vegetation relationships on an involuted hill, Pleistocene Mackenzie Delta area, N.W.T.**
Affiliations
Publication Thesis (M.Sc.) - University of Alberta, Edmonton, Alta., (1983)
lib. code ASTIS 27100
Libraries
Summary The vegetation and soils of an involuted hill, a massive ground-ice landform on the Pleistocene **Mackenzie Delta**, were described quantitatively and qualitatively. The vegetation from 34 stands was classified into 5 community types (ct's) within 3 tundra groups, using minimum variance cluster analysis, principal components analysis and field observations…. (description of ct's follows)

Author(s) Hay, M.B. Michelutti, N. Smol, J.P. B39
Title **Ecological patterns of diatom assemblages from Mackenzie Delta lakes, Northwest Territories, Canada**
Affiliations
Publication *Canadian journal of botany*, v. 78, no. 1, (Jan. 2000), p. 19-33
lib. code ASTIS 48370
Libraries ACU
Summary Sediment samples were collected from 77 lakes in the **Mackenzie Delta** representing a gradient of lakes from those having continual connection with the sediment-laden **Mackenzie River** to lakes having connection for only a couple of days every few years. Diatom assemblages in all lakes were dominated by a diverse benthic microflora, primarily from the genera Navicula and Nitzschia. Maximum relative abundance of the dominant taxon at all sites was less than 30%, and most taxa did not dominate in more than one or two lakes. Delta lake assemblages were distinct from diatom assemblages associated with other regional transects of upland tundra and forest lakes. Detrended correspondence analysis showed that nonmotile epiphytic genera, such as Cocconeis and Gomphonema, were more common in lakes having a lower influence from the **Mackenzie River**, reflecting the extensive macrophyte growth within these lakes. Species diversity decreased as macrophyte production increased. Taxa responses along this macrophyte production gradient were modeled using partial least squares regression. Diatoms were sensitive to the degree of river influence, and the related biological and limnological changes, suggesting assemblages can provide an indication of hydrological variability within **Mackenzie Delta** lakes.

Author(s) Hernandez, H. B40
Title **Surficial disturbance and natural plant recolonization in the Tuktoyaktuk Peninsula region, N.W.T.**
Affiliations
Publication Thesis (M. Sc.) University of Alberta: Edmonton, AB (1972)
lib. code QH 541.5 .T8 H47 1972 THE
Libraries U Alberta, ARI
Summary Tundra flora, soils and ecology in the northwest territories. Petroleum prospecting

Author(s)	Hirst, S.M. Miles, M. Blachut, S.P. Goulet, L.A. Taylor, R.E. Pearce, C.M. B41
Title	**Quantitative synthesis of the Mackenzie Delta ecosystems**
Affiliations	Applied Ecology Ltd. Pearce, C.M. [Technical Reviewer] Lewis, C.P. [Technical Reviewer] Canada. Inland Waters Directorate [Sponsor]
Publication	
lib. code	ASTIS 48847
Libraries	ACU
Summary	The report presents a quantitative synthesis of the ecosystems of the **Mackenzie Delta**. The objective of the synthesis is to examine the structure and relative sensitivity of ecosystem components and processes within the **Mackenzie Delta**, and to identify significant information gaps.

Author(s)	Inter-Disciplinary Systems Ltd. Templeton Engineering Company B42
Title	**Environmental impact assessment of the portion of the Mackenzie Gas Pipeline from Alaska to Alberta : Volume 3 : environmental atlas**
Affiliations	Environment Protection Board [Sponsor]
Publication	(1974)
ASTIS #	ASTIS 30351
Libraries	ACU
Summary	This document points out potential areas of conflict between the proposed [**Mackenzie Valley**] gas pipeline and the environment. It includes potential interactions between project components and environmental components; an assessment of the probable environmental impact on a regional basis; and a series of maps containing relevant environmental and project base data, flagged site specific concerns, and recommendations to ameliorate impact.

Author(s)	Inuvialuit Environmental & Geotechnical Inc. B43
Title	**Vegetation classification and wildlife habitat suitability modeling in the Mackenzie Delta region**
Affiliations	AEC West Ltd. [Sponsor] Anadarko Canada Corporation [Sponsor] Devon Canada Corporation [Sponsor] BP Canada Energy Company [Sponsor] Burlington Resources Canada Energy Ltd. [Sponsor] Chevron Canada Resources Limited [Sponsor] Conoco Canada Resources Limited [Sponsor] Petro-Canada [Sponsor] Shell Canada Limited [Sponsor] Wildlife Management Advisory Council (N.W.T.) [Sponsor]
Publication	Calgary, Alta. ; Inuvik, N.W.T. : Inuvialuit Environmental & Geotechnical Inc., (2002). vi, 66 p.
lib. code	ASTIS 51071
Libraries	ACU
Summary	… In July 2001, flora and fauna were surveyed at >500 sites throughout the **Mackenzie Delta** Region, including the Richardson Mountains, Peel Plain, **Mackenzie Delta**, Husky Lakes, and **Tuktoyaktuk Peninsula**. … Integrating the ground surveys, satellite imagery, and traditional ecological knowledge (TEK); the analyses resulted in the following information: Twenty unique spectral classes were identified and mapped, with each class representing a different vegetation community; Vegetation community diversity was calculated using Shannon's H values, and was subsequently mapped; Landscape diversity was calculated by examining the spatial variation of vegetation community diversity across the landscape and was also mapped; Habitat suitability indices (HSIs) representing potential wildlife habitat were developed and mapped; A wildlife species richness map, based on an overlay of all HSI models, was created. The landscape classification indicated that the terrestrial component of the study area consisted primarily of 'Low Willow Alder' (26%), followed by 'Low Birch/Dwarf Shrub' (12%), 'Open Conifer Forest' (11.5%), 'Woodland Conifer' (10.2%), 'Tussock Tundra' (10.1%), 'Sedge' (10%), 'Tall Willow Alder' (8%), 'Mud/Silt' (3.5%), 'Graminoid' (2.8 %) and 'Barren Rock' (1.6%). Wildlife Valued Ecosystem Components (VECs) were selected for habitat suitability index (HSI) modelling. VECs were selected based on community consultation and community conservation plans, Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status, their standing as umbrella species, and their ecological significance. Ten species were modelled, including: caribou, moose, snowshoe hare, beaver, brown lemming, collared lemming, great gray owl, white fronted goose, rock ptarmigan and willow ptarmigan. ... Models were combined to create an overall wildlife species richness map. Concentrated areas of high vegetation community diversity occur in the Peel Plain region, the Caribou and Campbell Hills, the Miner River, Richards Island and the Richardson Mountains. The delta was generally characterized by low vegetation community diversity, possibly due to frequent flooding and the presence of forests with low species richness. In contrast, the delta had high landscape diversity, which is likely representative of a large number of habitat patches for wildlife (high landscape diversity = high1y variable vegetation community diversity). This indicates that the delta, overall, may be important in terms of habitat diversity for wildlife, which is in agreement with the community consultations. ... Areas in the study region that appear to be of significant ecological importance with respect to wildlife species richness (Valued Ecosystem Components 'hotspots'), which is related to vegetation community structure and landscape diversity, occur throughout the entire study area, but are more heavily concentrated in the Peel Plain region, the Campbell Hills southeast of **Inuvik**, areas east of Sitidgi Lake, and areas south of the Husky Lakes. Small pockets of hotspots are also scattered throughout the **Mackenzie Delta** proper.

Author(s) Ives, J.D. Barry, R.G. [Editors] B44
Title **Arctic and alpine environments**
Affiliations
Publication Arctic and alpine environments / Edited by Jack D. Ives and Roger G. Barry. - London : Methuen, (1974), p. 953-960 [Book]
Lib. code
Libraries
Summary Not Available

Author(s) Jacobson, R. B45
Title **Wildlife and wildlife habitat in the Great Slave and Great Bear Lake regions 1974-1977**
Affiliations
Publication Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 10 (1979)
Lib. code ASTIS 6202
Libraries ACU
Summary As part of the primary research, a series of year-round, multi-year wildlife surveys were conducted essentially between 60 deg. N and the Arctic Coast and from the **Mackenzie Valley** east to well onto the tundra. Habitats that were important or critical for the maintenance or survival of wildlife populations were outlined and ecosystems (wildlife zones) were described. Animals studied included: moose, barren-ground caribou, woodland caribou, bison, bears (grizzly and black), red fox, lynx, muskox, marten, wolverine, muskrat, mink, otter, beaver, Arctic fox, wolf, waterfowl, and raptors (falcons and eagles).

Author(s) Kadonaga, L. B46
Title **Fire in the environment**
Affiliations
Publication In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, 1994, p. 329-336
ASTIS # ASTIS 36882
Libraries ACU
Summary Lodgepole pine (P. contorta) and other species require fire disturbance as part of their life cycle. Weather conditions and fire occurrence are strongly linked, and if shifts in climate patterns result in an increased fire regime, there could be long-range implications for the boreal environment. For fire scenarios, knowledge of the role of atmospheric circulation might contribute to predictions of the frequency and duration of rainfall events. This appears to be a major determinant of whether or not fires can occur. At present, the study of the role of fire in the **Mackenzie Basin** can provide basic information on regional patterns. Knowing how often severe fire years occur, including burn counts and sizes, can be of help to ecological modelling and identify susceptible areas.

Author(s) Kinosita, S. B47
Title **Joint studies on physical and biological environments in the permafrost, north Canada**
Affiliations
Publication Hokkaido University, Institute of Low Temperature Science: Sapporo, Japan (1978 and 1981)
lib. code GB 645 .A4 K56 1981
Libraries ARI
Summary Physics-Tundra- Biology- **Mackenzie Delta** NT

Author(s) Kokelj, S. B48
Title **Near-surface ground ice in sediments of the Mackenzie Delta region, N.W.T.**
Affiliations
Publication (2001)
lib. code ASTIS 51447
Libraries
Summary This project investigated the physical and chemical characteristics of near-surface ground ice in the sediments of the **Mackenzie Delta** region. A relationship has been established between ground ice and vegetation type indicating that vegetation communities may be used to predict the amounts of near-surface ground ice in the sediments of the **Mackenzie Delta**. Field data also suggests that ground ice development influences spruce forest succession in the delta, through the tilting and eventual toppling of trees. Preliminary results indicate that the ice-rich zone is nutrient-rich relative to the base of the active layer and that nutrient accumulation is linked to water movement in freezing soils. This could be important in understanding fire ecology in permafrost terrain, since after intense burns, active layer thickness increases, resulting in the thaw of near-surface permafrost.

Author(s) Kokelj, S. B49
Title **Hydrologic overview of the Gwich'in and Sahtu Settlement Areas**
Affiliations Indian and Northern Affairs Canada, Yellowknife
Publication (2001)
lib. code
Libraries
Summary Not available

Author(s) Komers, P. B50
Title **Biophysical study - Inuvialuit Settlement Region**
Affiliations Inuvialuit Environmental & Geotechnical Inc. [Affiliation]
Publication (2001)
lib. code ASTIS 51411
Libraries
Summary The aim of this biophysical study in the **Mackenzie Delta** was to better assess the environmental impacts and cumulative effects of oil and gas developments, and to aid in the development of future environmental management plans. The survey incorporated remote sensing data, field surveys and traditional ecological knowledge in an effort to illustrate a refined picture of the region's floral and faunal diversity. Flora and fauna were surveyed at more than 500 sites, including the Richardson Mountains, Peel Plain, Husky Lakes and **Tuktoyaktuk Peninsula**. Using information obtained during air calls (site descriptions, plant community types, percent cover, and other physical parameters) and ground plot surveys (vegetation composition, vegetation structure, hiding cover, and wildlife signs), two satellite Landsat images were classified and merged into a uniform map of the area. The map integrated the ground surveys, satellite imagery and traditional ecological knowledge.

Author(s)	Komers, P.	B51
Title	**Biophysical survey of baseline data for plant communities and animals**	
Affiliations	Inuvialuit Environmental & Geotechnical Inc. [Affiliation] Wildlife Management Advisory Council (N.W.T.) [Sponsor]	
Publication	(2001)	
lib. code	ASTIS 50988	
Libraries		
Summary	Map vegetation communities and wildlife habitats in the region, including bird communities, using GIS remote sensing and spatial modelling. Ground truthing and mapping analyses based on satellite imagery.	

Author(s)	Lange, P.	B52
Title	Fire and climate change on the instability and revegetation of permafrost soil	
Affiliations		
Publication	(1993)	
lib. code	S 591.55 .C22 L35 1933	
Libraries	ARI	
Summary	Revegatation and climate changes, and soils in the **Mackenzie river** region NT. Forest fires – **Inuvik**, NT	

Author(s)	Latour, P. Maclean, N.	B53
Title	**Progress report on forest fire/wildlife studies in the Mackenzie Valley**	
Affiliations		
Publication	In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994), p. 347-359	
lib. code	ASTIS 36884	
Libraries	ACU	
Summary	Recently, predictions of rapid global warming over the next several decades due to the accumulation in the atmosphere of gases produced by combustion of hydrocarbons, has caused much speculation about consequences to the world's forests. In north-temperate and sub-arctic forests it has been predicted that fires will increase in frequency and that without greatly increased suppression efforts compared to the present day, the total amount of forest burned each season will rise dramatically .... The objectives of this study are: 1) to determine the relative abundances of furbearers (primarily marten and lynx) and ungulates (primarily moose) in burns of different ages in the Sahtu District; 2) to describe the vegetation characteristics of the above burns.	

Author(s) Lavoie, C. Payette, S. B54
Title **The stability of the boreal forest limit over the last 3000 years**
Affiliations
Publication Presented at the 24th Arctic Workshop, INSTAAR, Colorado, U.S.A., March 1994
ASTIS # ASTIS 36790
Libraries
Summary Palaeoecological studies reconstructing Holocene forest limit fluctuations may be helpful to assess and predict realistic forest movements following climate change. Macrofossil evidence for retreat of the forest limit are numerous in northern Canada (Yukon and **Mackenzie Delta**) and Russia (Taimyr peninsula) around 5000 yr BP. Here we show from one of the world's most sensitive environment, the arctic treeline of northern Quebec, the stability of forest stands over a period of 3000 14C years. North of the modern forest limit, the absence of tree stem buried in peat and charcoal under topsoil organic horizon implies that the forest limit remained fairly stable during the last millennia, in spite of known cooling during the Neoglacial period and milder episodes at 2350-1650 yr BP, 1050-750 yr BP, 1435-1570 AD and during this century. The stability of the northernmost forests is likely explained by the ability of long-lived forest trees to withstand in the vegetative stage a large spectrum of climatic variability mostly in absence of catastrophic, allogenic events like wildfire.

Author(s) Lesack, L. B55
Title **Bio-geochemistry of lakes in the Mackenzie Delta**
Affiliations Simon Fraser University. Dept. of Geography [Affiliation]
Publication (1999)
lib. code ASTIS 48464
Libraries
Summary This research was completed to develop a model of the interacting bio-geochemical and hydrological processes that control nutrient balance and primary productivity in the lakes of the **Mackenzie Delta** Region…. Field work involved day trips by boat or helicopter to a small cluster of 6-9 lakes just north of **Inuvik** along the **east channel** of the river. Instrumentation was set up to continuously measure the transparency of the water at each monitoring site. Each lake was visited by boat every two weeks, to collect the light meter data, and samples of water, algae and sediments for analysis in Inuvik. Another set of **20 lakes west of Inuvik** and along the **East Channel** were examined in August. In these lakes only one sample of aquatic plants was taken at each lake.

Author(s) Lesack, L. B56
Title **Biogeochemistry of lakes in the Mackenzie Delta**
Affiliations Simon Fraser University. Dept. of Geography [Affiliation]
Publication (2000)
lib. code ASTIS 50051
Libraries
Summary This project is on-going and the long-term goal is to develop a biogeochemical model for lakes in the **Mackenzie Delta** and ultimately a more general ecosystem model for lakes in the flood plains and deltas of major world rivers that could help assess the effects of multiple stresses on rivers as a result of global change. Specific goals the research program included 1) evaluating the relation between aquatic plant biomass and the type of lake connection with delta distributary channels and 2) a preliminary assessment of the degree to which thermokarst erosion of terrestrial plant material may affect aquatic plant biomass. During August, abundances of aquatic plants, water transparency and sediment characteristics were measured in two lake-chain systems (Taylor Channel and Reindeer Channel systems) and from this the research team was able to confirm differences in aquatic plant biomass within these lake-chains relative to single lakes with similar water transparency. Laboratory experiments were also completed on phytoplankton samples from turbid, clear and thermokarst lakes, and they were able to confirm the thermokarst lakes responded differently to the addition of river sediments and nutrients than other lake types.

Author(s) Lesack, L. B57
Title **Biogeochemistry of lakes in the Mackenzie Delta**
Affiliations Simon Fraser University. Dept. of Geography [Affiliation]
Publication (2001)
lib. code ASTIS 51475
Libraries
Summary This project is ongoing and the long-term goal is to develop a biogeochemical model for the lakes in the **Mackenzie Delta** (Inuvialuit Settlement Region and Gwich'in Settlement Area).... During the field season samples were collected for various microorganisms. Seasonal trends in bacterial and zooplankton communities were documented for the first time across a gradient of lake flooding frequencies. It was also confirmed that the consumption of microflagellates by zooplankton depends strongly on the species of zooplankton present.

Author(s) Lesack, L. Cobbett, M. Pipke, K. Hay, M. B58
Title **Biogeochemistry of lakes in the Mackenzie Delta**
Affiliations Simon Fraser University. Dept. of Geography [Affiliation]
Publication (1996)
lib. code ASTIS 43519
Libraries
Summary This is an on-going research project and the long-term goal is to develop a biogeochemical model for lakes in the **Mackenzie Delta**, and ultimately, a more general ecosystem model for lakes in the flood plains & deltas of major world rivers that could help assess the effects of multiple stresses on rivers as a result of global change. Specific goals for the 1996 season included evaluating of the strength of methane emissions from a set of lakes in the **Mackenzie Delta** near **Inuvik** and evaluating algae community composition as a potential predictor of flooding regimes within lakes of the **delta**. During May, we successfully collected samples of methane that accumulated under the ice of 27 lakes during the winter. During August we returned to the same set of lakes and collected samples of algae for community analysis.

Author(s) Lesack, L. Squires, M. Teichreb, C. B59
Title **Biogeochemistry of lakes in the Mackenzie Delta**
Affiliations Simon Fraser University. Dept. of Geography [Affiliation]
Publication (1997)
lib. code ASTIS 43608
Libraries
Summary …Specific goals for the 1997 season included evaluating the rates of growth among specialized groups of aquatic plants among a set of lakes that range from non-transparent to relatively transparent (Ph. D. thesis project of Squires) and evaluating of the average amount of light available for plant growth in the same set of lakes. Ms. Squires spent July and August identifying potential study sites and performing initial fieldwork. She found a lake chain with a consistent gradient in turbidity which will be exploited for more detailed investigations during 1998 field season. We also installed a number of recording light meters that were able to measure the variation in water turbidity (capacity of water currents to carry large quantities of particles in suspension) over the course of the summer.

Author(s) Lesack, L. Squires, M. Teichreb, C. Schultz, A. B60
Title **Biogeochemistry of lakes in the Mackenzie Delta**
Affiliations Simon Fraser University. Dept. of Geography [Affiliation]
Publication (1998)
lib. code ASTIS 46764
Libraries
Summary This project is on-going and the long-term goal is to develop a biogeochemical model for lakes in the **Mackenzie Delta**. Specific goals for the 1998 season include evaluating the distributions of aquatic plants and their relation to water clarity and flooding regime among a system of nine connected lakes ranging from turbid to clear (Ph.D. project, Squires), and evaluating how changes in ultraviolet (UV) light affect dissolved organic carbon (DOC) levels and growth of bacteria among lakes of the delta (M.Sc. project, Teichreb). Squires spent July and August measuring amounts of aquatic plants, water clarity, sediment characteristics, and was successful in characterizing the distributions of larger plants in a system of lakes. During July and August, Mr. Teichreb set up a series of enclosures (large plastic bags in South Lake) with differing transparencies to UV light and differing amounts of DOC, and was successful in measuring the response of bacteria to the experimental conditions. The results from the enclosures were also successfully compared to bacteria and DOC levels among 40 other lakes near **Inuvik**.

Author(s) Lesack, L. Teare, C. Pipke, K. Cobbett, M. Smith, L. B61
Title **Biogeochemistry of lakes in the Mackenzie Delta**
Affiliations Simon Fraser University. Dept. of Geography [Affiliation]
Publication (1994)
lib. code ASTIS 38701
Libraries
Summary Researchers evaluated the spatial variability of nutrient chemistry during the snowmelt period within the drainage network of the tundra stream ecosystem. Evaluation of the controls on nutrient chemistry and community metabolism in streams within the boreal forest/tundra ecotone were done through the measurement of algae and organic matter in the stream. Evaluation of the potential role of the **Mackenzie Delta** lakes as emitters of methane to the atmosphere was also done.

Author(s) LGL Limited, Environmental Research Associates B62
Title **Ecology and resource management in the Mackenzie Delta: an interdisciplinary assessment of cumulative impacts: an unsolicited proposal**
Affiliations Dept. of Supply and services
Publication (1982)
lib. code QH 77 .N67 E36 1982
Libraries ARI
Summary Natural resources. **Mackenzie Delta** NT

Author(s)	LGL Limited, Environmental Research Associates ESL Environmental Sciences Limited Environmental and Social Systems Analysts Ltd. P.J. Usher Consulting Services	B63
Title	**Mackenzie environmental monitoring project 1985-1986 final report**	
Affiliations	Canada. Dept. of Indian Affairs and Northern Development [Sponsor] Canada. Environment Canada [Sponsor] Canada. Dept. of Fisheries and Oceans [Sponsor] Northwest Territories [Sponsor] Yukon Territory [Sponsor]	
Publication	(1986)	
lib. code	ASTIS 20739	
Libraries	NWYIN OORD ACU	
Summary	... This report summarizes the results of the first year of MEMP [Mackenzie Environmental Monitoring Program]. … The basic approach proceeds through eight tasks: 1. identification of valued ecosystem components (VECs); 2. identification of development activities; 3. identification of the temporal horizon and within-year resolution; 4. identification of the spatial extent and resolution; 5. identification of impact hypotheses that causally relate development activities to VECs; 6. screening of impact hypotheses for validity, relevance and credibility; 7. evaluation of impact hypotheses; and 8. design of research and monitoring programs.	

Author(s)	Machtans, H.	B64
Title	**Environmental assessment for proposed oil and gas development activities in the Tulita area, NWT**	
Affiliations	Golder Associates [Affiliation] NorthRock Resources Ltd. [Sponsor]	
Publication	(1999)	
lib. code	ASTIS 48429	
Libraries		
Summary	A final report covers regulatory approvals and process, field surveys, a literature review, and impact assessment for the following areas of concern: air and noise, soils and vegetation, wildlife, fish, socio-economic impacts, cultural and heritage resources, and cumulative effects, and ways of addressing these areas of concern…. to document vegetation types, signs of wildlife, and fish habitat.	

Author(s)	Mackenzie Valley Pipe Line Research Limited	B65
Title	**Feasibility study : 1971 : back-up data : volume 15 - Environment**	
Affiliations		
Publication	(1971)	
ASTIS #	ASTIS 31983	
Libraries	ACU	
Summary	This document consists of several different reports as follows: 1) Vegetation protection and restoration program, Phase I, F.F. Slaney and Company Limited, November, 1971. 2) Fishes and fish habitat protection program, Phase I, F.F. Slaney and Company Limited, November, 1971. 3) Proposal for archaeological salvage, Millar, J.F.V., University of Saskatchewan, November, 1971. 4) Selected environmental bibliography, Durrant, D.T., and Rempel, G., Mackenzie Valley Pipe Line Research Limited, March, 1972.	

Author(s) MacLeod, N.R. B66
Title **The feasibility of developing granular resources from the bed of the Mackenzie River**
Affiliations
Publication In: Granular Resource Requirements for Proposed Mackenzie Valley Pipelines : technical papers and workshop proceedings / Prepared by R.J. Mahnic and T.J. Fujino. - [S.l.] : Stanley Associates Engineering, (1993), p. 54-65
lib. code ASTIS
Libraries ACU OORD
Summary …**Mackenzie River** bed potential was assessed by examining hydrological and geological data for 19 river sections. Economic data was compiled to demonstrate the feasibility of river bed dredging and in particular the practicability of long haul distances by barge. The impact of dredging on fish populations and their migration was also reviewed. Eleven river reaches were identified with a significant potential for supplying granular materials where there are shortages of terrestrial deposits within 15 km of the river. It must be recognized, however, that there is little direct data from the river bed to identify specific source areas or dredging sites.

Author(s) Marsh, P. Ommanney, C.S.L. B67
Title **Mackenzie Delta : environmental interactions and implications of development : proceedings of the Workshop on the Mackenzie Delta, 17-18 October 1989, Saskatoon, Saskatchewan**
Affiliations
Publication NHRI symposium, no. 4, (1991)
lib. code ASTIS 46249
Libraries ACU
Summary The primary aim was to attract scientists from various disciplines to discuss interactions between different elements of the physical and biological environments. These proceedings are the formal record of the workshop held at the National Hydrology Research Centre in October 1989. The published papers are not a comprehensive review of past research, but are a snapshop of current investigations in the area, brief discussions of future research requirements, and a source of references for those with an interest in the **Mackenzie Delta**.

Author(s) Martin, L.C. B68
Title **Fisheries and water chemistry survey, Big Horn Point, Richards Island, N.W.T., 1975**
Affiliations F.F. Slaney & Company Beaufort Gas Project [Sponsor] Imperial Oil Limited [Sponsor]
Publication F.F. Slaney and Company Limited, (1976)
lib. code ASTIS 4386
Libraries ACU
Summary ... The purpose of the study was to provide ... an overview of the background fisheries, hydrological and water quality data necessary to assess the potential effects of dredging silt and granular materials from Harry Channel.

Author(s)	Melton, D. Machtans, H. Bessie, W.	B69
Title	**Grey Wolf Norman Wells Drilling Project**	
Affiliations	Golder Associates [Affiliation] Grey Wolf Exploration [Sponsor]	
Publication	(1998)	
lib. code	ASTIS 46733	
Libraries		
Summary	… The report includes the baseline information. Field surveys were conducted in September 1998 in the area of the proposed development in order to: document the mammal and bird species present, document wildlife habitat, assess potential water sources, document baseline water quality and fish habitat, and identify fish species present. Potential impacts, proposed control measures and residual negative impacts were discussed for the following: air and noise, soils and vegetation, wildlife, fish, cultural resources, traditional land use, socio-economic impacts, and cumulative effects….	

Author(s)	Metikosh, S.	B70
Title	**Summer fish and fish habitat surveys : biophysical baseline studies in support of the Mackenzie Delta gas feasibility study**	
Affiliations	Golder Associates [Affiliation]	
Publication	(2001)	
lib. code	ASTIS 51416	
Libraries		
Summary	…Basic geomorphological descriptions of the watercourses, channel features, hydrological features and habitat features were documented. Fish sampling was also carried out at each of the six watercourses.	

Author(s)	Ottawa Field-Naturalists' Club	B71
Title	**Environmental impact statement (EIS) concerning hydrocarbon development in the Beaufort Sea/Mackenzie Delta region**	
Affiliations	Ottawa : Ottawa Field Naturalists' Club, (1983)	
Publication	1983	
lib. code	ASTIS 12061	
Libraries	ACU	
Summary	The Ottawa Field-Naturalists Club presents its comments on the Environmental Impact Statement concerning hydrocarbon development in the **Beaufort Sea-Mackenzie Delta** region for consideration by the Beaufort Sea Environmental Assessment Panel.	

Author(s) Pallister Resource Management Ltd. B72
Title **Arctic Petroleum Operators' Association - reference manual - description of research projects**
Affiliations Arctic Petroleum Operators Association [Sponsor]
Publication Calgary, Alta. : InfoPall, Pallister Resource Management Ltd., (1986)
lib. code ASTIS 19042
Libraries ACU
Summary APOA research projects include a wide range of topics relevant to hydrocarbon exploration throughout the Arctic. Environmental research in the **Beaufort Sea**, **Mackenzie Delta**, High Arctic and Eastern Arctic regions has included studies of seabirds, marine mammals, lower life-forms, climate, oceanography and geomorphology. A number of studies have been dedicated to the various forms of sea-ice and icebergs in each of these regions, including theoretical modelling and field measurements of the strength and behaviour of ice and its effect on structures. …Some 350 APOA study reports have been placed in twenty-three reference libraries across Canada, in the United States, and Great Britain. These reports are also available for purchase. As well, the Association publishes the APOA Review, a magazine dedicated to the history, content and progress of arctic research and operations.

Author(s) Peterson, E.B. Kabzems, R.D. Levson, V.M. B73
Title **Environmental overview of a portion of the proposed Polar Gas "Y" Line**
Affiliations Western Ecological Services Ltd. Polar Gas Limited [Sponsor]
Publication Toronto : Polar Gas, (1981). xix, 350 p
lib. code ASTIS 9023
Libraries ACU OON
Summary Bibliography
This report contains detailed annotations of 181 references on renewable resources, non-renewable resources, resource use, land capability and physical and biological environmental features within a 50 km zone on either side of the proposed Polar Gas "Y" Line from approximately Aylmer Lake in the Northwest Territories southeastward to Windigo Lake in Ontario. This, 1,700-km segment of route is part of a combined pipeline system that would connect gas reserves of the Sverdrup Basin and the **Mackenzie Delta**/**Beaufort Sea** region to a common pipeline system.

Author(s) Peterson, E.B. Levson, V.M. B74
Title **Environmental overview of a possible Polar Gas "Y" Line**
Affiliations Western Ecological Services Ltd. Polar Gas Limited [Sponsor]
Publication Toronto : Polar Gas, (1979). 2v.
lib. code ASTIS 6988
Libraries ACU OON
Summary Contents: Part 1. Annotated bibliography. - Part 2. Analysis and summary
This report contains detailed annotations of 256 references on renewable resources, non-renewable resources, resource use, land capability and physical and biological environmental features within a 50 km zone on either side of a potential pipeline route that would connect the gas reserves of the Sverdrup Basin and the **Mackenzie Delta**/**Beaufort Sea** region to a common pipeline system.

Author(s)	Petro-Canada	B75
Title	**Getting along in the Mackenzie Delta**	
Affiliations		
Publication	(1979)	
Lib. code	ASTIS 13817.	
Libraries	ACU	
Summary	This booklet is part of a series published by Petro-Canada to inform our employees about the environment and people of regions where resource development is being pursued. This booklet presents a brief sketch of the land plant and animal life, and people of the Delta region. It focuses on the **Mackenzie Delta** proper, with additional information on surrounding areas, including the **Beaufort Sea coast** from the Yukon/Alaska border to Cape Bathurst.	

Author(s)	Polar Gas Limited	B76
Title	**An environmental reconnaissance of two alternative routes**	
Affiliations		
Publication	Toronto : Polar Gas, (1979). 30p.	
lib. code	ASTIS 29588	
Libraries	ACU	
Summary	This report describes the environmental characteristics of areas along the routes as observed from the air, between 18 and 24 July, 1979. Photographs supplement the text.	

Author(s)	Polar Gas Limited	B77
Title	**An environmental reconnaissance of "Y"-line route to Longlac direct, August 1979**	
Affiliations		
Publication	Toronto : Polar Gas, (1979)	
lib. code	ASTIS 29595	
Libraries	ACU	
Summary	This report describes the environmental characteristics of areas along the route as observed from the air, between 18 and 24 July, 1979. Photographs supplement the text.	

Author(s)	Pollard, D.F.W. Benton, R.A.	B78
Title	**The status of protected areas in the Mackenzie Basin**	
Affiliations		
Publication	In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994), p. 23-27	
Lib. code	ASTIS 36853	
Libraries	ACU	
Summary	Protected areas currently occupy 4.1 percent of the 1.8 million square kilometres of the **Mackenzie**. Gap analysis will reveal where serious shortfalls occur; even from this cursory exercise it is evident that 8 Ecoregions are without any protected area whatsoever, and most others will be under represented. Our next steps will be to examine the purposes of individual protected areas, and to characterize them with regard to their representativeness. We shall pay particular attention to the size, shape, orientation, degree of contiguity or isolation, and nature of individual protected areas. Later in the project we shall attempt to characterize the discrepancies between ecosystems of current and projected climates occupied by protected areas. …	

Author(s)	Ripley, Klohn & Leonoff Alberta Limited	B79
Title	**Presentation of test hole log data**	
Affiliations	Mackenzie Valley Pipe Line Research Limited [Sponsor]	
Publication	Ripley, Klohn & Leonoff Alberta Ltd; (1970)	
lib. code	ASTIS 31510	
Libraries	ACU	
Summary	This report contains test hole logs with detailed classification of the soils and permafrost as well as results of the laboratory tests. This report is a supplement to the Photo Mosaic and Terrain Investigation Data Report, which is under separate cover and presents surface and subsurface data in the form of notes and photographs. As an aid to locating the test hole logs in this book, the logs have been grouped as follows: Mile 0 - 300 Prudhoe Bay to Alaska/Yukon Border, Mile 300 - 670 Alaska/Yukon Border to Sans Sault Rapids, Mile 670 - 1200 Sans Sault Rapids to the 60th Parallel of Latitude (**East Side of Mackenzie River** to **Fort Simpson**), Mile 670 - 1000 Sans Sault Rapids to approximately Fort Simpson (**West Side of Mackenzie River**) ... Detailed logging of holes consisted of a description of surficial conditions, surface vegetation, and a description of the soils and permafrost conditions encountered.	

Author(s)	Rosenberg, D.M. Snow, N.B.	B80
Title	**Species list of aquatic plants and animals collected from the Mackenzie and Porcupine River watersheds from 1971 to 1973**	
Affiliations		
Publication	Technical report - Freshwater Institute (Canada), no. 557 (1975)	
lib. code	ASTIS 27375	
Libraries	ACU	
Summary	Not Available	

Author(s)	Rosenberg, D.M.	B81
Title	**Ecological studies of aquatic organisms in the Mackenzie and Porcupine River drainages in relation to sedimentation**	
Affiliations		
Publication	Freshwater Institute: Winnipeg, MB (1975)	
lib. code	QE 581 .R67 1975	
Libraries	ARI	
Summary	Sedimentation and deposition. Aquatic ecology. **Mackenzie River Basin**, Porcupine River.	

Author(s)	Rowe, J.S.	B82
Title	**Fire studies in the Mackenzie Valley**	
Affiliations	Dept. of Indian affairs and Northern Development: Ottawa	
Publication	(1974)	
lib. code	SD 421 .F57 1974	
Libraries	ARI	
Summary	Forest fires. **Mackenzie River Delta**, NT	

Author(s) Rowe, J.S. Spittlehouse, D. Johnson, E.A. Jasieniuk, M.A. B83
Title **Fire studies in the upper Mackenzie valley and adjacent Precambrian uplands**
Affiliations
Publication Ottawa : DIAND, (1975)
lib. code ASTIS 6360
Libraries ACU SSU
Summary This is a report on the second year of research concerning fire in the Northwest Territories. In 1974 work was continued in the Upper **Mackenzie Valley** and, in addition, studies were extended eastward on the Shield. ... The approach taken to field studies continued to be geographic and wide-ranging, with many sites examined for comparative purposes. The following objectives were pursued: (1) To continue an analysis of fire records and of climatic correlates. (2) To study fire recurrence on important terrain types in the Valley and on the Shield, using tree ring and stratigraphic techniques. (3) To examine fire effects on peat plateaus and on permafrost mineral soils. (4) To study the responses of vegetation to fire with attention to the autecology of dominant species.

Author(s) Rueggeberg, H.I. B84
Title **Northern land use planning : a context for wildlife habitat management and conservation in the Beaufort Sea-Mackenzie Delta region**
Affiliations University of British Columbia, Vancouver, B.C.
Publication Thesis (M.Sc.) - University of British Columbia, Vancouver, B.C., (1983)
Lib. code ASTIS 35785
Libraries ACU
Summary The objectives of the thesis are: [1] to determine criteria for a northern land use planning and management regime that would ensure that it is capable of recognizing wildlife habitat as an important land use; [2] to analyze existing institutional mechanisms and government activities in light of these criteria; [3] to determine where changes in the planning/management regime are necessary. The relevant features of the current land administration regime and land use interests north of 60 degrees are described. As well, an on-going land use conflict in the Beaufort Sea region is documented to illustrate how government deals with such issues. Gulf Canada Resources Incorporated's proposal and application to construct a deep water harbour facility at Stokes Point on the north Yukon serves as the case example. If it is resolved that wildlife habitat should remain as a primary land use, it is suggested that a park, national wildlife area or combination thereof be established in conjunction with native land claim agreements in the region.

Author(s) Sherstone, D.A. B85
Title **Bibliography of research publications: Inuvik Scientific Resource Centre 1964 - 1985**
Affiliations
Publication Canada Dept. of Indian and Northern Affairs: Ottawa, ON (1986).
lib. code Q 180 .C2 S54 1986
Libraries ARI
Summary Bibliography

Author(s) Shopik, T. B86

Title **Alaska Gas Producers Pipeline Team - terrestrial environmental studies for the portion of the proposed Mackenzie Valley pipeline route within the Inuvialuit Settlement Region**

Affiliations ExxonMobil Resources Ltd. [Affiliation] Alaska Gas Producers Pipeline Team [Sponsor]

Publication (2001)

lib. code ASTIS 51432

Libraries

Summary … The field research program included the following general areas of study: freshwater aquatics, terrestrial wildlife, vegetation and soils, archaeology and noise. Methods employed involved standard environmental survey techniques and did not involve any new technology. Global Positioning Systems (GPS), appropriate scale maps and aerial photos were used for recording point location information and navigation. Studies were conducted within a 5 km wide corridor centred on the proposed route. Fish were captured live and released. Interactions with wildlife were minimized and wildlife monitors were utilized during the completion of the study program.

Author(s) Shopik, T. B87

Title **Alaska Gas Producers Pipeline Team - marine environmental studies for the portion of the proposed Mackenzie Valley Pipeline route within the Inuvialuit Settlement Region**

Affiliations ExxonMobil Resources Ltd. [Affiliation] Alaska Gas Producers Pipeline Team [Sponsor]

Publication (2001)

lib. code ASTIS 51433

Libraries

Summary This research involved a series of marine environmental studies in connection with a proposed **Mackenzie Valley** pipeline route, a portion of which lies within the Inuvialuit Settlement Region (ISR). The program had the following objectives: (1) to start to develop a baseline inventory of resources that could potentially be affected by the construction of an offshore pipeline within the Beaufort Sea and a terrestrial pipeline within the ISR; (2) to evaluate the environmental constraints determining the location of the pipeline landfall and the location of construction sites, equipment staging sites and compressor station locations; and (3) to start to use field results to assist in the development of mitigative strategies. The research will help determine the technical and environmental feasibility and economic viability of a subsea natural gas pipeline from Prudhoe Bay, Alaska to the **Mackenzie Delta** area of Canada. Water depth and bottom surface characteristics were examined to assess the feasibility and design of the proposed pipeline offshore route. The potential effects of coastal erosion were examined. The effects of climate change on coastal processes (focusing on permafrost, oceanographic processes, shoreline stability, and coastal geomorphology) were assessed. The distribution of moulting waterfowl through a series of aerial surveys was documented. The timing and extent of use of the nearshore waters by concentrations of bowhead and beluga whales was documented to aid in the selection of the most appropriate route and the timing of construction activities in the area. Camp locations, traditional land use patterns and resource use was also mapped.

Author(s) F.F. Slaney & Company B88
Title **1972 environmental field program Taglu - Richards Island, Mackenzie Delta. Part 1 : Letter of transmittal and general project description : interim report**
Affiliations Imperial Oil Limited [Sponsor]
Publication Vancouver, B.C. : F.F. Slaney & Co., (1973).
lib. code ASTIS 40928
Libraries ACU
Summary …Part 1 is prerequisite to the other six parts because it includes project information of an introductory nature. Other parts should also be read together. In particular, Part 2 should be read in conjunction with Parts 3 and 4 because wildlife evaluations were made in terms of vegetative mapping units and water body classifications follow physical boundaries. Similarly, part 7 includes data pertinent to the understanding of Parts 4 and 5.

Author(s) F.F. Slaney & Company B89
Title **1972 environmental field program Taglu - Richards Island, Mackenzie Delta. Part 2 : Soils and vegetation : interim report**
Affiliations Imperial Oil Limited [Sponsor]
Publication F.F. Slaney & Co., (1973) APOA project no. 43, preliminary to the major regional EIA conducted as APOA Project 61.
lib. code ASTIS 40929
Libraries ACU
Summary This report describes the soils and vegetation of the study area

Author(s) F.F. Slaney & Company B90
Title **1972 environmental field program Taglu - Richards Island, Mackenzie Delta. Part 4 : Aquatic systems : interim report**
Affiliations Imperial Oil Limited [Sponsor]
Publication F.F. Slaney & Co., (1973).
lib. code ASTIS 40931
Libraries ACU
Summary ... The purpose of the Aquatic Systems Program was to provide inventory data on the lentic, lotic and estuarine ecosystems of the Study Area. The program is divided into the categories of lake, channel, and estuarine surveys. Specific objectives of the survey program were: identify aquatic vertebrates and invertebrates, determine base line water chemistry data, and identify aquatic resource utilization.

Author(s) F.F. Slaney & Company B91
Title **Environmental impact assessment Immerk artificial island construction, Mackenzie Bay, N.W.T.**
Affiliations Imperial Oil Limited [Sponsor]
Publication Vancouver : F.F. Slaney & Company Limited, (1973).
lib. code ASTIS 4450
Libraries ACU
Summary This is a two-volume report on a program of environmental impact assessment. Volume I relates research findings to the industrial process being assessed. It contains an environmental impact statement. Volume II contains an accounting of ecological and other kinds of surveys and research undertaken to provide a factual basis for assessment. It describes environmental studies.

Author(s) F.F. Slaney & Company B92
Title **Preliminary assessment, aquatic resources Tuktoyaktuk Harbour**
Affiliations Imperial Oil Limited [Sponsor]
Publication Beaufort E.I.S. reference work, no. RWE13 (1973)
lib. code ASTIS 10808
Libraries ACU
Summary This study was a preliminary one designed to sample three prospective gravel sites during the summer period (mid-August) of the yearly biological cycle. Data collected included 32 benthic grabs for invertebrate samples and fish sampling by beam trawl, gillnet and seine. Fish collected were examined for stomach content and spawning conditions. The report also includes a brief description of the physical and chemical characteristics of **Tuktoyaktuk** harbour waters based on available historic data. While not adequate for a complete projection of potential environmental impact the survey served to indicate the following points: 1. **Tuktoyaktuk** Habrour waters appear to be rich in aquatic resources compared to the outer **Mackenzie Delta**. 2. Area No. I (Malrok Point to Saviktok Point) appears the one most susceptible to short term physical changes in water quality….

Author(s) F.F. Slaney & Company B93
Title **1972-1974 environmental program Mackenzie Delta, N.W.T., Canada**
Affiliations
Publication APOA project no. 61 : Environmental impact assessment program, Mackenzie Delta - Phase II. Report, no. 1-9 (1974) 37 microfiches
lib. code ASTIS 2579; TD 195 .G3 F47 1974
Libraries ACU NFSMO; ARI
Summary Contents: - v.1. Meteorology and climate. - v.2. Hydrology. - v.3. Landform and vegetation. - v.4. Birds. - v.5. Mammals. - v.6. Aquatic resources. - v.7. Environmental quality. - v.8. Winter study supplement. - v.9. Impact assessment.

Author(s) F.F. Slaney & Company B94
Title **1972-1974 environmental program, Mackenzie Delta, N.W.T. : volume 6 : aquatic resources**
Affiliations Imperial Oil Limited [Sponsor] Gulf Oil Canada [Sponsor] Shell Canada Limited [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]
Publication F.F. Slaney & Co., (1974). Part of a seven volume set.
lib. code ASTIS 30278; TD 195 .G3 F47 1974
Libraries ACU, ARI
Summary The primary purpose of the aquatic program was to describe the channel, stream and lake ecosystems of the study region through surveys carried out over a two-year period. Preliminary surveys were also carried out in **East Mackenzie Bay**. The specific objectives of surveys were: to identify aquatic vertebrates and invertebrates and learn of their distribution, to describe basic physical and chemical parameters of aquatic habitat, and to identify aquatic resource use by people of the region.

Author(s) F.F. Slaney & Company B95
Title **1972-1974 environmental program Mackenzie Delta, N.W.T. : impact assessment**
Affiliations Imperial Oil Limited [Sponsor] Gulf Oil Canada [Sponsor] Shell Oil Canada [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]
Publication Vancouver, B.C. : F.F. Slaney & Co., (1974).
lib. code ASTIS 30280;
Libraries ACU,
Summary This assessment is based on data collected through field studies over a two-year period, 1972-1974. ... Detailed descriptions of the study region and its resources have been submitted in seven volumes plus a winter study supplement, and are summarized in this report.

Author(s) F.F. Slaney & Company B96
Title **1972-1974 environmental program, Mackenzie Delta, N.W.T. : winter study supplement**
Affiliations Imperial Oil Limited [Sponsor] Gulf Oil Canada [Sponsor] Shell Canada Limited [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]
Publication Vancouver, B.C. : F.F. Slaney & Co., (1974).
lib. code ASTIS 30281;
Libraries ACU;
Summary The general purpose of the 1973-74 Winter Supplement was to continue environmental data collection in new study areas added to the "Mackenzie Delta Environmental Program" in early 1973. These included drill sites at H-30, C-58, P-53, F-36, N-10, and K-09; the staging area at Swimming Point; and additional areas within Kumak, Taglu and Parsons Corridors. Continuation of environmental data collection to June 1974 provides one year's description of seasonal variations within those regions.

Author(s) F.F. Slaney & Company B97
Title **1973-1974 winter benthic and oceanographic surveys offshore Mackenzie Delta, N.W.T.**
Affiliations Imperial Oil Limited [Sponsor]
Publication (1974) 2 microfiches
Lib. code ASTIS 10807
Libraries ACU
Summary Specific objectives of the program were to: 1. Sample the winter benthic faunal communities in various sectors of the estuary. 2. Determine certain physical and chemical parameters of any free water. 3. Collect substrate samples from the uppermost layer.

Author(s) F.F. Slaney & Company B98
Title **1974 Summer environmental program - Mackenzie River Estuary**
Affiliations Imperial Oil Limited [Sponsor]
Publication APOA project no. 76 : Summer environmental studies - East Mackenzie Bay - Mackenzie Delta. Report, v. 1-3 (1975) 13 microfiches
Lib. code ASTIS 2670
Libraries ACU NFSMO
Summary The integrated program consisted of eight study disciplines. Physical Oceanography, Water Chemistry, Plankton, Benthos, Fisheries, Avifauna, Terrestrial Mammals, Marine Mammals. Also included were less extensive observations of meteorology and climate. All studies were designed to integrate with, or supplement, existing information and ongoing work by other groups.

Author(s) F.F. Slaney & Company B99
Title **1974 summer environmental program, Mackenzie River Estuary : volume 1 : aquatic studies**
Affiliations Imperial Oil Limited [Sponsor] Sun Oil Company [Sponsor]
Publication (1975)
Lib. code ASTIS 44312
Libraries ACU
Summary The specific objectives of the 1974 summer environmental program were to: 1. Monitor the effects of construction and associated activities at the Pelly, Netserk and Adgo sites, up to and including the fall period 1974, with supplementary investigations at existing islands at the Unark and Adgo sites; 2. Measure physical and chemical conditions and indicators of primary productivity at selected island and borrow sites; 3. Provide an assessment of the relative distribution and abundance of plankton, benthic fauna and fish at selected island sites, selected borrow sites and shoreline staging areas; 4. Provide a preliminary assessment of the distribution and relative abundance of larval fish in nearshore aquatic habitats of the Barrier Islands, and at Adgo and other island sites; 5. Determine the summer use and significance of the Barrier Islands to birds and foxes, provide surveillance of fall bird migration patterns in the outer delta, and determine the importance of the study area to foxes and polar bears; 6. Provide surveillance and documentation of the movements, distribution and abundance of white whales in relation to activities at the Pelly, Netserk, Unark and Pullen sites during summer, 1974; 7. Advise I.O.L. and Sun field supervisors, within limits imposed by weather, regarding potential interference with whale migrations and/or native hunting activities and recommend preventative action if required; and 8. Prepare a comprehensive report dealing with all studies.

Author(s) F.F. Slaney & Company B100
Title **1974 summer environmental program, Mackenzie River Estuary : volume 2 : terrestrial studies**
Affiliations Imperial Oil Limited [Sponsor]
Publication Vancouver, B.C. : F.F. Slaney & Co., (1975).
lib. code ASTIS 30282; QH 95 .57 .M3 S63 1975
Libraries ACU; ARI
Summary ... The specific objectives of the 1974 summer environmental program were to: 1. Monitor the effects of construction and associated activities at the Pelly, Netserk and Adego sites, up to and including the fall period 1974, with supplementary investigations at existing islands at the Unark and Adgo sites; 2. Measure physical and chemical conditions and indicators of primary productivity at selected island and borrow sites; 3. Provide an assessment of the relative distribution and abundance of plankton, benthic fauna and fish at selected island sites, selected borrow sites and shoreline staging areas; 4. Provide a preliminary assessment of the distribution and relative abundance of larval fish in nearshore aquatic habitats of the Barrier Islands, and at Adgo and other island sites; 5. Determine the summer use and significance of the Barrier Islands to birds and foxes, provide surveillance of fall bird migration patterns in the outer delta, and determine the importance of the study area to foxes and polar bears; 5. Provide surveillance and documentation of the movements, distribution and abundance of white whales in relation to activities at the Pelly, Netserk, Unark and Pullen sites during summer, 1974; 7. Advise I.O.L. and Sun field supervisors, within limits imposed by weather, regarding potential interference with whale migrations and/or native hunting activities and recommend preventative action if required; and, 8. Prepare a comprehensive report dealing with all studies.

Author(s) F.F. Slaney & Company V.A. Poulin B101
Title **1975 summer environmental program, Mackenzie River Estuary : volume 1 : aquatic studies**
Affiliations Imperial Oil Limited [Sponsor]
Publication (1976)
lib. code ASTIS 30283
Libraries ACU
Summary Contents: part 4. A summer survey of the physical oceanography and water chemistry of the **Mackenzie River Estuary**, N.W.T., 1975 / J.W. McDonald and L.C. Martin - part 5. A preliminary investigation of plankton resources within the **Mackenzie River Estuary**, N.W.T., 1975 / W.R. Olmsted - part 6. Summer benthic sampling in the coastal **Mackenzie Delta**, N.W.T., 1975 / W.E. Bengeyfield - part 7. Summer fisheries investigations in the coastal waters of the **Mackenzie Estuary**, N.W.T., 1975

Author(s) F.F. Slaney & Company B102
Title **The environmental impact of the proposed Mackenzie Delta Gas Development System**
Affiliations Gulf Oil Canada [Sponsor] Imperial Oil Limited [Sponsor] Shell Canada Limited [Sponsor]
Publication (1976)
Lib. code ASTIS 30221
Libraries ACU
Summary The general area included in the investigation extended from Parson's Lake in the east to contiguous areas in a large segment of the outer **Mackenzie Delta**, encompassing Ellice-Langley, Richards Island and other islands. All major components of the physical and biological environment were investigated.

Author(s) Spivey, D. B103
Title **The influence of thermokarst subsidence on peat land and the role of climatic change within the discontinuous permafrost zone in the southern Mackenzie Valley**
Affiliations Carleton University [Affiliation and Sponsor]
Publication (1989)
lib. code ASTIS 30697
Libraries
Summary Objective: to investigate the causes of melting beneath peat landforms; to map, survey, and sample vegetation on peat landforms; to investigate the thermal properties of peat; and to use this information to determine the climatic changes that have occurred in the last century. Summary: Diane Spivey is interested in knowing why there is less permafrost now in peat bogs. First, she mapped areas that have thawed and collapsed. Then, she sampled vegetation to see if the vegetation had been disturbed so that it no longer insulated the permafrost as well. Finally, she studied how well peat retains heat and acts as an insulator. This was a continuation of her 1988 research.

Author(s)	Spivey, D.B.	B104
Title	**Climate change and permafrost in the South Mackenzie Valley: a methodological approach**	
Affiliations	Carleton University, Geography Dept.; Ottawa, Ont.	
Publication	Thesis (M.A.) (1990)	
lib. code	GB 648 .15 .S65 1990 THE	
Libraries	ARI (thesis cabinet)	
Summary	Frozen ground, climatic changes. **Mackenzie River Delta**, NT	

Author(s)	Squires, M. Lesack, L.	B105
Title	**Relative contributions of DOC, sestonic chlorophyll, and suspended sediments to light (PAR) attenuation in lakes of the Mackenzie Delta**	
Affiliations		
Publication	Paper presented at the American Society of Limnology and Oceanography, Annual Meeting, (February 1-5, 1998), Santa Fe, N.M.	
Lib. code	ASTIS 45465	
Libraries		
Summary	The **Mackenzie Delta** is a complex environment containing 25,000 lakes. The frequency and duration of river flooding is thought to exert considerable control over the abundance and distribution of phytoplankton, epipelon, macrophytes, and epiphytes among the lakes via the direct effect of riverine suspended sediments on light attenuation. Less clear is how DOC, from internal and external sources, and sestonic chlorophyll affect light availability and in turn autotroph assemblages. We followed light attenuation and concentrations of suspended sediments, DOC, and sestonic chlorophyll over the open water period for a subset of delta lakes exhibiting a clear gradient in flood frequency. Preliminary analysis confirms a dominant influence of suspended sediments, particularly in frequently flooded lakes, but also shows a substantial effect of DOC and chlorophyll in many of the lakes. The effect of DOC and sestonic chlorophyll may be strongest in lakes where the flood frequency and suspended sediments are at intermediate levels rather than in very clear or very turbid lakes. Understanding the controls on the light environment among lakes of the **Mackenzie Delta** is necessary if we are to predict the responses of the autotroph communities to the multiple stresses of global change.	

Author(s)	Strang, R.M.	B106
Title	**Studies of vegetation, landform and permafrost in the Mackenzie Valley : some case histories of disturbance**	
Affiliations	Canadian Forestry Service Environmental-Social Program, Northern Pipelines (Canada) [Sponsor]	
Publication	Environmental-Social Committee Northern Pipelines, Task Force on Northern Oil Development report, no. 73- 14 (1973)	
lib. code	ASTIS 27499; QH 541 .S87 1973	
Libraries	ACU OORD; ARI	
Summary	Ecology, botany, frozen grounds and landforms – **Mackenzie River**, NT	

Author(s) Templeton Engineering Company B107
Title **Data report on preliminary soils and terrain investigation program : mile 100 to mile 520 of proposed pipeline route. Appendix VI : field data and laboratory test results : Mackenzie River slide and Thermokarst Lake at mile 380**
Affiliations Alberta Gas Trunk Line Company Limited [Sponsor]
Publication (1971)
lib. code ASTIS 31516
Libraries ACU
Summary This report presents in chart format the number, mileage and class of drill holes sampled. For each site sampled, the physical properties of the soil, the plant cover, slope, drainage, snow depth and temperature are described.

Author(s) Vonk, P. Green, J. Thomas, D. B108
Title **Beaufort Region Environmental Assessment and Monitoring Program, draft report for 1993/1994 : annotated guide to the final reports of BEMP, MEMP and BREAM**
Affiliations Axys Environmental Consulting [Affiliation] Canada. Indian and Northern Affairs Canada [Sponsor] Canada. Dept. of Fisheries and Oceans [Sponsor]
Publication Year (1994)
Contents ill., 1 map
Lib. code ASTIS 35393
Libraries ACU OORD
Summary BREAM (Beaufort Region Environmental Assessment and Monitoring) is a process that ensures that environmental research and monitoring is fully integrated with industry's plans for hydrocarbon exploration and development in the region, and helps to identify areas where further information gained through research and monitoring is needed to assess the impacts of such development. (BEMP = Beaufort Environmental Monitoring Program 1983-1987, MEMP = Mackenzie Environmental Monitoring Program, 1985-1987)

Author(s) Wein, R. Sweda, T. B109
Title **Forest and forest fire studies in the Mackenzie Delta ecosystem**
Affiliations University of Alberta. Dept. of Forest Science [Affiliation]
Publication (1994)
lib. code ASTIS 38717
Libraries
Summary The fire history of the **Mackenzie Delta Region** is known only through fire suppression records over the past 25 years. Tree ring approaches were used in this study and the Canadian Forest Fire Weather Index System used as a guide.

B110

Author(s) Welch, H.E. Klings, H. Welch, C.
Title **Limarctic : Arctic freshwater ecology** [software]
Affiliations Canada. Dept. of Fisheries and Oceans [Sponsor]
Publication 1 CD-ROM. Winnipeg, Man. : Freshwater Institute, University of Manitoba, (2000?)
lib. code ASTIS 51663
Libraries ACU
Summary LIMARCTIC is designed primarily for educators, resource managers and students interested in Arctic freshwater ecology. The program contains a number of modules describing both the physical and biological limnology of Arctic lakes. This CD is a synthesis of what is known about lakes in the central and eastern Canadian Arctic, corresponding to the Arctic ecozone east of the **Mackenzie River drainage basin**. Running waters are not covered except incidentally where they may apply to limnology or fish biology. ... This CD was produced with a mixed audience in mind and is neither a strictly popular account nor a comprehensive documented review of arctic limnology.

B111

Author(s) White, G.
Title **Potential environmental impacts : biophysical**
Affiliations
Publication In: Granular Resource Requirements for Proposed Mackenzie Valley Pipelines : technical papers and workshop proceedings / Prepared by R.J. Mahnic and T.J. Fujino. - [S.l.] : Stanley Associates Engineering, (1993), p. 105-106
lib. code ASTIS 33264
Libraries ACU OORD
Summary This paper provides an overview perspective of some of the scientific activities currently being conducted in the **Mackenzie Delta**. Presented below are issues and biophysical constraints that may greatly affect [the petroleum industry] and in fact, all development in the NWT. ... This workshop is concentrated on establishing what granular reserves are along the corridor of the **Mackenzie Valley**, where potential granular reserves are, pipeline and highway transportation systems and other factors in the borrow industry.

B112

Author(s) Williams Brothers Canada Limited
Title **Listing and description of environmental studies and programs**
Affiliations Northwest Project Study Group [Sponsor]
Publication (1971)
Lib. code ASTIS 44239
Libraries ACU
Summary … Section 3.0 includes information supplied by Mackenzie Valley Pipeline Research Limited concerning their environmental research programs. Section 4.0 is entitled "Government of Canada - miscellaneous" and includes information about the Yukon Pipeline Study Fisheries Service, Pacific region; Department of the Environment Fisheries Service, Central region, Resource Development Branch, Winnipeg - Mackenzie River Valley Environmental Study, 1971; and Mackenzie Valley Pipeline Studies : a summary of research and survey projects underway by the Department of the Environment, 1971-72 and 1972-73.

Author(s)	Wiens, A.P.	B113
Title	**Species list of aquatic plants and animals collected from the Mackenzie and porcupine River watershed from 1971 - 1973**	
Affiliations		
Publication	Fisheries and Marine services, Freshwater Institute: Winnipeg, MB (1975)	
lib. code	SH 37 .T25 W54 1975	
Libraries	ARI	
Summary	Fisheries – research. Botany, zoology, watersheds. NT	

Natural Value Theme: Climate Change

Author(s)	Bone, R.M. McPherson, P. Joshi, M. Saku, J. CL1
Title	**Effects of global warming on settlements and non-renewable resource development in the Mackenzie Basin to the year 2050**
Affiliations	University of Saskatchewan. Dept. of Geography [Affiliation]
Publication	(1994)
lib. code	ASTIS 38822
Libraries	
Summary	Should global warming occur, the environment and human landscape may be altered. The researchers used public information (Statistics Canada censuses and public documents) to collect data for this study. They used this data to examine the possible impacts that global warming will have on the **Mackenzie region**. The results of this study may assist planning for future development.

Author(s)	Bussières, N. CL3
Title	**Thermal features of the Mackenzie basin from NOAA AVHRR observations for summer 1994**
Affiliations	
Publication	*Atmosphere-ocean*, v. 40, no. 2, (June 2002), p. 233-244
lib. code	ASTIS 51879
Libraries	ACU
Summary	A series of mid-afternoon Advanced Very High Resolution Radiometer (AVHRR) thermal radiance scenes were assembled in order to develop a better understanding of the complex energy and water processes leading to variations in surface temperature. An in-depth knowledge of the temperature variability is of interest to land surface process modelling and its application to the Mackenzie Global Energy and Water Cycle Experiment (GEWEX) Study (MAGS)….

Author(s)	Cao, Z. Wang, M. Proctor, B.A. Strong, G.S. Stewart, R.E. Ritchie, H. Burford, J.E. CL4
Title	**On the physical processes associated with the water budget and discharge of the Mackenzie basin during the 1994/95 water year**
Affiliations	
Publication	*Atmosphere-ocean*, v. 40, no. 2, (June 2002), p. 125-143 MAGS : Mackenzie Étude GEWEX Study.
lib. code	ASTIS 51873
Libraries	ACU
Summary	A comprehensive water budget analysis for the **Mackenzie basin** illustrates that the annual convergence of moisture flux over the region is positive, and that the moisture available for precipitation originates mainly from moisture transport across the south-west and north-west boundaries of the basin. In the summer, however, the basin's moisture supply comes mainly from local evaporation. Major atmospheric forcings for discharge are discussed. … The basin scale discharge in the autumn (spring) is, to a large extent, related to cyclonic (anticyclonic) circulation systems through moisture redistribution…. Over the **southern Beaufort Sea**, the overall storm frequency in the 1994/95 water year was very low compared with its climatology (Hudak and Young, this issue). However, this region was subjected to the highest percentage of Pacific-origin storms on record during the 1994/95 water year. Synoptic scale weather systems associated with major snowfall and critical spring snowmelt events in the 1994/1995 water year are also examined.

Author(s) Chatwin, S.C. CL5
Title **Holocene temperatures in the upper Mackenzie Valley determined by oxygen isotope analysis of peat cellulose**
Affiliations
Publication In: Permafrost : Fourth International Conference, proceedings, July 17-22, 1983. Washington, D.C. : National Academy Press, (1983), p. 127-130
lib. code ASTIS 14554
Libraries ACU
Summary Oxygen isotope ratios in nonexchangeable plant cellulose extracted from samples of Sphagnum are positively correlated with the Mean Annual Temperature at their respective growth sites. Furthermore, the isotope ratio of aquatic plant cellulose is independent of the plant species. These results were used to extract a paleotemperature record, spanning the last 10,300 years from an Upper **Mackenzie Valley** peat core. Temperature does not appear to have been an impediment to permafrost aggradation in this area for the period of record. A comparatively cool climate between 10,000 and 7,000 years B.P. was followed by a warming trend between 6,000 and 5,000 years B.P. Cooling followed, reaching minimum Holocene temperatures approximately 3,500 years B.P. Preliminary results suggest this temperature was 3-4 degrees cooler than present day Mean Annual Temperatures. Steady warming since that date has resulted in widespread permafrost degradation. Present day temperatures are the warmest that have occurred during the Holocene for the area.

Author(s) Cohen, S.J. CL6
Title **Mackenzie Basin Impact Study : interim report #1**
Affiliations
Publication Cover title: MBIS: Mackenzie Basin Impact Study : interim report #1, (March 1993)
Lib. code ASTIS 36845
Libraries ACU
Summary The MBIS (Mackenzie Basin Impact Study) employs scenarios of future warmer climates and changes in population and economic conditions. These are not forecasts and there are uncertainties in the methods used and the data collected, so results must be interpreted with caution. ... Because of the complexities associated with studying the potential regional implications of global warming, the MBIS will attempt to combine information from physical, biological and social sciences with indigenous traditional knowledge to produce an integrated assessment.

Author(s) Cohen, S.J. CL7
Title **The second half of MBIS**
Affiliations
Publication Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994), p. 470-471
lib. code ASTIS 36899
Libraries ACU
Summary MBIS has added two more projects: 1) Multiobjective Program Modelling, led by Guo Huang, Environmental Adaptation Research Group, Atmospheric Environment Service, and 2) Two Economies: The Implications of Climate Change for Aboriginal Peoples of the **Mackenzie River Basin**, led by Steve Lonergan and Barb Kavanagh, Centre for Sustainable Regional Development, University of Victoria, and co-sponsored by the Environmental Innovation Program (EIP). There will also be a small workshop in 1995 on implications of climate warming scenarios for water resources

management in the Basin.

Author(s) Cohen, S.J. CL8
Title **Mackenzie Basin Impact Study : summary of interim report #2**
Affiliations Canada. Environment Canada [Sponsor] Canada. Indian and Northern Affairs Canada [Sponsor] Northwest Territories. Dept. of Renewable Resources [Sponsor] Science Institute of the Northwest Territories [Sponsor] Canadian Global Change Program [Sponsor] Canadian Polar Commission [Sponsor]
Publication (1995)
lib. code ASTIS 40026; QC 981.8 .C5 C36 no. 95-01
Libraries ACU; ARI
Summary This report is a summary report of the Sixth Biennial Meeting on Northern Climate and the Mid Study Workshop of the Mackenzie Basin Impact Study, a six-year effort dealing with the regional implications of climate change. The joint meeting/workshop was sponsored by Environment Canada, Indian and Northern Affairs Canada, Science Institute of the NWT, Canadian Polar Commission, Canadian Global Change Program of the Royal Society of Canada, and Department of Renewable Resources of the Government of the NWT.

Author(s) Cohen, S.J. CL9
Title **Integrated regional assessment of global climatic change : lessons from the Mackenzie Basin Impact Study (MBIS)**
Affiliations
Publication *Global and planetary change*, v. 11, no. 4, (April 1996), p. 179-185
Lib. code ASTIS 45209
Libraries ACU
Summary As part of the Government of Canada's Green Plan, the Global Warning Science Program includes a study of regional impacts of global warming scenarios in the **Mackenzie Basin**. The MBIS (Mackenzie Basin Impact Study) is a six-year program focussing on potential climate-induced changes in the land and water resource base, and the implications of four scenarios of global climatic change on land use and economic policies in this region. These policy issues include interjurisdictional water management, sustainability of native lifestyles, economic development opportunities (agriculture, forestry, tourism, etc.), sustainability of ecosystems and infrastructure maintenance. MBIS is due to be completed in 1997.

Author(s) Cohen, S. CL10
Title **Mackenzie Basin Impact Study (MBIS): final report**
Affiliations
Publication http://www.msc-smc.ec.gc.ca/airg/research_projects/mack_basinstudy/sum_results_e.cfm http://www.msc-smc.ec.gc.ca/airg/research_projects/mack_basinstudy/sum_results_f.cfm (1997)
Lib. code ASTIS 41639; QC 981.8 .C5 C658 1997
Libraries ACU; ARI
Summary The Mackenzie Basin Impact Study is now concluded, but it has spawned new levels of involvement focused on such issues as interjurisdictional water management, sustainability of ecosystems, economic development, the maintenance of infrastructure, and the sustainability of native lifestyles.

Author(s) Cohen, S.J. CL11
Title **What if and so what in northwest Canada : could climate change make a difference to the future of the Mackenzie Basin?**
Affiliations
Publication *Arctic*, v. 50, no. 4, (Dec. 1997), p. 293-307
lib. code ASTIS record 41625
Libraries ACU
Summary If atmospheric concentrations of carbon dioxide and other "greenhouse gases" continue to increase, global mean air temperatures are expected to rise 1.5 to 4.5 C within the next several decades. High-latitude regions are projected to experience above-average increases. What effects would such a warming have in the Canadian Arctic? In a recently completed study of the **Mackenzie Basin** in northwestern Canada, regional stakeholders provided their responses to the "what if?" scenario of climate change in their region. This scenario includes more frequent landslides due to permafrost thaw, lower minimum annual river and lake levels, more forest fires, and lower yields from softwoods. These impacts could offset potential benefits from a longer growing and ice-free season. Regional stakeholders, including provincial and territorial governments, aboriginal organizations and the private sector, felt confident about their abilities to adapt, so long as climate change would be predictable and gradual. Some potential impacts, however, could be very significant for renewable resources and aboriginal communities, and some stakeholders spoke of intervention into national and international policy arenas to raise awareness of the **Mackenzie Basin**.

Author(s) Csanady, G.T. CL12
Title **Ice fog clouds formed by vapour emissions in cold climates such as the upper Mackenzie Valley**
Affiliations
Publication Environment – Social Committee, Northern Pipelines Task Force on Northern Oil: s.l. (1973)
lib. code QC 929 .F7 C73 1973
Libraries ARI
Summary Fog, ice fog, clouds and emissions. Engineering meteorology, arctic regions. NT

Author(s) Environment Canada CL13
Title **Climate Change Digest (subtitle: Mackenzie Basin Impact Study: Summary of Interim Report #2 – CCD 95-01**
Affiliations
Publication Environment Canada: Ottawa (1987)
lib. code QC 981.8 .C5 C637 95/01
Libraries ARI
Summary Climatic changes. Greenhouse effect, atmospheric. Atmospheric carbon dioxide. Global temperature changes. Canada

Author(s) Environment Canada CL14
Title **Mackenzie Basin Impact Study (subtitle: A regional Study of the Effect of Climate Change in Canada)**
Affiliations
Publication Environment Canada: Ottawa (1996)
lib. code QC 981.8 .G56 M337 1996
Libraries ARI
Summary Global warming, Climatic changes – Environmental aspects. Climatic Changes. NT – **Mackenzie watershed**. Global warming- Economic and Social Aspects. NT – **Mackenzie watershed**.

Author(s) Forbes, D.L. Jodrey, F. CL15
Title **Coastal impacts of climate change**
Affiliations Bedford Institute of Oceanography. Marine Environmental Geoscience [Affiliation]
Publication (1996)
lib. code ASTIS 43515
Libraries
Summary The Coastal Impacts project on the **Beaufort Sea coast** had two complementary objectives; to improve our understanding of coastal processes, and to develop methods for prediction of coastal impacts of changing climate. Field work was performed from the Alaska border to the **Tuktoyaktuk Peninsula** and included sites of archaeological significance in Ivvavik National Park, sites on the **outer Mackenzie Delta**, at North Head, and in the vicinity of Tuktoyaktuk…. The field work concentrated on revisiting 11 sites which were investigated in the past several years to look for changes that can be related to changing environmental parameters such as storms, floods, etc. There were also observations of the recovery of eroded areas affected by the fall 1993 storm. Erosion was measured at GSC monitoring sites (Tent, Ellice, and **Taglu Islands**, North Head, **Tuktoyaktuk**, Tibjak Point, and Toker Point) and near shore bathymetric profiles were acquired where possible. Sediment samples were taken with a jet drill and the thickness of the active layer was measured at several sites as input into models of coastal evolution. Aerial photography was also flown at selected sites for comparison with historical air photos in order to provide a more complete picture of coastal variability.

Author(s) Huang, G.H. Cohen, S.J. Yin, Y.Y. Bass, B. CL16
Title **Land resources adaptation planning under changing climate - a study for the Mackenzie Basin**
Affiliations
Publication *Resources, conservation and recycling*, v. 24, no. 2, (Nov. 1998), p. 95-119
Lib. code ASTIS 45214
Libraries
Summary In this study, an inexact-fuzzy multiobjective programming model was proposed for adaptation planning of land resources management in the **Mackenzie Basin** under changing climate. Many sectors were considered, including agriculture, forest, wildlife habitat preservation, wetland preservation, hunting, recreation, and soil conservation, as well as their interactive relationships. The results indicate that uncertain, multiobjective, dynamic and interactive features of the study system have been effectively reflected. Temporal variations of land characteristics and land-use activities exist due to changes in climatic, economic and environmental conditions.

Author(s) Hudak, D.R. Young, J.M.C. CL17
Title **Storm climatology of the southern Beaufort Sea**
Affiliations
Publication MAGS : Mackenzie Étude GEWEX Study. Atmosphere-ocean, v. 40, no. 2, (June 2002), p. 145-158 [English]
lib. code ASTIS 51874
Libraries ACU
Summary Building on the expertise from the Beaufort Weather Office, an objective method of identifying storm periods in the **southern Beaufort Sea area** based on surface wind speed criteria was developed…. The important variables were 50-kPa wind speed and direction, and the 85-kPa temperature. The former variable is a reflection of the steering current of the storm systems while the latter is related to airmass characteristics within the storm system. The algorithms were applied to the 1970 to 1995 time period for the months of June to November inclusive. On the average, there were 14 storms per storm season, with a standard deviation of 5. By month, October had the highest storm frequency, July the lowest…. Overall, 58% of the storms were Arctic, 27% Pacific and 15% Irregular…. There were more storms during El Niño years because of an increase in Arctic storms.

Author(s) Judge, A.S. CL18
Title **Thermal regime of the Mackenzie Valley**
Affiliations
Publication Environmental – Social Committee, Northern Pipelines Task Force on Northern Oil: s.l. (1973)
lib. code S 599.1 .N6 J84 1973
Libraries ARI
Summary Effect of temperature on soils, **Mackenzie Valley**, NT

Author(s) Luckman, B.H. CL19
Title **Global change GSC project 521-8847**
Affiliations Geological Survey of Canada [Affiliation and Sponsor] Polar Continental Shelf Project (Canada) [Sponsor] Natural Sciences and Engineering Research Council Canada [Sponsor]
Publication (1989)
lib. code ASTIS 30678
Libraries
Summary Objective: to reconnoiter potential sites for future global change studies by Terrain Services Division, Geological Survey of Canada; to obtain recent tree-ring chronologies from treeline sites. Summary: Dr. Luckman and an assistant looked for potential sites for the Geological Survey of Canada to study global change. They also obtained recent tree-ring chronologies from treeline sites in the **Mackenzie Delta**.

Author(s) Mackenzie Global Energy and Water Cycle Experiment Study CL20
Title ***Mackenzie Arctic GEWEX Study,* Atmosphere-Ocean**
Affiliations
Publication Canadian Meteorological and Oceanographic Society, Volume 40, No. 2, (June 2002)
Lib. code
Libraries
Summary Not Available

Author(s) Marsh, P. Onclin, C. Neumann, N. CL21
Title **Water and energy fluxes in the lower Mackenzie Valley, 1994/95**
Affiliations
Publication *Atmosphere-ocean*, v. 40, no. 2, (June 2002), p. 245-256
lib. code ASTIS 51880
Libraries ACU
Summary … Earlier work had suggested that the timing of the spring breakup was very consistent from year to year. An analysis of the timing of breakup from the early 1960s to the late 1990s, however, shows a trend towards earlier spring breakup, with the mean for the 1990s being nine days earlier than that for the 1960s, and with the 1995 breakup being the earliest on record. Such an early breakup is not only an indication of warm local conditions, but of warm temperatures and an early runoff event over the more southerly areas of the **Mackenzie basin**. A companion Mackenzie Global Energy and Water Cycle Experiment study illustrates the importance of a high pressure circulation pattern centred east of the basin to this early melt event.

Author(s) CL22
Title **MBIS Mackenzie Basin Impact Study newsletter**
Affiliations Environment Canada
Publication Periodical. Semi-annual?. (1993-)
lib. code ASTIS 36847
Libraries ACU (Indexed from issue no. 3, January 1994.)
Summary The Mackenzie Basin Impact Study newsletter reports on the environmental and socio-economic research relating to the environmental and socio-economic effects of climatic changes, ie. global warming in the **Mackenzie Basin**. It strives to share information about the Study and about the implications of global warming on the north and for northerners.

Author(s) Nixon, F.M. Taylor, A.E. CL23
Title **Regional active layer monitoring across the sporadic, discontinuous and continuous permafrost zones, Mackenzie Valley, northwestern Canada**
Affiliations
Publication Permafrost : Seventh International Conference, June 23-27, 1998, Yellowknife, Canada : proceedings / Edited by Antoni G. Lewkowicz and Michel Allard. Collection Nordicana, no 57, (1998), p. 815-820
lib. code ASTIS 45352
Libraries ACU
Summary Fifty-eight sites have been established along a 1200 km transect in the **Mackenzie Valley** to monitor processes linking climate, climate change, permafrost and the active layer. Annual maximum thaw penetration and surface movement are measured relative to thaw tubes anchored in permafrost. Active layer thickness, calculated from thaw penetration and surface movement, varies more with local soil properties, vegetation and microclimate than with regional atmospheric climate. While thaw penetration has increased at most sites over the last 4-6 years, this increase is not always reflected by an increase in active layer thickness because of thaw settlement. Air and shallow ground temperatures are measured every 2-6 hours at many sites. Air thawing degree-days (DD) are up to three times greater than ground thawing DD, an effect of surface vegetation and snow cover. Larger air thawing DD values are required in boreal forest than in the tundra to achieve similar active layer thicknesses.

Author(s) Skinner, W. Maxwell, B. CL24

Title **Climate patterns, trends and scenarios in the Arctic**

Affiliations

Publication In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994), p. 125-137

Lib. code ASTIS 36865

Libraries ACU

Summary Annual temperature trends for the Canadian Arctic generally have reflected the annual trends observed for Canada as a whole, as well as the Northern Hemisphere; that is, rising temperatures from the early 1900s to the 1940s, followed by cooling to the 1970s, and then by warming through the 1980s and into the 1990s. Within the Canadian Arctic and on a seasonal basis, there have been variations of this pattern with some regions warming substantially (**Mackenzie**, particularly in the winter and spring) and others actually cooling (extreme eastern Arctic, in the winter and spring). The geographic and temporal variations seen in the Canadian Arctic temperatures are similar to what has been observed for the entire circumpolar Arctic. Observed trends in other climatic and related elements in the circumpolar Arctic are generally consistent with the temperature trends. This consistency in observed trends combined with the fact that such trends are generally in accord with those projected by the global circulation models under increased atmospheric CO_2 concentrations provides a measure of confidence in the validity of the observed trends as an early indicator of global warming. It must be stressed, however, that the observed trends are still generally within the range of historic variability so that it cannot yet be stated with certainty that an enhanced greenhouse gas effect is being observed.

Author(s) F.F. Slaney & Company CL25

Title **1972 environmental field program Taglu - Richards Island, Mackenzie Delta. Part 5 : Meteorology and climate : interim report**

Affiliations Imperial Oil Limited [Sponsor]

Publication Vancouver, B.C. : F.F. Slaney & Co., (1973).

lib. code ASTIS 40932

Libraries ACU

Summary The approach taken within this program is to make measurements of wind speed, wind direction, and air temperature up to a height of 100 ft. at a possible location of a gas plant site Study Center A. These measurements are to be recorded over a period of one year and are to be supplemented by humidity measurement at one level. The characteristics of the atmospheric turbulence will be determined from this data together with more sophisticated measurements at two periods, summer and spring, of fluctuations of horizontal wind velocity, vertical wind velocity, and temperature…. The turbulent factors which characterize the typical micro-climate of the region are unknown.... The objectives of these types of measurements are as follows: 1. To measure the meteorological parameters which determine the diffusive characteristics of the atmosphere at Study Center A. The pertinent parameters involved will be the mean wind distribution ... the surface roughness coefficient ... and the vertical temperature gradient .... 2. To determine geographical variations of these meteorological parameters. Meteorological measurements taken at Study Center A will be compared with those taken at the weather stations of **Aklavik, Inuvik**, **Tuktoyaktuk**, and Tununuk in order to establish the degree of correlation. 3. To determine the climatology of the vertical variation of meteorological parameters. Radiosonde data from **Inuvik** and the tower data from Study Center A will be examined to determine the interrelationship.

Author(s) F.F. Slaney & Company CL26
Title **1972-1974 environmental program, Mackenzie Delta, N.W.T. : volume 1, meteorology and climate**
Affiliations Imperial Oil Limited [Sponsor] Gulf Oil Canada [Sponsor] Shell Canada Limited [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]
Publication F.F. Slaney & Co., (1974)
lib. code ASTIS 30273; TD 195 .G3 F47 1974
Libraries ACU; ARI
Summary ... The primary objective of the meteorology and climate portion of this study was to determine the local climate at three locations in the study region and relate these individual climates to historical records collected at nearby weather stations. **Taglu** G-33, Swimming Point and Parsons Lake were the three sites chosen (Map 1-3). Each differed in elevation and local topography. The meteorological parameters studied were air temperature, wind speed and wind direction. Vertical distributions of each were studied at **Taglu** G-33. Specific objectives were: 1. To determine geographical variations of meteorological parameters between remote stations established at **Taglu** G-33, Swimming Point and Parsons Lake and government weather stations at **Aklavik**, **Inuvik** and **Tuktoyaktuk**, plus Tununuk. 2. To determine the diffusive and dispersal characteristics of the atmosphere at **Taglu** G-33 by examining the vertical distribution of meteorological parameters and conducting special measurements of atmospheric heat, momentum and moisture fluxes.

Author(s) Solomon, S.M. Forbes, D.L. Kierstead, B. CL27
Title **Coastal impacts of climate change : Beaufort Sea erosion study**
Affiliations
Publication NOGAP project no. D.01 : Coastal zone geotechnics, Beaufort Sea (Open file - Geological Survey of Canada, no. 2890) (1993?)
lib. code ASTIS 35224
Libraries OORD
Summary ... This report looks at coastal impacts of climate change in the **Beaufort Sea coastal zone**. ... existing air photographs are analyzed at four representative sites in the Beaufort Sea coastal zone to estimate rates of cliff recession over the past 30 to 40 years. ... Databases have been compiled on coastal retreat rates, erosion volume, storm occurrence, ice distribution and open-water fetch, melting degree days, water levels, **Mackenzie River discharge**, and coastal characteristics such as stratigraphy, ice content, seabed slope, and coastal orientation.

Author(s) Solomon, S.M. Forbes, D.L. CL28
Title **Impacts of climate change on the Beaufort Sea coastal zone**
Affiliations Bedford Institute of Oceanography
Publication In: Proceedings of Coastal Zone Canada '94, Halifax, N.S., September 20-23, 1994. - [S.l. : s.n.], (1994), p.1810-1824
lib. code ASTIS 35211
Libraries OORD
Summary Along the **Canadian Beaufort Sea coast**, cliffs developed in unconsolidated frozen materials are eroding at typical rates of 1 to 3 m per year. This study examines relations between coastal retreat and climatic variables over the past several decades in order to develop empirical models describing coastal response to climate change.

Author(s)	Soulis, E.D., Solomon, S.I. Lee, M. Kouwen, N.	CL29
Title	**Changes to the distribution of monthly and annual runoff in the Mackenzie Basin under climate change using a modified square grid approach.**	
Affiliations		
Publication	In: Cohen, S. (ed.), *Mackenzie Basin Impact Study (MBIS) Interim Report #2. Proceedings of the 6th Biennial Meeting on Northern Climate and mid study workshop of the MBIS*, Yellowknife, NWT., April 10-14, 1994. 197 - 209	
lib. code	Part of ASTIS 36899	
Libraries	ACU	
Summary	Not available	

Author(s)	Strong, G.S. Gyakum, J. Stewart, R. Kochtubajda, B. Gudak, D. Cho, H.R.	CL30
Title	**MAGS moisture budget studies (using instrumental weather balloons)**	
Affiliations	Canada. Environment Canada [Affiliation]	
Publication	(1998)	
lib. code	ASTIS 46774	
Libraries		
Summary	The objective of this study was to obtain quantitative information on atmospheric temperatures, moisture, and winds from ground level to 15,000 km (or higher) above sea level (ASL), using instrumented weather balloons (radiosondes). It was proposed to release radiosondes on inflated helium-filled balloons 2-6 times daily, depending on weather conditions, for three or four months during the period from September, 1998 through September 1999. These data are essential to determine sources and sinks of moisture in different seasons and weather regimes. The sources of moisture include transpiration from vegetation over the basin (primarily during summer), evaporation from open water (mostly during late summer through until freeze up), and moisture carried into the basin from the Pacific (all seasons). Sinks of moisture include precipitation over the basin and discharge through the **Mackenzie** into the **Beaufort Sea**, and atmospheric moisture carried out of the basin by upper winds. This work was motivated by the need to resolve the critical balance between atmospheric moisture and surface water discharge and storage in the current climate case, with precipitation (rain and snow) and evaporation being the two process linkages. The results will be used in complex numerical computer models of the climate to determine the water balance of the **Mackenzie** resulting from any climate warming.	

Author(s)	Tarnocai, C. MacInnes, K.L.	CL31
Title	**Soil climates of the Mackenzie Valley**	
Affiliations	Centre for Land and Biological Resources Research (Canada) [Affiliation]	
Publication	(1994)	
Lib. code	ASTIS 38759	
Libraries		
Summary	Soil (at seven depths) and air temperature data were recorded by data loggers. These loggers were programmed to collect data every 3 hours on the hour. The sites were visited twice a year to reprogram the loggers. In addition, active layer depth and subsidence were recorded during the fall visit. Researchers collected this data in order to determine the effect of climate change on the environment and to provide soil temperature and other data.	

Author(s) Tummers, E.L. CL32
Title **Heat budgets of the southeast Beaufort Sea for the years 1974 and 1975**
Affiliations
Publication Thesis (M.Sc.) - Naval Postgraduate School, Monterey, Calif., (1980).
lib. code ASTIS 35760
Libraries ACU
Summary Comparisons were made of the heat budgets of the **Southeast Beaufort Sea** for the summer of 1974 (a severe ice year) and the summer of 1975 (a good ice year). Local meteorological data and oceanographic measurements obtained during the **Beaufort Sea** Project during August of both years were used to obtain estimates of the various heat terms. Results indicate that: (1) The major heat input to the sea is from absorbed solar radiation; (2) the overall heat contribution from the **Mackenzie River** is small in comparison to that from solar radiation; (3) the wind patterns in early spring are the major factor in determining the heat content of the water by summer; and (4) the wind patterns later in the spring and summer are the major factor in determining the ice coverage. From the distribution of heat in the study area, three consistent features were found: (a) a warm water core in the vicinity of 70 degrees N, 138 degrees W; (b) a core of warmer water north of Atkinson Point associated with the early open-water area; and (c) a core of cold water north of Richard's Island.

Author(s) Vardy, S. CL33
Title **Climate change and postglacial paleoenvironmental history of peat lands in the Mackenzie Delta area**
Affiliations University of Waterloo. Dept. of Earth Sciences [Affiliation]
Publication (1992)
Lib. code ASTIS 36487
Libraries
Summary This research is part of an international project that is aimed at documenting the history of changes in the treeline during the Holocene era. While much is known about the environment and climate of this era, little is known about the development of peat lands during this time. The researcher will collect data on peat layering, pollen and fossils in order to determine how the peat lands developed during this time period. Peat samples will be taken from bogs for further analyses. The feasibility of using peat as a temporal record of pesticide residues will also be investigated.

Author(s) Vardy, S. CL34
Title **Climate change and postglacial paleoenvironmental history of peat lands in the Mackenzie Delta area**
Affiliations University of Waterloo. Dept. of Earth Sciences [Affiliation]
Publication (1993)
Lib. code ASTIS 40239
Libraries
Summary This research is part of an international project that is aimed at documenting the history of changes in the treeline during the Holocene era. While much is known about the environment and climate of this era, little is known about the development of peatl ands during this time. The researcher will collect data on peat layering, pollen and fossils in order to determine how the peat lands developed during this time period. Peat samples will be taken from bogs for further analyses. The feasibility of using peat as a temporal record of pesticide residues will also be investigated.

Author(s)	Wein, R.W. Gal, R. Hogenbirk, J.C. Hogg, E.H. Landhausser, S.M. Lange, P. Olsen, S.K. Schwarz, A.G. Wright, R.A. CL35
Title	**Analogues of climate change - fire-vegetation responses in the Mackenzie Basin**
Affiliations	
Publication	In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994), p. 337-343
Lib. code	ASTIS 36883
Libraries	ACU
Summary	Forest fire is the most powerful, annual, summer event that changes the dynamics of much of the circumpolar boreal forest. Under predicted climatic warming due to the greenhouse effect, the fire season may be lengthened, wildfires may become more widespread and fire intensity and severity may increase. In the discontinuous permafrost zone, permafrost features such as peat plateaus may disappear. Fires provide a feedback loop to climate change by contributing greenhouse gases, primarily carbon dioxide, not only during burning but also during accelerated decomposition of the organic material remaining after fires. Fires may have major effects on the vegetation of northern ecosystems, especially at ecological boundaries or where ecosystems are already under stress. Changes may be as subtle as changes in populations at the genetic level. In our research on analogues of future climate change, we have shown that there can be species abundance changes or conversion from one vegetation type to another after one fire event.

Natural Value Theme: Contaminants

Author(s)	Alaee, M. Barrie, L. Gregor, D. Afghan, B.K. Wilkinson, R. Peters, A. C1
Title	**Polychlorinated dibenzo dioxins and furans in the arctic environment**
Affiliations	
Publication	Synopsis of research conducted under the 1993/94 Northern Contaminants Program / Edited by J.L. Murray and R.G. Shearer. Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 72, (1994), p. 113-116
Lib. Code	ASTIS 36915
Libraries	ACU OORD
Summary	To survey the presence of polychlorinated dibenzo dioxins (PCDD) and polychlorinated dibenzo furans (PCDF) in air, water, sediment and suspended sediment at Alert (air), Yukon/Laberge system, **Mackenzie River**, and Amituk Lake, and to provide relevant baseline information.

Author(s)	Backus, S.M. Swyripa, M.W. Jeffries, D.S. C2
Title	**Riverine inputs of contaminants to the Arctic marine environment**
Affiliations	
Publication	Proceedings of the Hydro-Ecology Workshop on the Arctic Environmental Strategy Action on Water, May 1996, Banff, Alberta / Edited by D. Milburn. NHRI symposium, no. 16, (1997), p. 81 [abstract only]
Lib. code	ASTIS 41424
Libraries	ACU
Summary	Water and suspended sediment samples were collected at twelve major rivers in the Northwest Territories to investigate the distribution of hexachlorocyclohexanes (HCHs) and the enantioselective degradation of alpha-HCH in Canadian Arctic rivers. Samples were collected on the **Mackenzie River** on four occasions to characterize spring, summer and fall flow conditions and once on the remaining 11 rivers during high flow conditions. … The **Mackenzie River** is distinctively different then the other 11 rivers. The average concentrations of alpha-HCH and gamma-HCH in water samples collected there were 0.22 ±0.07 and 0.12 ±0.05 ng/L. The average ER for water samples collected in the central and eastern Arctic was 1.01 ±0.04, while the average ER for water samples collected on the **Mackenzie River** was 0.77 ±0.19.

Author(s)	Beak Consultants C3
Title	**Disposal of waste drilling fluids in the Canadian Arctic**
Affiliations	Imperial Oil Limited [Sponsor]
Publication	APOA project no. 73 : Research program on pollution from drilling fluids (1974). [4 microfiches]
lib. code	ASTIS 8338
Libraries	ACU NFSMO
Summary	Environmental aspects of disposal practices of drilling fluids in the shallow marine environment from offshore exploration wells on the **Mackenzie Delta** [were examined]. This study included extensive literature reviews and laboratory testing to document the delta environment, drilling fluid characteristics, the status of waste drilling fluid treatment technology, and related pollution problems. The rigorous and extremely seasonal environment of the delta and the nature of the resident biotic communities can readily accommodate the discharge of waste drilling fluids. No serious consequences of direct sea bed disposal were identified. ... No additional treatment is recommended and no environmental advantage is seen in land disposal. The solids settle rapidly in saline waters blanketing the local bottom sediments. The effect of this to the delta ecosystem is insignificant. No

serious environmental disruption or pollution hazard is likely from sea bed disposal.

Author(s)	Beak Consultants C4
Title	**Heavy metals project Mackenzie Delta and estuary**
Affiliations	Imperial Oil Limited [Sponsor]
Publication	(1978) [4 microfiches]
lib. code	ASTIS 286
Libraries	ACU
Summary	The concentration of heavy metals in the surficial and submarine sediments from 45 stations in the vicinity of a post-operational artificial island drilling site (Netserk F-40) and a similar number of stations in the vicinity of (Isserk F-27) were documented. In addition sediments were sampled in four **Mackenzie River delta channels** to determine background levels of sediments being transported and deposited in the estuarine area out from the mouth of the river In order to determine if bio-accumulation of heavy metals had occurred, and if so to what extent, samples of benthic invertebrate epifauna and infauna were collected, where possible, at each of the sediment stations. Samples of fish and whale from the **Beaufort Sea** and vicinity were also analysed for the same series of heavy metals. This report describes the sampling and analytical procedures, documents the findings and interprets the marine environment of the **Beaufort Sea**.

Author(s)	Chan, H.M. Ing, A. C5
Title	**A database for environmental contaminants in traditional food in northern Canada**
Affiliations	
Publication	In: Circumpolar health 96 : proceedings of the Tenth International Congress on Circumpolar Health, May 19-24, 1996, Anchorage, Alaska / Edited by Robert Fortuine, George A. Conway, Cynthia D. Schrarer, Michael J. Dimino, Carl M. Hild and Juli Braund-Allen. - Anchorage, Alaska : American Society for Circumpolar Health, (1996), p. 567-571
lib. code	ASTIS 43729
Libraries	ACU
Summary	The potential health effects of environmental contaminants in traditional food on indigenous peoples in Northern Canada have been a growing concern. We have conducted an extensive literature review on contaminant levels in Northern Canada through searches of commercial, private, and government databases for the years 1986-1995. … Ranges of levels of 13 contaminants in major traditional food groups collected from four geographical regions (Yukon, **Mackenzie**, Keewatin, Baffin and Northern Quebec) were calculated. Exposure levels, particularly according to different dietary patterns, were estimated and discussed in relation to guideline levels.

Author(s)	Chiperzak, D. McLeod, I. C6
Title	**Investigation of changes in the composition of benthic invertebrates and fish due to outflows from the Inuvik Sewage Lagoon**
Affiliations	Canada. Dept. of Fisheries and Oceans. Central and Arctic Region [Affiliation]
Publication	(1997)
lib. code	ASTIS 45978
Libraries	
Summary	Objectives: To investigate if there are any changes in the composition of benthic invertebrates and fish (including Broad Whitefish, Lake Whitefish, Arctic Cisco, Least Cisco, Northern Pike, Burbot and Inconnu) due to outflows from the **Inuvik** Sewage Lagoon. Waters: **East Channel of the Mackenzie River Delta** within 10 km of the outfall from the Inuvik Sewage Lagoon.

Author(s) Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc. C7

Title **Environmental impact statement for hydrocarbon development in the Beaufort Sea, Mackenzie Delta region - volume 6 : accidental spills**

Affiliations

Publication (1982)

lib. code ASTIS 9223

Libraries ACU NFSMO NSDB

Summary The purpose of this vol. is to describe the potential for and the fate, cleanup and effects of accidental spills of oil and hazardous materials. The geographical regions addressed are within Canadian lands and waters north of 60 degrees N latitude, and include the **Beaufort Sea - Mackenzie Delta region**, the **Mackenzie Valley** and the Northwest Passage, the regions potentially involved in hydrocarbon development .... The focus in this vol. is on large crude oil spills, as these are perceived to be a potential major impact associated with the proposed development. Smaller, minor spills of other refined and waste oils and spills of hazardous materials are also discussed at the end of the vol.

Author(s) Dyke, L. Hunter, J. Douma, M. Hyde, C. C 8

Title **Using drilling mud sumps to determine how well permafrost contains contaminants**

Affiliations Geological Survey of Canada [Affiliation]

Publication (1997)

lib. code ASTIS 43566

Libraries

Summary Abandoned drilling mud sumps in the **Mackenzie Delta** area provide an opportunity to examine how well permafrost contains industrial wastes. …Results from spring 1997 field work on two sumps show that salt has migrated beyond the original confines of the pit. High electrical conductivity around the rims of sump mounds suggest that seepage shortly after burial caused fluid to be squeezed upwards along the edges of the pits where confinement by overfilling was least. Core samples show that potassium chloride, commonly added to muds to lower the freezing point, has migrated at least 10m beyond the sump edge through the active layer, and is also present in the permafrost below. Because there is no topographic gradient to induce groundwater flow, this movement must be due to diffusion alone. The probable importance of groundwater in promoting migration will be addressed during 1998 field work.

Author(s) Dyke, L. Kamichaitis, K. Julian, S. C9

Title **Using drilling mud sumps to determine how well permafrost contains contaminants**

Affiliations Geological Survey of Canada [Affiliation]

Publication (1998)

lib. code ASTIS 46755

Libraries

Summary Oil and gas exploration in frontier arctic regions has relied on ice-bonded permafrost as a medium for containing waste fluids from drilling operations. …If the drilling fluids or other wastes are to be routinely disposed of in permafrost settings, the true suitability of permafrost as a waste container needs to be determined. Although the hydraulic conductivity of well ice-bonded permafrost may be low, it can be greatly increased depending on textural or environmental factors. Permafrost may be dry or it may contain appreciable amounts of unfrozen water. It may contain an ice fabric which, when warmed by disturbance or climate change, greatly increases hydraulic conductivity. Thawing ice fabric in the active layer can produce the same effect. These factors suggest that contaminant movement in frozen and thawing ground should be examined to gain a better understanding of the suitability of permafrost sites for waste disposal. Although existing drilling mud disposal sites in the **Mackenzie Delta area** are not an immediate environmental threat, they offer a unique opportunity for examining the effectiveness with which contaminants have been contained by ice-bonded sediments. Preliminary assessments of five sumps show that potassium chloride, present in muds as a freezing point depressant, is migrating away from sumps through the active layer to distances of tens of meters on level ground and hundreds of meters on sloping ground. It has also moved into ice-bonded permafrost sediments. Diffusion, solute exclusion ahead of freezing fronts, and advection where sumps are located on slopes, are the presumed causes of solute migration. These results suggest that neither permafrost nor fine-grained thawing sediments can be expected to completely contain contaminants.

Author(s) Elkin, B. C10

Title **Identification of baseline levels and reproductive effects of organochlorine and heavy metal contaminants in mink (Mustela vison)**

Affiliations

Publication Synopsis of research conducted under the 1992/93 Northern Contaminants Program / Edited by J.L. Murray and R.G. Shearer. Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 70, (1993), p. 238-243

lib. code ASTIS 33889

Libraries ACU OORD

Summary Objectives: 1. To assess the exposure of wild mink to organochlorine and heavy metal contaminants in the western Northwest Territories. 2. To determine baseline levels of organochlorine and heavy metal contaminants in several mink tissues. 3. To identify spatial and temporal trends of these contaminants in mink along the **Mackenzie**, Slave and Liard drainage systems. 4. To evaluate the potential biological effects of contaminants on mink reproduction. To determine the potential sources (via the prey base) of contaminants found in mink. 6. To evaluate mink as a sensitive indicator species to monitor environmental contaminants and ecosystem health.

Author(s) Elkin, B. Poole, K. Haffner, D. C11

Title **Identification of baseline levels and reproductive effects of organochlorine and heavy metal contaminants in mink (Mustela vison)**

Affiliations

Publication Edited by J.L. Murray and R.G. Shearer. Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 68, (1992), p. 178-181

lib. code ASTIS 52292

Libraries ACU OORD

Summary OBJECTIVES: 1. To assess the exposure of wild mink to organochlorine and heavy metal contaminants. 2. To determine baseline levels of organochlorine and heavy metal contaminants in several mink tissues. 3. To identify geographical trends of these contaminants in mink along the **Mackenzie River system**. 4. To provide baseline contaminant data that will serve as the basis for ongoing monitoring of temporal trends in mink. 5. To evaluate the potential biological effects of organochlorine contaminants on mink reproduction. 6. To evaluate mink as a sensitive indicator species to monitor the effects of environmental contaminants on ecosystem health. ... ACTIVITIES: Mink are being collected from four sites in the NWT. North-south variations in contaminant levels in mink along the **Mackenzie River** will be evaluated through collections at **Fort Simpson**, **Fort Good Hope** and **Inuvik**. Fort Rae is being used as a control site located off of the **Mackenzie River**. ... The study will initially involve broad-spectrum screening for organochlorine and heavy metal contaminants. Organochlorine analysis will be conducted on both fat and liver samples in order to evaluate tissue distribution resulting from considerable seasonal body fat fluctuations in mink. Selected samples will be analyzed for co-planar PCBs and dioxins/furans. Heavy metal analysis will be run on liver, kidney and hair samples. Hair will be evaluated as a potential sampling method in living animals. ... RESULTS AND FUTURE DIRECTIONS: Preliminary results have indicated the presence of significant levels of PCB mixture 1260 in a number of samples. Complete results are expected in early 1992/93. Mink will continue to be collected from **Inuvik**, and samples from 20 mink will be analyzed in addition to 20 stored samples collected in 1991/92.

Author(s) Evans, M. Lockhart, L. Inkster, J. Gerein, K. C12

Title **An investigation of the factors affecting high mercury concentrations in predatory fish in the Mackenzie River basin**

Affiliations National Hydrology Research Institute (Canada) [Affiliation]

Publication (1998)

lib. code ASTIS 46744

Libraries

Summary This study is investigating why mercury levels are so high in fish (such as pike, walleye, and lake trout) in some lakes in the Northwest Territories. The researchers are beginning their study by looking at the Cli and Little Doctor lakes near **Fort Simpson**. Last September, they visited the lakes and determined how deep the lakes are and the concentrations of plant nutrients. They also sampled the streams for mercury. Mercury concentrations were very high in some streams, but it is possible that the samples were accidentally contaminated. The sediment samples are still being analyzed. The researchers also sampled some of the animals that live on the lake bottom and caught some pike and whitefish for mercury analysis. They went back to Cli Lake in March and got sediment cores from two deep regions in the lake. They will determine how old the cores are at different depths (slices), and at what rate mercury has been coming into the lake over the past 100 years. The researchers also sampled snow, lake water, and one creek for mercury using different methods than in September. Mercury concentrations were low. They went back in July and continued studies focusing on Cli Lake.

Author(s)	Fisk, A.	C13
Title	**Congener patterns of contaminants in fish and sediments of the Mackenzie River basin**	
Affiliations	University of Windsor. Dept. of Biological Sciences [Affiliation]	
Publication	(1993)	
ASTIS #	ASTIS 35920	
Libraries		
Summary	The researcher plans to take samples of sediments and fish from sites near the three settlements in order to determine the types of contaminants that are present in the environment, as well as those that collect or accumulate in the tissues of fish. This study will benefit other studies that have examined contaminants in NWT wildlife, as fish are preyed upon by a variety of wildlife species. The researcher will collect 54 fish and sediment samples.	

Author(s)	Gariepy, C. Gaillardet, J. Dupre, B.	C14
Title	**Sampling of water from the Mackenzie River and some of its principal tributaries**	
Affiliations	Université du Québec à Montréal. GEOTOP [Affiliation]	
Publication	(1996)	
lib. code	ASTIS 43516	
Libraries		
Summary	In August 1996, we sampled the **Mackenzie** and the Arctic Red River at Tsiigehtchic, as well as the Peel River at Fort McPherson. In addition, several of the large tributaries of the **Mackenzie** (Liard, Peace, Slave, Hay, Yellowknife, Athabasca rivers) were also sampled in northern Alberta and the NWT. …To our knowledge, this is the first study focussing on Sr (Strontium), Nd (Neodymium), Pb (Lead), and Os (Osmium) isotopic concentrations of a major drainage basin worldwide. The analytical work is currently being done out at the University of Paris (mass spectrometry) and the University of Toulouse (ICP-MS facilities). Some results show that Strontium isotopic analysis allow an identification of the regions that contribute the most, by chemical weathering, to the total element load carried by the **Mackenzie River**. It is noteworthy that the denudation rate of the Precambrian Shield areas is very low. The results also allowed for a calculation of the rate at which the **Mackenzie Basin** is being chemically eroded. The calculated rates are not very different from those found for the Amazon River basin, which is unexpected in view of the usually assumed premise that chemical erosion of continents occurs much faster under warm, tropical climates compared to very cold regions. In a collaborative effort, C. Gariepy is determining the amounts and the isotopic compositions of atmospheric heavy metals deposited in the **drainage basin of the Mackenzie** (Yukon, NWT, and northern BC) using lichen samples. The results from that research should provide answers to whether the wild **basin of the Mackenzie River** is significantly contaminated by industrial activities.	

Author(s) Gibbins, W.A. C15
Title **Mississippi Valley type lead-zinc districts of northern Canada**
Affiliations
Publication Contributions to the geology of the Northwest Territories, volume 1 / Edited by J.A. Brophy. EGS - Canada. Dept. of Indian and Northern Affairs. Exploration and Geological Services Unit, 84- 6, p. 95-106
Reprinted from: International Conference on Mississippi-Valley-Type Lead-Zinc Deposits, proceedings volume, University of Missouri-Rola, Missouri, (1983), p. 403-414.
lib. code ASTIS 15699
Libraries ACU
Summary Mississippi Valley type (MVT) deposits account for all of the lead, zinc, cadmium and a significant amount of the silver currently produced in Northern Canada. This production comes from deposits associated with a Middle Devonian barrier reef complex of the Pine Point District, the Polaris deposit in Ordovician Thumb Mountain Formation in the Cornwallis Lead-Zinc District and the Nanisivik deposit in Helikian (Proterozoic) Society Cliffs Formation on Northwestern Baffin Island….

Author(s) Hardy BBT Limited C16
Title **Geophysical assessment of waste drilling fluid containment sites in the Mackenzie River Valley region, N.W.T.**
Affiliations Canada. Dept. of Indian Affairs and Northern Development [Sponsor]
Publication (1988)
lib. code ASTIS 29185
Libraries NWYIN OORD ACU
Summary The authors report on the results of a field survey, utilizing geophysical soil conductivity measurements coupled with near-surface soil chemistry analyses, to determine if drilling wastes are migrating away from the boundaries of eight capped sumps. Based on the collected evidence, six of these were rated as having some likelihood of leakage. It appears that poor drilling fluid containment results primarily from factors related to location. The report suggests future studies relating to the potential environmental hazard of leaking sumps at drill sites.

Author(s) Jackson, F.J. Lafontaine, C.N. Klaverkamp, J.F. C17
Title **Yellowknife-Back Bay study on metal and trace element contamination of water, sediment and fish**
Affiliations Arctic Environmental Strategy. Action on Water Component [Sponsor]
Publication (1997)
lib. code ASTIS 41582
Libraries ACU
Summary A health risk assessment on the water data is included but for fish it is pending. Mackenzie Regional Health Services deemed the water at community use areas safe to drink and swim in but still recommended that the water be treated for bacteria (boiled/chlorinated) prior to consumption. Six species of fish consisting of 1) lake whitefish, 2) longnose suckers, 3) burbot, 4) walleye, 5) northern pike and 6) lake trout were analysed for eight heavy metals. Tissue analysis included the muscle, liver, kidney, stomach and eggs. Although elevated concentrations of As, Hg, Cd, and Se were observed in various tissues of fish collected from sites downstream of the mine sites, preliminary analysis indicates that these concentrations might be well below limits set for human consumption. A final section summarises the following: biological descriptions (length, weight, age and condition factor) for the six species of fish caught; an estimate of the annual loading of metals by Royal Oak Mines Inc. (Giant mine) and Miramar-Con Mine.

Author(s)	Jeffries, D. Gregor, D. Macdonald, R. Redshaw, A. Carey, J.	C18
Title	**Riverine inputs of contaminants**	
Affiliations		
Publication	Synopsis of research conducted under the 1991-1992 Northern Contaminants Program / Edited by J.L. Murray and R.G. Shearer. Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 68, (1992), p. 42-45	
lib. code	ASTIS 52245	
Libraries	ACU OORD	
Summary	... Northward flowing rivers ... are thought to be major conduits to the Arctic Ocean of contaminants originating from point sources and/or atmospheric deposition to the terrestrial ecosystem. ... The **Mackenzie River** is the only major north-flowing river in North America. ... The processes controlling the timing and rate as well as the forms of the contaminants delivered to the marine environment by the river systems, likely differ from those in temperate climates. Similarly, the impact on the coastal, productive receiving waters must also be assessed to fully appreciate the importance of the riverine delivery of contaminants.	

Author(s)	Knowles, R.	C19
Title	Nitrogen fixation in arctic marine sediments	
Affiliations		
Publication	Beaufort Sea Project, Dept. of the Environment: Victoria, BC (1974)	
lib. code	QR 89.7 .K66 1974	
Libraries	ARI	
Summary	Assimilation of nitrogen, Environmental pollution, offshore oil and gas development, Oil technology. **Mackenzie Delta**, NT	

Author(s)	Kuhnlein, H.	C20
Title	**Assessment of toxaphene intake by Mackenzie River community residents**	
Affiliations	Canada. Health and Welfare Canada [Affiliation and Sponsor] Canada. Indian and Northern Affairs Canada [Sponsor] Northwest Territories. Dept. of Health [Sponsor] Dene Nation [Sponsor] Canada. Dept. of Fisheries and Oceans [Sponsor] Northwest Territories. Dept. of Renewable Resources [Sponsor]	
Publication	(1988)	
lib. code	ASTIS 3001	
Libraries		
Summary	Objective: To collect samples of fish, wildlife, and plants consumed by **Mackenzie River community residents** for subsequent laboratory analysis to determine toxaphene levels and nutritional value; to interview residents to determine type and quantity of foods consumed by each individual; to determine seasonal variation in foods consumed; and to quantify the amount of contaminants consumed by **Mackenzie River community residents**.	

Author(s)	Lockhart, W.L. Metner, D.A. Murray, D.A.J. Danell, R.W. Billeck, B.N. Baron, C.L. Muir, D.C.G. Chang-Kue, K. C21
Title	**Second cumulative data report of studies to determine whether the condition of fish from the lower Mackenzie River is related to hydrocarbon exposure**
Affiliations	Freshwater Institute (Canada) Canada. Dept. of Fisheries and Oceans [Sponsor] Canada. Dept. of Indian Affairs and Northern Development [Sponsor]
Publication	NOGAP project no. A.12 : Contaminants in the aquatic environment and quality of food species (1987)
lib. code	ASTIS 28121
Libraries	ACU OORD
Summary	The study continues an investigation of whether deterioration in fish quality, specifically livers in burbot and whitefish flesh, has an objective, measureable basis, and could be related to oil industry operation at Norman Wells. The study concluded that the cause of the liver condition is unlikely to be exposure to petroleum hydrocarbons, although this was not ruled out conclusively. The study noted contamination of **Mackenzie River** fish with low levels of several compounds, notably toxaphane, chlordane, and PCBs. The northern whitefish had higher water content and lower fat content than most other whitefish.

Author(s)	Lockhart, W.L. C22
Title	**Studies to determine whether the condition of fish from the lower Mackenzie River is related to hydrocarbon exposure.**
Affiliations	
Publication	Supply and Services Canada: Ottawa, ON (1989)
lib. code	SH 174 .L63 1989
Libraries	ARI
Summary	Fishes exposure to hydrocarbon contamination

Author(s)	Muir, D.C.G. Ford, C.A. Grift, N.P. Metner, D.A. Lockhart, W.L. C23
Title	**Geographic variation of chlorinated hydrocarbons in burbot (Lota lota) from remote lakes and rivers in Canada**
Affiliations	
Publication	*Archives of environmental contamination and toxicology*, v. 19, no. 4, (1990), p. 530-542
Lib. code	ASTIS 50790
Libraries	SSU
Summary	The variation in levels of polychlorinated biphenyls (Sigma PCBs), chlorobenzenes and chlorinated pesticides was studied in burbot (Lota lota) from eight remote locations along a northwesterly transect from northwestern Ontario to the **Mackenzie River delta** in Canada. Significant declines in concentrations of PCB congeners, DDT isomers (Sigma DDT), lindane, dieldrin, and mirex in burbot liver were found with increasing north latitude. Mean Sigma PCB concentrations ranged from 1,290 ng/g (lipid wt) at Lake 625, a remote lake in northwestern Ontario, to 301 ng/g in samples from the **Mackenzie River** at Arctic Red River, N.W.T. No significant differences in mean concentrations of toxaphene, alpha-HCH, tri- and tetrachlorobiphenyls were observed between southern and northern sampling sites. Toxaphene was the predominant organochlorine residue in northern fish samples averaging 1,400 ng/g (lipid wt) at the three most northerly sites and 1,723 ng/g at Lake 625. Airborne contamination was the only likely source of organochlorines for most of the locations surveyed. The results were consistent with the hypothesis that inputs of semi-volatile organochlorines to northern aquatic ecosystems decrease with increasing north latitude and distance from North American sources.

Author(s)	Outridge, P.M. Hobson, K.A. McNeely, R. Dyke, A. C24
Title	**A comparison of modern and preindustrial levels of mercury in the teeth of beluga in the Mackenzie Delta, Northwest Territories, and walrus at Igloolik, Nunavut, Canada**
Affiliations	
Publication	Arctic, v. 55, no. 2, June 2002, p. 123-132
lib. code	ASTIS 49614
Libraries	ACU
Summary	Mercury (Hg) concentrations were compared in modern and preindustrial teeth of belugas (Delphinapterus leucas) and walrus (Odobenus rosmarus rosmarus) at sites in the Canadian Arctic so that the relative amounts of natural and anthropogenic Hg in modern animals could be estimated. Mercury levels in the teeth of **Beaufort Sea** belugas captured in the **Mackenzie Delta**, Northwest Territories, in 1993 were significantly ($p = 0.0001$) higher than those in archeological samples dated A.D. 1450-1650. In terms of geometric means, the Hg levels in modern animals were approximately four times as high as preindustrial levels in 10-year-old belugas, rising with age to 17 times as high in 30-year-olds. Because Hg levels in modern teeth were highly correlated with those in soft tissues, including muscle and muktuk, which are part of traditional human diets, it is likely that soft-tissue Hg has increased to a similar degree over the past few centuries. The increase was not due to dietary differences over time, as shown by analysis of stable-C and -N isotopes in the teeth, and was unlikely to be due to sex differences or to chemical diagenesis of historical samples. Industrially related Hg inputs to the Arctic Ocean and Canadian Arctic Archipelago may be the most likely explanation for the increase. If so, then 80-95% of the total Hg in modern **Beaufort Sea** belugas more than 10 years old may be attributed to anthropogenic activities. In contrast, tooth Hg concentrations in walrus at Igloolik, Nunavut, were no higher in the 1980s and 1990s than in the period A.D. 1200-1500, indicating an absence of industrial Hg in the species at this location.

Author(s)	Pannatier, E.G. C25
Title	**Sediment accumulation and historical deposition of trace metals and trace organic compounds in the Mackenzie Delta (Northwest Territories, Canada)**
Affiliations	
Publication	Thesis (Ph.D.) - Université de Genève, Section des sciences de la Terre, Genève, (1997). Université de Genève thèse no 2952.
lib. code	ASTIS 51064; QE 471.2 .C22 P36 1977 THE
Libraries	ACU; ARI (thesis cabinet)
Summary	This study examines historical and current deposition of contaminants in **the subaerial delta of the Mackenzie River** (Northwest Territories, Canada). Although the **Mackenzie Delta** is remote from industrial centers and seems to be located in a pristine environment, there are many concerns about the potential effects of oil and gas development and deposition of anthropogenic contaminants which have no arctic sources. The conclusions drawn from this study point out that the sources of trace metals and hydrocarbons found in the delta since the 1950s have been natural and that concentrations of some anthropogenic organochlorine compounds have increased since the 1950s but still remain very low…. A large fraction of the annual sediment input into the lakes appears to be eroded and reentrained in the channel network of the lower plain. The analysis of trace metals [As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, V, Zn] in surface sediments indicates that their concentrations are homogeneous within the delta. Trace metal fluxes in connected lakes have not changed significantly since the 1950s. The **Mackenzie River** is the major source of the trace metals found in the delta. The source of metals is natural and the input of anthropogenic trace metals via the **Mackenzie River** can be considered negligible. The main source of polycyclic aromatic hydrocarbons (PAH) measured in lake and overbank sediments is the **Mackenzie River**. A large fraction of the lower molecular weight PAHs originates from petrogenic sources such as oil seeps and/or rock bitumens present in the **lower Mackenzie watershed**. The contribution of anthropogenic/combustion PAHs can be considered as minor. The profiles of PAH fluxes do not indicate any trend over time. The proportions of the different molecular-mass constituents have been constant since the 1950s, suggesting that the PAH source, or the relative contribution of different sources, has been the same for the last 40 years. It should be noted that the naturally high level of lower molecular weight PAHs in the delta may obscure the effects of oil and gas activities in the area. The concentrations of semi-volatile organochlorine compounds (OCs) such as polychlorobiphenyls, chlorobenzenes and organochlorine pesticides are very low in lake sediments, indicating that the **Mackenzie Delta** is remote from industrial and agricultural sources of OCs. The accumulation of OCs in lake sediments is probably explained by the direct deposition of semi-volatile compounds coming from industrialized areas via long-range atmospheric transport and by riverine inputs. Although concentrations of OCs are low in the **Mackenzie Delta**, polychlorobiphenyl, pentachlorobenzene, hexachlorobenzene and hexachlorocyclohexane concentrations have regularly increased since 1955. This regular increase supports the predictions of the global fractionation model. Cyclodiene and DDT concentrations are close to the detection limit and no trend over time can be observed. Endrin, dieldrin, a-chlordane and a-endosulfan were occasionally detected in lake sediments.

Author(s)	Parrott, J.L. Backus, S.M. Borgmann, A.I. Swyripa, M. C26
Title	**The use of semipermeable membrane devices to concentrate chemicals in oil refinery effluent on the Mackenzie River**
Affiliations	
Publication	Arctic, v. 52, no. 2, (June 1999), p. 125-138
lib. code	ASTIS 44931
Libraries	ACU
Summary	To concentrate natural and refinery-derived inducers of mixed function oxygenase (MFO), semipermeable membrane devices (SPMDs) were deployed for 11-12 days in Norman Wells refinery effluent and upstream and downstream on the **Mackenzie River**, Northwest Territories, Canada. SPMDs, which are layflat polyethylene membrane tubes containing a thin film of purified triolein, absorb freely dissolved neutral organic chemicals that diffuse through the polyethylene membrane. Fish liver cells (Poeciliopsis lucida hepatoma; PLHC-1) were dosed with SPMD extracts; then MFO activity was determined. SPMDs from the effluent contained potent MFO inducers, equivalent to 4830-8700 pg 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin (TCDD)/g SPMD. SPMDs from the site 0.5 km downstream of the refinery outfall also induced MFO, but downstream extracts were about 1/40 as potent as those from effluent-exposed SPMDs. Comparing sites on the **Mackenzie River**, extracts of SPMDs from downstream of the refinery outfall were over 20 times as potent as those from upstream SPMDs. Polyaromatic hydrocarbons (PAHs) and C1- to C3-substituted PAHs were abundant in extracts of SPMDs from the effluent and, to a lesser degree, in extracts of SPMDs from 0.5 km downstream. In effluent-exposed and downstream SPMDs, concentrations of parent PAHs were lower than those of C1-substituted PAHs. The highest concentrations were those of C2- and C3-substituted PAHs. It is unknown which compounds in the SPMDs caused the MFO induction, but there was a very strong correlation between the concentration of total C3-phenanthrene/anthracene in the SPMD extracts and MFO-induction potency. The study shows both the use of SPMDs as concentrators of neutral organic compounds in harsh environments (such as high temperature effluents and fast-flowing rivers) and the utility and sensitivity of the fish liver cell line for ranking MFO-inducing potencies of environmental SPMD extracts.

Author(s) Parrott, J.L. Backus, S.M. Swyripa, M.W. C27

Title **SPMDs concentrated MFO inducers from an oil refinery effluent and from the Mackenzie River, Norman Wells, Northwest Territories : final report**

Affiliations National Water Research Institute (Canada) [Sponsor] Backus Consulting Northern Affairs Program (Canada). Water Resources Division [Sponsor]

Publication Burlington, Ont. : NWRI ; Yellowknife, N.W.T. : Water Resources Division, (1997) 10 p.

lib. code ASTIS 41595

Libraries ACU

Summary Semipermeable membrane devices (SPMDs) were deployed for 11 to 12 d in **Mackenzie River** waters upstream and downstream of, as well as in the skimmer ponds and effluent stream of, Imperial Oil, Norman Wells. Extracts of SPMDs were dosed to fish liver cells (PLHC-1, Poeciliopsis lucida hepatocarcinoma cells, a liver tumour cell line from a top minnow) and mixed function oxygenase (MFO) was determined by measuring the activity of ethoxyresorufin-O-deethylase (EROD) in the cells. SPMDs deployed at the upstream (7km) site had no more MFO inducers than present in trip blanks (approximately 10.8 pg EROD-EQ/g SPMD). These potencies were one-twentieth those observed in other studies of SPMDs from oil sands wastewaters. SPMDs from the **Mackenzie River** site 0.5 km downstream of the Norman Wells refinery outfall induced MFO in fish cells, but extracts were one-twentieth to one-fortieth as potent as Imperial Oil effluent-exposed SPMDs. Polyaromatic hydrocarbons (PAHs) and mono, di- and trimethyl-PAHs were abundant in extracts of SPMDs from the effluent, and to a lesser degree, in SPMDs from 0.5 km downstream. It is unknown at the present time which of the compounds in the SPMDs caused the MFO induction. Although SPMD extracts from the refinery effluent induced fish liver cells in culture, and chemistry data showed many PAHs in refinery effluent, small rainbow trout exposed to effluent showed little MFO response. Fish exposed to effluent for 3 days showed only three-fold induction over control fish, which was less than that seen in laboratory exposures of fish to other Canadian refinery effluents. The study shows the use of SPMDs as concentrators of neutral organic compounds in harsh environments such as high temperature effluents and fast flowing rivers, and shows the utility and sensitivity of the fish liver cell line to rank MFO-inducing potencies of the environmental SPMD extracts.

Author(s) Payne, J. Fancey, L. Hellou, J. Kiceniuk, J. Ray, S. C28

Title **Potential for effects on reproduction, carcinogenesis, mutagenesis and teratogenesis in Arctic mammals : status of biomarkers in Arctic seals and whales**

Affiliations

Publication Synopsis of research conducted under the 1991/92 Northern Contaminants Program / Edited by J.L. Murray and R.G. Shearer. Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 68, (1992), p. 149-153

lib. code ASTIS 52284

Libraries ACU OORD

Summary OBJECTIVES: To determine if the levels of contaminants in the Arctic are sufficiently high to engender concerns about reproductive failure and carcinogenesis, mutagenesis, and teratogenesis in marine mammals - the species at highest risk. To assess the present situation and provide a baseline on the critical biological indices that will be of paramount importance for a monitoring/assessment strategy for the Arctic. ... CONCLUSIONS AND FUTURE DIRECTIONS: Preliminary information has been obtained on the status of (a) vitamin A in belugas from the **Mackenzie** and St. Lawrence Rivers, (b) DNA adducts in belugas from the **Mackenzie** and St. Lawrence Rivers and Hudson Bay, (c) DNA adducts in harp seals from waters around Newfoundland and Labrador, and (d) DNA oxidative damage in belugas from the **Mackenzie** and St. Lawrence Rivers. Additional studies are required on a variety of tissues in different marine mammal species to determine if the biomarker differences being observed could have a chemical aetiology.

Author(s) Poole, K.G. Elkin, B.T. C29
Title **Identification of levels and reproductive effects of organochlorine and heavy metal contaminants in mink (Mustela vison)**
Affiliations
Publication Synopsis of research conducted under the 1993/94 Northern Contaminants Program / Edited by J.L. Murray and R.G. Shearer. Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 72, (1994), p. 362-367
lib. code ASTIS 36948
Libraries ACU OORD
Summary Objectives: 1. To determine levels and spatial and temporal trends of organochlorine and heavy metal contaminants in mink along the **Mackenzie**, Slave and Liard drainage systems in the western Northwest Territories. 2. To evaluate the potential biological effects of contaminants on mink reproduction. 3. To determine the potential sources (via the prey base) of contaminants found in mink.

Author(s) Poole, K.G. Elkin, B.T. C30
Title **Identification of levels and reproductive effects of organochlorine and heavy metal contaminants in mink (Mustela vison)**
Affiliations
Publication Synopsis of research conducted under the 1994/95 Northern Contaminants Program / Edited by J.L. Murray, R.G. Shearer, S.L. Han. Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 73, (1996), p. 259-263
lib. code ASTIS 38498
Libraries ACU OORD
Summary Objectives: 1. To determine levels and spatial and temporal trends of organochlorine and heavy metal contaminants in mink along the **Mackenzie**, Slave and Liard drainage systems in the western Northwest Territories; 2. To evaluate the potential biological effects of contaminants on mink reproduction; 3. To determine the potential sources (via the prey base) of contaminants found in mink.

Author(s) Poole, K.G. Elkin, B.T. C31
Title **Identification of levels and reproductive effects of organochlorine and heavy metal contaminants in mink (Mustela vison)**
Affiliations
Publication Synopsis of research conducted under the 1995-1997 Northern Contaminants Program / Edited by J. Jensen and L.A. Walker. Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 74, (1997), p. 245-248
lib. code ASTIS 46018
Libraries ACU OORD
Summary Objectives: 1. To determine levels and spatial and temporal trends of organochlorine and heavy metals contaminants in mink along the **Mackenzie**, Slave and Liard drainage systems in the western Northwest Territories. 2. To evaluate the potential biological effects of contaminants on mink reproduction. 3. To determine the potential sources (via the prey base) of contaminants found in mink.

Author(s)	Seddon, L. C32
Title	**Maternal snf cord blood monitoring for environmental contaminants: final report of the Kitikmeot and Mackenzie program**
Affiliations	Kitikmeot Health Board and Mackenzie Regional Health Service
Publication	(1996)
lib. code	RG 963 .N67 R64 1996
Libraries	ARI
Summary	Maternal and infant welfare, maternal health services, pollutants, blood. NT

Author(s)	F.F. Slaney & Company C33
Title	**1972 environmental field program Taglu - Richards Island, Mackenzie Delta. Part 6 : Pollution testing : interim report**
Affiliations	Imperial Oil Limited [Sponsor]
Publication	APOA project no. 43 (1973)
Lib. code	ASTIS 40933
Libraries	ACU
Summary	The objective of the pollution testing program is the determination of current levels of various chemical constituents within components of the ecosystems in the Study Area. Air, water and soil samples were taken and plant and animal specimens were collected. Samples and specimens were taken at 19 different sampling sites ... during the period March through September, 1972.

Author(s)	F.F. Slaney & Company C34
Title	**1972-1974 environmental program, Mackenzie Delta, N.W.T. : volume 7 : environmental quality**
Affiliations	Imperial Oil Limited [Sponsor] Gulf Oil Canada [Sponsor] Shell Canada Limited [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]
Publication	F.F. Slaney & Co., (1974). Part of a seven volume set.
Lib. code	ASTIS 30279; TD 195 .G3 F47 1974
Libraries	ACU; ARI
Summary	The purpose of the environmental quality program is to determine and present for consideration some current levels of chemical constituents within study region ecosystems. The data for the most part represent instantaneous checks of a wide range of environmental quality parameters. They do not constitute a baseline inventory of changing levels over the period of study, and were not meant as a basis for monitoring future change.

Author(s) F.F. Slaney & Company C35
Title **The oil sinking ability of Mackenzie River borne suspended sediments in the Beaufort Sea : a literature review**
Affiliations
Publication (1978) [2 microfiches, Also available in paper]
lib. code ASTIS 10719
Libraries ACU NSDB
Summary ... The primary objective of this study was to establish if there is sufficient evidence to suggest that suspended sediments carried by the **Mackenzie River** and discharged in the form of a **plume** in the **Beaufort Sea** could contribute to the dispersal of an oil slick originating from an oil well blowout. Specific questions relating to temporal and spatial differences in **Mackenzie River** sediment discharge and oil sinking potentials were posed by Canadian Marine Drilling Ltd., Calgary, Alberta, and are addressed in subsequent sections of this report. Two other study objectives were to 1). attempt to establish a formula relationship between the volume of suspended sediments and their ability to sink oil, and 2). if probable oil sinking effects were expected, to provide recommendations for future laboratory and field studies that would substantiate the oil sinking hypothesis and supplement the results of the present literature review in relation to a **Beaufort Sea** oil well blowout. Implicit to both examination of oil-sediment interactions and derivation of a formula relationship was an examination of a number of factors such as sediment type, particle size, temperature and salinity which could conceivably affect oil sedimentation rates in the **Beaufort Sea**.

Author(s) Snow, N.B. C36
Title **Crude oil and nutrient enrichment studies in a Mackenzie Delta lake**
Affiliations
Publication Freshwater Institute: Winnipeg, MB (1975)
lib. code TD 428 .S66 1975
Libraries ARI
Summary Oil pollution of water. Eutrophication. **Mackenzie Delta**, NT

Author(s) Snow, N. C37
Title **Oil spill hazards in the Mackenzie River and Delta area and adequacy of clean-up procedures**
Affiliations
Publication (1978)
Lib. code ASTIS 49521
Libraries ACU
Summary The first activity was to conduct a general survey of the distribution and abundance of aquatic organisms in this region. Attention was focussed upon benthic organisms because they are of fundamental importance with respect to food chain inter-relationships. Following the general survey, an experimental approach was adopted to study the specific effects of two major types of disturbance to aquatic habitats occasioned by pipeline development. These were the effect of increases in suspended sediment from erosion and the effects of oil in water. Suspended sediment studies were carried out primarily in the **Fort Simpson area**, while oil-spill studies were primarily undertaken in the **Inuvik** region. Data obtained from the whole area were, however, used to support the experimental studies, with sampling stations located throughout the **Mackenzie** and Porcupine systems.

Author(s) Stich, H.F. Dunn, B.P. C38
Title **The carcinogenic load of the environment : benzo(a)pyrene in sediments of arctic waters**
Affiliations
Publication *Arctic*, v. 33, no. 4, (Dec. 1980), p. 807-814
Lib. code ASTIS 6016
Libraries ACU
Summary Baseline levels of the chemical carcinogen benzo(a)pyrene were measured in arctic sediments. Levels were highest in samples from the **Mackenzie River delta** and adjacent areas of the **Beaufort Sea**. The distribution of carcinogen did not correspond to the location of inhabited areas - a natural rather than a man-made source for polycyclic aromatic hydrocarbons in arctic sediments is indicated.

Author(s) Swyripa, M.W. C39
Title **Department of Indian and Northern Affairs, Fort Simpson District, Trout Lake water quality study**
Affiliations
Publication In: Activity reports 1992-93 : Arctic Environmental Strategy NWT Water Component / Northern Affairs Program (Canada). Water Resources Division. - Yellowknife, N.W.T. : Water Resources Division, (1993)
lib. code ASTIS 41648
Libraries ACU
Summary The solid waste disposal site is poorly maintained and located quite close to a drainage that flows into the Island River which in turn flows into Trout Lake ..., Drinking water is pumped directly from the lake and batch chlorinated. The solid waste disposal site is poorly maintained and located quite close to a drainage that flows into the Island River which in turn flows into Trout Lake ..., In response to concerns brought forth September 28, 1989 by the Trout Lake Dene Band Council, regarding the quality of water in Trout lake and the relationship between cases of skin rashes and a number of dead fish observed in the lake, the Northern Affairs Program, **Fort Simpson District** established a sampling program and a series of water samples were taken during the period from March 07, 1990 to September 19, 1990.

Author(s) Wein, R.W. C40
Title **Will oil spills damage Arctic tundra?**
Affiliations
Publication *Oilweek*, v. 21, no. 46, (Jan. 4, 1971), p. 13-14
lib. code ASTIS 3017
Libraries ACU NFSMO
Summary ... Experimental areas in the **Mackenzie Delta** were located at **Inuvik**, **Tuktoyaktuk** and **Tununuk Point** (on the southern tip of **Richard Island**). Five landscape units (vegetation-soils-topography-permafrost conditions) were selected as study sites. At each site crude oil was applied in the spring, summer, and late fall. The last treatment was applied when the snow cover was eight inches deep. ... In conclusion it should be pointed out that although oil spills on land have occurred many times before and have been studied scientifically, we do not know how much of this information is applicable to the Arctic tundra.

Author(s) White, T.L. C41
Title **Field report on environmental conditions of abandoned oil and gas drilling pads and sumps situated in sporadic and continuous permafrost**
Affiliations
Publication Geotechnical Science Laboratories, Carleton University, (1998?)
lib. code ASTIS 46312
Libraries
Summary The objectives of this study were to 1) investigate the permafrost of drilling pads (where utilized) and sumps situated in sporadic and continuous permafrost zones characterised by a wide range of cryosols and thermal regimes; 2) to regulate ground-based examination of wellsite infrastructure and permafrost terrain to the integrity of existing engineering design of drilling pad and sump sites; 3) to evaluate potential contamination of permafrost soils; and, 4) to evaluate potential contamination of granular resources used to construct pads which may be considered for reuse or transport.

Author(s) Whitehouse, B.G. Macdonald, R.W. Iseki, K. Yunker, M.B. McLaughlin, F.A. C42
Title **Organic carbon and colloids in the Mackenzie River and Beaufort Sea**
Affiliations Canada. Dept. of Fisheries and Oceans
Publication Marine chemistry, v. 26, (1989), p. 371-378
lib. code ASTIS 30977
Libraries OORD
Summary Photo-oxidation analysis of colloidal organic material from the **Mackenzie River** and **Beaufort Sea** indicates that organic colloids in riverine, brackish, and marine waters match organic particulate material in magnitude and distribution. Comparison with data obtained by CHN analysis of organic colloids >0.2 micro meters in size indicates that most of the riverine organic colloidal material resides in the <0.2 micro meters to low nm size range. The colloidal fraction is significant in the **Mackenzie River**, but does not play a major role in the mass balance of total organic carbon in the **Mackenzie River** and **Beaufort Sea**. We recognize recent controversy regarding the analysis of marine dissolved organic carbon and suggest that such controversy may not apply to data obtained from freshwater environments.

Author(s) Yunker, M.B. Macdonald, R.W. Whitehouse, B.G. C43
Title **Phase associations and lipid distributions in the seasonally ice-covered arctic estuary of the Mackenzie Shelf**
Affiliations
Publication *Organic geochemistry*, v. 22, no. 3-5, (Dec. 1994), p. 651-669
lib. code ASTIS 45169
Libraries ACU
Summary Alkanes, hopane triterpenes, polycyclic aromatic hydrocarbons (PAHs), n-alcohols and sterols have been determined in the suspended particulate (>0.7 micro m) and dissolved (Chromosorb T absorption) phases of samples from the **Mackenzie River and shelf** in winter, spring and summer….

Natural Value Theme: Fauna

Author(s)	Babaluk, J.A., Wastle, R.J. and Treble, M.A. F1
Title	**Results of Tagging and Biological Studies in the Lower Mackenzie River, Northwest Territories Conducted During 1992 and 1993**
Affiliations	Fisheries and Oceans Canada, Central and Arctic Region, Winnipeg, Manitoba
Publication	Canadian Journal Report of Fisheries and Aquatic Sciences 2387, 80 pp. (2001)
lib. code	
Libraries	
Summary	Not available

Author(s)	Bailey, R.C. F2
Title	**Longterm examination of abiotic and biotic influences on the community structure of stream invertebrates, Mackenzie Delta area**
Affiliations	University of Western Ontario [Affiliation] Northern Scientific Training Program (Canada) [Sponsor] Natural Sciences and Engineering Research Council Canada [Sponsor]
Publication	(1987)
lib. code	ASTIS 21360
Libraries	
Summary	Objective: To sample the organisms living on rock surfaces (benthic invertebrates) in at least 25 streams of the **Mackenzie Delta area**. The number of species present and their relative abundance will be estimated and correlated with environmental factors such as the stream size and flow rate. Habitat data will also be collected at each site. Itinerary: Inuvik area and Dempster Highway to Fort McPherson. (Arctic Red River).

Author(s)	Banfield, A.W.F. F3
Title	**Notes on the mammals of the Mackenzie District, Northwest Territories**
Affiliations,	
Publication	*Arctic*, v. 4, no. 2, (Sept. 1951), p. 113-121
Lib. code	ASTIS 9690
Libraries	ACU
Summary	Contains result of observations on distribution of mammals made in the course of other field investigations during 1946-49, for the Canadian Wildlife Service, by trapping, canoe trips and low-level flights. "**Mackenzie district** consists of two major biotic formations in which mammals occur: the tundra and the taiga or boreal forest biomes. These observations deal with the fauna of both formations." 18 species are dealt with, their occurrence (observed or implied) is discussed together with their color, habitat, migration, abundance etc. Bibliography (9 items).

Author(s)	Barry, S.J. F4
Title	**Birdlife response to oil well drilling, during operations and five years later**
Affiliations	
Publication	(1976)
Lib. code	ASTIS 44172
Libraries	ACU
Summary	This report follows up the 1971 study of the bird and mammal populations in the **Taglu** area five years after the original drilling study. Because the study plots were the same in 1971 and in 1976 a comparison of the results of the two studies is possible.

Author(s)	Barry, T.W. Kuyt, E. F5
Title	**Seabird populations in the coastal Beaufort Sea : interim report of Beaufort Sea Project Study A3, December 1974**
Affiliations	Canadian Wildlife Service Beaufort Sea Project (Canada) [Sponsor]
Publication	Interim report - Beaufort Sea Project, (December 1974)
lib. code	ASTIS 44215
Libraries	ACU
Summary	Contents: Part I : Waterfowl populations offshore in the **Beaufort Sea** / T.W. Barry - Part II : Waterfowl populations in coastal **Beaufort Sea** / E. Kuyt. …Species using the Arctic coast migration route include Arctic terns, Sabine's gulls, and jaegers, from the Antarctic and the South Pacific; Pacific brant from coastal Mexico and California; and eiders, murres, and glaucous gulls, from the North Pacific and the Bering Sea. Some species flying the interior migration routes also use the coast, especially the whistling swans which move westward in the spring from the **Mackenzie Delta**, and travel along the Yukon and Alaska coasts. Many snow geese follow the **coast of Tuktoyaktuk Peninsula** when en route from the **Mackenzie Delta** to Banks Island, and they use the same route again in the fall. For the purpose of this report, the term "sea birds" also includes those species which occur in the littoral zone and in those lowlands which are covered by storm-tides; these are birds which an oil spill at sea would seriously effect. Also, this report will consider only the larger species, and those of economic importance. The records of all species observed are on computer tapes, however.

Author(s)	Beaufort [periodical journal] F6
Title	**Renewable resources of the Beaufort-Mackenzie Delta region : reindeer ranching and muskox research**
Affiliations	
Publication	*Beaufort*, v. 2, no. 1, (Aug. 1982), p. 10-13
lib. code	ASTIS 9324
Libraries	ACU
Summary	... One of the success stories in harvesting renewable resources is the domestic reindeer herd located in the Mackenzie Reindeer Grazing Reserve. This reserve covers approximately 46,620 square kilometres (18,000 square miles).

Author(s) Bernard, F.R. F7
Title **Bivalve mollusks of the western Beaufort Sea**
Affiliations
Publication Contributions in science - Los Angeles County. National History Museum, no. 313, (1979)
lib. code ASTIS 11210
Libraries ACU
Summary This report is a systematic review and identification guide to 58 species of bivalve mollusks collected between 0-2560 m in the western part of the **Beaufort Sea**. Oceanographically the region is an integral portion of the Arctic Ocean, but faunally it consists of contributions from both the Atlantic and Pacific oceans. Six species are stenobathyal endemics with no close boreal relatives, their presence showing that at least a fraction of the deep-water benthic fauna survived the past several periods of glaciation. During these periods the shelf was emergent and ice-scoured and its fauna obliterated. As conditions ameliorated, adaptable species migrated from adjacent boreal seas, notably the Beringia refugium and also the Atlantic sector to colonize the newly submerged shelf. 24 species are of Atlantic and 20 of Pacific origin, a pattern probably largely dictated by the oligohaline region of the **Mackenzie River estuary** which is an effective barrier to many species. The fauna is not depauperated and is numerically comparable to temperate regions with similar limited habitat niches. One new genus, Boreacola in the family Montacutidae, with the new species B. vadosa is described. A new species, Axinulus careyi in the family Thyasiridae is also proposed.

Author(s) Bilyj, B. F8
Title **Effects of physical and chemical gradients on the abundance and distribution of aquatic invertebrate species in the Mackenzie Delta : I. Preliminary review of unpublished data**
Affiliations Canada. Dept. of Fisheries and Oceans [Sponsor]
Publication NOGAP project no. B.03 : Critical western arctic freshwater habitats (1985)
lib. code ASTIS 20881
Libraries MWFW OORD ACU
Summary Data on invertebrate species, physical measurements and chemical analyses taken at fifty-eight Delta stations representing freshwater lentic and lotic and marine estuarine habitats were compiled, synthesized and summarized. ... a total of 259 species were collected. ... Distributional patterns and densities of 50 of the most abundant Chironomidae species are plotted. The benthic community at each station-year(s) is characterized using % composition of major taxa, number of species and the Shannon-Weaver diversity index. The sampling habitats are described using a series of physical and chemical parameters. Ranges, means and sample numbers are summarized for 8 on-site measurements consisting of maximum depth, turbidity, water temperature, conductivity, pH, salinity, DO and alkalinity; 5 categories of bottom sediment composition ... and finally a series of chemical analyses for the following: major ions ... total dissolved particulate and bottom concentrations of nutrient elements ... and particulate seston.

Author(s)	Bodaly, R.Z. Reist, J.D. Rosenberg, D.M. McCart, P.J. Hecky, R.E. F9
Title	**Fish and fisheries of the Mackenzie and Churchill River basins, northern Canada**
Affiliations	Freshwater Institute (Canada)
Publication	Proceedings of the International Large River Symposium / Edited by D.P. Dodge. Canadian special publication of fisheries and aquatic sciences, no. 106, (1989), p. 128-144
lib. code	ASTIS 30955
Libraries	OORD
Summary	The fish faunas of the **Mackenzie** and Churchill **basins** are relatively simple: 53 species are native to the **Mackenzie** and 39 to the Churchill. The faunas are dominated by salmonids and cyprinids. Migratory behavior is characteristic of many of the fish species of importance to fisheries, especially in the **Mackenzie basin**, where it is often associated with one of the three major delta areas in the basin. Although high standing stocks of large fish are often present, they usually have relatively low rates of biological production. Migratory behaviour tends to concentrate fish temporally and spatially, making such populations vulnerable to multiple stresses, including fisheries, during their life cycles.

Author(s)	Boles, B. F10
Title	**Report on fur bearers**
Affiliations	Northwest Territories. Division of Game Management Environmental-Social Program, Northern Pipelines (Canada) [Sponsor]
Publication	The Division, (1975)
lib. code	ASTIS 44271
Libraries	ACU
Summary	Investigations into some fur bearers were carried out in the **Mackenzie River Valley** area northward from **Fort Good Hope** to **Aklavik**, North West Territories between November 1972 and March 1975 by the Game Management Division to obtain some baseline population indices and fur bearer ecology information prior to impending resource extraction and highway development activities. Information on the economic and utilitarian value of the different furbearers is considered: hunting, trapping, subsistence use, value as a source of income, home craft material and meat to the resident hunters and trappers. Specific information on migration routes and timing, population, harvesting methods, vegetation and food utilization, wildlife management and physiological considerations are also discussed for each of the animals considered.

Author(s)	Brackett, D. F11
Title	Moose surveys in Mackenzie River Delta, Valley and tributaries
Affiliations	
Publication	Dept. of renewable Resources, Government of the Northwest Territories: Yellowknife, NT 1985
lib. code	QL 737 .U55 M66 1985
Libraries	ARI
Summary	Mouse counting, **Mackenzie River Delta**, NT

Author(s) Canadian Arctic Gas Pipeline Limited F12
Title **Corridor wildlife map series**
Affiliations
Publication (1974?) [all maps]
lib. code ASTIS 30348
Libraries ACU
Summary This volume contains maps showing the proposed route of the **Mackenzie Valley Pipeline**, the location of pipeline facilities and compressor stations, areas of important wildlife habitat and the distribution of animal, bird and fish populations.

Author(s) Carbyn, L.N. F13
Title **Overwintering birds observed along the Mackenzie-Great Slave Lake highways**
Affiliations
Publication *Arctic*, v. 21, no. 4, (Dec. 1968), p. 294-297
lib. code ASTIS 10054
Libraries ACU
Summary The Rae and Heart Lake regions fall within the Hay River, Upper **Mackenzie** and northwestern transition sections of the transcontinental boreal forest region and mostly within the Canadian life zone. The subarctic climate is characterized by long cold winters, short warm summers and light precipitation. Of approx 105 bird species that breed in these areas, only 13 species overwinter. An annotated list of these species is given.

Author(s) Carmichael, L.E. Nagy, J.A. Larter, N.C. Strobeck, C. F14
Title **Prey specialization may influence patterns of gene flow in wolves of the Canadian Northwest.**
Affiliations
Publication *Molecular Ecology* v.10, no. 12, (Dec 2001), 2787-98
lib. code
Libraries
Summary This study characterizes population genetic structure among grey wolves (Canis lupus) in northwestern Canada, and discusses potential physical and biological determinants of this structure. Four hundred and ninety-one grey wolves, from nine regions in the Yukon, Northwest Territories and British Columbia, were genotyped using nine microsatellite loci. Results indicate that wolf gene flow is reduced significantly across the **Mackenzie River,** most likely due to the north-south migration patterns of the barren-ground caribou herds that flank it. Furthermore, although Banks and Victoria Island wolves are genetically similar, they are distinct from mainland wolf populations across the Amundsen Gulf. However, low-level island-mainland wolf migration may occur in conjunction with the movements of the Dolphin-Union caribou herd. Whereas previous authors have examined isolation-by-distance in wolves, this study is the first to demonstrate correlations between genetic structure of wolf populations and the presence of topographical barriers between them. Perhaps most interesting is the possibility that these barriers reflect prey specialization by wolves in different regions.

Author(s)	Carruthers, D.R. Jakimchuk, R.D. F15
Title	**The distribution, numbers and movements of the Bluenose caribou herd, Northwest Territories, Canada**
Affiliations	
Publication	Proceedings of the Third International Theriological Congress, Helsinki, 15-20 August, 1982. [Volume] VII. Third International Reindeer/Caribou Symposium, Saariselka, 23-26 August, 1982 / Edited by E. Pulliainen. Acta zoologica Fennica, no. 175, (1983), p. 141-143
lib. code	ASTIS 13377
Libraries	ACU
Summary	The distribution, numbers and movements of caribou in a 210,000 square km area north of Great Bear Lake were studied between March 1980 and February 1981. Most (94%) of the Bluenose herd wintered in the forested region between the Horton and **Mackenzie Rivers**. Tundra wintering animals (6%) occupied a small area in the vicinity of the Rae-Richardson Rivers. Mean group sizes were almost twice as large in forested vs. tundra winter ranges. Mean group sizes decreased significantly between 1980 and 1981 on both forested and tundra winter ranges partially in response to the mild winter of 1981. In February 1981 a stratified sample of an area of 60,000 square km estimated 38,497 ± 10,442 caribou in the Bluenose herd. Recruitment in February 1981 was estimated at 17.8% (n=296). Mortality rates from human kill and natural factors are estimated at 6.5% and 8 percent respectively. Seasonal movements are diffuse probably because of the small area of range compared to other caribou populations. The distance between winter range and calving grounds is approximately one third that of other caribou populations. Timing of movements is consistent with other caribou populations suggesting response to a consistent factor such as photoperiod.

Author(s)	Chang, P.S. F16
Title	**Emergence of insects from Shell Lake and Explosive Lake, Mackenzie Delta, N.W.T.**
Affiliations	
Publication	Freshwater Institute: Winnipeg, MB (1975)
lib. code	QL 476 .C53 1975
Libraries	ARI
Summary	Insects, fisheries, research. Arctic regions

Author(s)	Charlton, K.M. Tabel, H.	F17
Title	**Epizootiology of rabies in Canada**	
Affiliations		
Publication	In: Circumpolar health : proceedings of the 3rd international symposium, Yellowknife, N.W.T. / Edited by R.J. Shepard and S. Itoh. - Toronto : University of Toronto Press, (1976), p. 301-305	
lib. code	ASTIS 43836	
Libraries	ACU	
Summary	... There are no reports of rabies in the Canadian Arctic (Northwest Territories and Yukon) in the 19th century. During the 1920s and 1930s, there were several reports from the NWT of a neurologic disease in sleigh dogs and wild animals. A disease resembling rabies was seen in dogs from Somerset Island in 1945, and in 1946, there were similar reports from Baffin Island and Baker Lake. The first laboratory diagnosis of rabies in the Canadian Arctic was made by Plummer at Baker Lake, NWT, in 1947. This diagnosis, in a fox, was based on demonstration of Negri bodies and confirmed by animal inoculation. In the same year, the disease was diagnosed in a wolf at **Aklavik** in the **Mackenzie Delta** and in a sleigh dog at Frobisher Bay on Baffin Island. Since 1947, rabies has been diagnosed in the NWT and/or Yukon every year except four - 1949, 1950, 1957, and 1960. Rabies has thus been widespread and continuously present in the Canadian Arctic at least since 1947. ... Rabies in the Yukon and NWT has had a profound effect on other parts of Canada, since outbreaks of rabies in several provinces in the 1950s were caused by a southward spread of the disease. The red fox was the predominant wildlife vector concerned.	

Author(s)	Chiperzak, D.B.	F18
Title	**Fish catch ata from the landfast ice of the Mackenzie River estuary, March 1985, and May 1986, 1987**	
Affiliations		
Publication	Dept. of Fisheries and Oceans: Winnipeg, MB (1991)	
lib. code	SH 225 .C55 1991	
Libraries	ARI (Bay A)	
Summary	Fisheries, Fishes. **Mackenzie River**, NT	

Author(s)	Chiperzak, D. McLeod, I. Stabler, M. Chetkiewicz, C. Howland, K.	F19
Title	**Determine the importance of various habitats within the study area for various life history aspects of inconnu, Stenodus leucichthys, and other associated species**	
Affiliations	Canada. Dept. of Fisheries and Oceans. Central and Arctic Region [Affiliation]	
Publication	(1996)	
lib. code	ASTIS 46484	
Libraries		
Summary	Purpose of the study: Determine the importance of various habitats within the study area for various life history aspects of inconnu, Stenodus leucichthys, and other associated species. Waters: Valid only for the following waters in the area: Shingle Point, YT (69 00 N, 137 28 W); Coney Lake, YT (68 50 N, 136 52 W); **Mackenzie Delta area** (68 50 N, 136 25 W). Duration: June 15, 1996 - March 31, 1997. Species: Inconnu, Stenodus leucichthys; Broad whitefish, Coregonus nasus; Lake whitefish, Coregonus clupeaformis; Dolly Varden, Salvelinus malma.	

Author(s)	Chowns, T.	F20
Title	**Numbers and distribution of the Mackenzie wood bison, March 1983**	
Affiliations		
Publication	Northwest Territories, Dept. of Renewable Resources: Hay River, NT (1987)	
lib. code	QL 737 .U53 C56 1987 no 68	
Libraries	ARI (Bay A)	
Summary	Wood bison- Northwest Territories	

Author(s)	Chowns, T.	F21
Title	**Seasonal changes in distribution of wood bison in the Mackenzie bison sanctuary**	
Affiliations		
Publication	Northwest Territories, Dept. of Renewable Resources: Hay River, NT (1987)	
lib. code	QL 737 .U53 C56 1987 no 67	
Libraries	ARI (Bay A)	
Summary	Wood bison- mammal population – wildlife management **Mackenzie bison sanctuary**, Northwest Territories	

Author(s)	Chudobiak, D.H. Abrahams, M.V. Tallman, R.F.	F22
Title	**Life history variation in broad whitefish (Coregonus nasus)**	
Affiliations		
Publication	Paper presented at the Conference of the Canadian Society of Zoologists, Winnipeg, Manitoba, (May 1994).	
lib. code	ASTIS 36720	
Libraries		
Summary	Multiple life history forms of broad whitefish exist in the former U.S.S.R. It is hypothesized that such multiple life history forms also exist in the Canadian Arctic. This hypothesis was tested by sampling supposed migratory and non-migratory populations from the **Mackenzie River** and Travaillant Lake systems, respectively. If multiple life history forms exist, it is proposed that they will differ in migration related life history traits. A migratory form should have a greater size at age and age at maturity, growth rate and fecundity than a non-migratory form. Differences in these life history traits have implications on the biology for broad whitefish.	

Author(s) Cooper, C. Green, J,E. F23
Title **A review of wildlife transplants in North America : a review from the perspective of the Northwest Territories**
Affiliations Delta Environmental Management Group Ltd. Northwest Territories. Dept. of Renewable Resources [Sponsor]
Publication (1988)
lib. code ASTIS 36105
Libraries
Summary In recent decades, wildlife transplants have played a significant role in restoring wildlife populations throughout North America. Several transplants have taken place in the Northwest Territories. introduction of wood bison (Bison bison athabascae) to the **Mackenzie Sanctuary** in 1963. Bison have also recently been introduced to the Nahanni Butte area. Caribou (Rangifer tarandus) reintroduced to Southampton Island in 1967 also exhibited marked success, the population increasing to at least 4000 by 1987. The attempt to introduce Scandinavian reindeer to Baffin Island in 1921 ended in complete failure, whereas a population of several thousand is now located in the **Mackenzie Delta area** as a result of their introduction in 1935. Transplants of beaver (Castor canadensis) have also been attempted in the Fort Smith region. Muskox transplants to the Repulse Bay area and Southampton Island have been proposed, as well as wood bison from the **Mackenzie Bison Sanctuary** to other areas in the Northwest Territories (e.g., Fort Smith). ... As a result of the potential for the introduction of endemic species to alter naturally occurring genotypes, the Wildlife Management Division of the Department of Renewable Resources Government of the Northwest Territories is formulating a policy on endemic wildlife transplants in the Northwest Territories. As one of the early steps in the formulation of this policy, The Delta Environmental Management Group Ltd. (The Delta Group) was retained to review the literature on transplants of caribou, muskox, bison and several species of furbearers, focusing on the reasons for the success or failure of the transplants.

Author(s) Cosens, S.E. F24
Title **Mackenzie River inconnu**
Affiliations
Publication Canadian Fisheries & Oceans: Winnipeg (1998) (Canadian stock status report D5-04)
lib. code QL 637 .C2 C6 1998
Libraries ARI
Summary Fish – inconnu. **Mackenzie River**, NT

Author(s) Craig, P.C. F25
Title **investigations in a coastal region of the Beaufort Sea**
Affiliations Aquatic Environments Limited Canadian Arctic Gas Study Limited [Sponsor] Alaskan Arctic Gas Study Company [Sponsor]
Publication Arctic Gas. Biological report series, v. 34 (1975)
lib. code ASTIS 1022
Libraries ACU
Summary The first two of the three studies in this volume investigate fish populations along the Alternative Interior Route of the proposed Arctic Gas pipeline in northeastern Alaska and the coastal route along nearshore habitats. The third study reports on the utilization of the **lower Mackenzie Delta** by a variety of fish species (particularly whitefish) for overwintering. Lakes and small channels are used more than larger channels for overwintering.

Author(s)	Decker, R.	F26
Title	**Bluenose caribou herd: aerial surveillance of the spring migration, 1976**	
Affiliations		
Publication	N.W.T. Fish ad Wildlife Services: Yellowknife, NT (1976)	
lib. code	QL 737 .U55 D43 1976	
Libraries	ARI	
Summary	Aerial surveys were used to determine the effect of seismic lines on the spring migration of the bluenose caribou herd.	

Author(s)	Degraaf, D.A.	F27
Title	**Aspects of the life history of the pond smelt (Hypomesus olidus) in the Yukon and Northwest Territories**	
Affiliations		
Publication	Arctic, v. 39, no. 3, Sept. (1986), p. 260-263	
lib. code	ASTIS 19067	
Libraries	ACU	
Summary	The pond smelt (Hypomesus olidus) has a limited North American distribution, being restricted to the west coast of Alaska and the drainage of the **lower Mackenzie River**, N.W.T. This study examined an isolated population in a small tundra lake on the Yukon coastal plain. Otolith interpretation revealed that most adult fish sampled in Lake 100 were age 4+ and 5+ years, but a few individuals lived to age 8+ and 9+. Full maturity was not reached until age 5+ and repeat spawning was common. The sex ratio was skewed in favour of females. Growth was found to be slower in the Yukon population than in Alaskan and Japanese lakes. Some stunting was evident in Lake 100 pond smelt, but otherwise their meristic and morphometric characteristics corresponded with those from elsewhere. The pond smelt were primarily planktivorous in Lake 100 and there appeared to be no significant predation on them, but in the **Mackenzie delta** and elsewhere they are utilized as a forage species.	

Author(s)	Dennington, M.	F28
Title	**Beaver habitat – Mackenzie Valley and northern Yukon**	
Affiliations		
Publication	Environmental – Social Committee, Northern Pipelines Task Force on Northern Oil: s.l. (1974)	
lib. code	QL 737 .R632 D46 1974	
Libraries	ARI	
Summary	Beavers – Wildlife habitat – arctic regions	

Author(s)	Department of Fisheries and Oceans	F29
Title	**Infectious pancreatic necrosis virus in adult arctic Charr, Salvelinus alpinus (L.), in rivers in the Mackenzie Delta region and Yukon territory**	
Affiliations	Department of Fisheries and Oceans, Western Region: Winnipeg, MB	
Publication	(1986).	
lib. code	SH 177 .57 I53 1986	
Libraries	ARI	
Summary	Freshwater fishes – Viruses – Pancreas - Necrosis	

Author(s) Department of Fisheries and Oceans Canada F30
Title **Mackenzie River Inconnu**
Affiliations
Publication Science Stock Status Report D5-04 (1998), Central and Arctic Region, September (1998), 9 pp.
lib. code
Libraries
Summary Not Available

Author(s) Dickson, H.L. et al. F31
Title **Identification of nesting and staging shorebirds areas in the Mackenzie River Delta and Richard Islands area, Northwest Territories using Landsat thematic mapper imagery 1985-1987**
Affiliations
Publication Environment Canada,: Ottawa Ont. (1989)
lib. code QL 685.5 .N6 I34 1989 IRCL
Libraries ARI
Summary Shore birds. Ecology. Remote sensing, Landsat satelliltes, artificial satellites in remote sensing. NT

Author(s) Dickson, H.L. Smith, A.R. F32
Title **Shorebirds of the outer Mackenzie Delta - Richard Islands [sic] area 1985-1986**
Affiliations Canadian Wildlife Service
Publication NOGAP project no. C.07 : Migratory bird disturbance, assessment and management (1987)
lib. code ASTIS 29225
Libraries AEECW OORD
Summary This study reports on the distribution, abundance and habitat requirements of arctic-breeding shorebirds species. Data on the shorebirds was gathered from the **outer Mackenzie Delta** and **Richards Island** area in 1985 and 1986 with emphasis on selected species. Landsat analysis was conducted in conjunction with ground vegetation and bird data. Results indicate that Landsat is capable of identifying the shorebird staging and nesting areas.

Author(s) Dillinger, R. F33
Title **Arctic cisco populations**
Affiliations Memorial University of Newfoundland [Affiliation] Northern Scientific Training Program (Canada) [Sponsor] Natural Sciences and Engineering Research Council Canada [Sponsor]
Publication (1986)
lib. code ASTIS 19360
Libraries
Summary Objective: 1. To continue work on arctic cisco populations in the Peel, Arctic Red, Liard and **Mackenzie Rivers**. 2. To collect other fish species in the Peel River and its tributaries to determine the relationship of fish from the **Mackenzie**, Peel and Yukon **River** system.

Author(s) Dillinger, R.E. Birt, T.P. Green, J.M. F34
Title **Arctic Cisco, Coregonus autumnalis, distribution, migration and spawning in the Mackenzie River**
Affiliations
Publication *Canadian field-naturalist*, v.106, no. 2, (Apr.-May 1992), p. 175-180
lib. code ASTIS 33830
Libraries ACU
Summary The distribution, migration, and spawning activities of Arctic Cisco (Coregonus autumnalis) in the tributaries of the **Mackenzie River system** were found to be more extensive than previously reported. The Peel River population had the earliest migration time, mid-July; however, a small movement of mature males upriver also occurred there in mid-September. Major movements of mature males and females took place in both late July and early to mid-September in the Arctic Red River. Migrations in the other river systems occurred in late August and early September. Arctic Ciscoes in the only river south of Great Bear Lake that has been found to contain this species, the Liard River, may show a mixed life history strategy. The apparently long distance the fish must swim, the lack of any known populations in any of the rivers between the Liard and Great Bear rivers, and the lack of evidence of migrations past Ft. Simpson suggest that this population may contain non-anadromous forms. No actual spawning was seen in any of the populations, but possible areas were noted, one in the Peel River and one in the Liard River.

Author(s) Ehrich, D. Fedorov, V.B. Stenseth, N.C. Krebs, C.J. Kenney, A. F35
Title **Phylogeography and mitochondrial DNA (mtDNA) diversity in North American collared lemmings (Dicrostonyx groenlandicus).**
Affiliations
Publication *Molecular Ecology*. v.9, no. 3, 329-37 (Mar 2000)
lib. code
Libraries
Summary Variation in the nucleotide sequence of the mitochondrial control region (250 bp) and the cytochrome b region (870 bp) was examined in collared lemmings (Dicrostonyx groenlandicus) from 19 localities in northern Alaska and the Canadian Arctic. The division of D. groenlandicus in two phylogeographical groups with limited divergence across the **Mackenzie River** is consistent with the separation of this species in more than one refugial area located to the northwest of the Laurentide ice sheet during the last glaciation. Populations of D.groenlandicus from formerly glaciated areas are no less variable than those in nonglaciated areas. Instead, the low intrapopulation and intraregional diversity estimates in D. groenlandicus are probably a result of regional bottleneck events due to range contractions during Holocene warming events. These results are consistent with findings previously reported on collared lemmings (D. torquatus) from the Eurasian Arctic.

Author(s) Ellis, D.V. F36
Title **Observations on the distribution and ecology of some arctic fish**
Affiliations
Publication *Arctic*, v. 15, no. 3, (Sept. 1962), p. 179-189
lib. code ASTIS 9878
Libraries ACU
Summary Reports on work during 1953-1955, mostly in the Coppermine River and **delta of Mackenzie District**, but extending east to Frobisher Bay, Baffin Island. The 27 species collected and two others observed are listed with notes on their distribution, ecology, and on the taxonomy when specific identification is uncertain. The number of specimens collected, dates, localities, and habitat are cited for each species. Methods are stated.

Author(s) Environmental Research Associates F37
Title **Mackenzie Delta project : final report**
Affiliations
Publication APOA project no. 11 : Mackenzie Delta ornithological study. Report (1970) [1 microfiche]
lib. code ASTIS 2130
Libraries ACU NFSMO
Summary Purpose: To delineate important and critical nesting, moulting, gathering ground, staging and migration routes of the birds in the **Mackenzie Delta region**. The study area was later expanded to include the coastal region from Herschel Island to the Baillie Islands and north to the bird sanctuary of Banks Island. Field work was conducted in four stages to coincide with major changes in ornithological activities such as spring arrival, nesting, moulting and fall staging. The project started in June, 1970, and was completed in October of the same year. ... report provides estimates of bird numbers and describes the habits of migratory and other species of birds that were observed. Some preliminary assessments of the potential impact of oil exploration and production on birds which utilize the study area are included.

Author(s) Eveleigh, E.S. F38
Title **Two new species of Paractinolaimus Meyl, 1957 (Nematoda : Paractinolaimidae) from the Mackenzie and Porcupine river systems, Northwest Territories, Canada**
Affiliations
Publication *Canadian journal of zoology*, v. 60, no. 2, (Feb. 1982), p. 158-164
lib. code ASTIS 8437
Libraries ACU
Summary Two new species of dorylaim nematodes, Paractinolaimus spanithelus n. sp. and Paractinolaimus longidrilus n. sp., from aquatic habitats are described and illustrated. The main differential characteristics of P. spanithelus are the small number of widely spaced supplements (12), length of sperms (9-10 micro m), bluntly rounded convex-conoid shape of the male tail, and the number of pairs of caudal papillae in both sexes. Paractinolaimus longidrilus is distinguishable from closely related species by the spicule length (83 micro m), the heavily cuticularized lateral guiding pieces that are broadly rounded distally, the number of pairs of caudal papillae (11) in the male, and the number of submedian ventral papillae (13) in the male.

Author(s) Ferguson, B. Jessop, E. Day, F. Joe, D. F39
Title **Obtain fish for scientific purposes from the Mackenzie Delta/Beaufort Sea area of the Northwest Territories**
Affiliations Canada. Dept. of Fisheries and Oceans [Affiliation]
Publication (1995)
lib. code ASTIS 46623
Libraries
Summary Obtain fish for scientific purposes. Waters: 1) Shingle Point - Yukon **Beaufort Sea Coast**, 2) West Channel, **Mackenzie Delta**. Species: inconnu (Stenodus leucichthys).

Author(s)	Fournier, M.A. Hines, J.E.	F40
Title	**Second record and possible breeding of the Eurasian Wigeon, Anas penelope, in the District of Mackenzie, Northwest Territories**	
Affiliations		
Publication	*Canadian field-naturalist*, v.110, no. 2, (Apr.-June 1996), p. 336-337	
lib. code	ASTIS 40642	
Libraries	ACU	
Summary	Eurasian Wigeons, Anas penelope, were observed in Yellowknife area on seven occasions between 1990 and 1992. These included the second record of this species in the District of Mackenzie. The temporal distribution and close proximity of six of these observations suggested that breeding of Eurasian Wigeon may have occurred in the Yellowknife area during this period.	

Author(s)	Fraker, M.A.	F41
Title	**The 1976 white whale monitoring program, Mackenzie estuary, N.W.T.**	
Affiliations	F.F. Slaney and Company Ltd.	
Publication	(1977)	
lib. code	QL 737 .C4 F73 (1977)	
Libraries	ARI	
Summary	Whales, white whales, research.	

Author(s)	Fraker, M.A.	F42
Title	**The 1977 whale monitoring program Mackenzie estuary**	
Affiliations		
Publication	(1977)	
lib. code	QL 737 .C4 F73 (1977)	
Libraries	ARI	
Summary	Whales, white whales, whale monitoring program – **Mackenzie River, Mackenzie estuary** – NT	

Author(s)	Fraker, M.A.	F43
Title	**The 1978 whale monitoring program Mackenzie estuary, N.W.T.**	
Affiliations	F.F. Slaney and Company Ltd.	
Publication	(1978)	
lib. code	QL 737 .C4 F73 (1978)	
Libraries	ARI	
Summary	Whales, white whales, research.	

Author(s)	Fraker, M.A.	F44
Title	**The 1979 whale monitoring program Mackenzie estuary**	
Affiliations		
Publication	Esso resources Canada: Edmonton, AB (1979)	
lib. code	QL 737 .C4 F73 (1979)	
Libraries	ARI	
Summary	Pollution, environmental. Whale industry, Beluga whales. Oil and gas development.	

Author(s) Fraker, M.A. F45
Title **White whale (Delphinapterus leucas) distribution and abundance and the relationship to physical and chemical characteristics of the Mackenzie Estuary**
Affiliations
Publication Dept. of Fisheries and the Environment: Winnipeg, MB (1979)
lib. code QL 737 .C423 F73 n.863
Libraries ARI
Summary White whale. Beluga whales. Estuarine ecology. **Mackenzie estuary**, NT

Author(s) Fraker, P.M. F46
Title **The 1982 white whale monitoring program, Mackenzie estuary**
Affiliations
Publication (1982)
lib. code QL 737 .C4 F73 (1982)
Libraries ARI
Summary Beluga whales, dolphins, killer whales. White whales research. **Beaufort sea** and the **Mackenzie Delta**

Author(s) Fuller, W.A. F47
Title **Canada and the "buffalo", Bison bison : a tale of two herds**
Affiliations
Publication *Canadian field-naturalist*, v.116, no. 1, Jan.-Mar. (2002), p. 141-159
ASTIS # ASTIS 51960
Libraries ACU
Summary This paper makes use of a packet of government files that were saved from destruction during the early 1940s. The files deal mainly with events from 1912 to 1925, including the first appearance of bovine tuberculosis, and later the prevalence of tuberculosis in the herd. In 1963, 18 disease-free Bison derived from a group of animals that showed some of the characteristics of Wood Bison, were released in the **Mackenzie Bison Sanctuary**. That herd now numbers about 2 600 individuals. As in 1923 we again have two herds, one with a high prevalence of tuberculosis and a second that is disease-free.

Author(s) Fuller, W.A. Stebbins, L.L. Dyke, G.R. F48
Title **Overwintering of small mammals near Great Slave Lake, northern Canada**
Affiliations
Publication *Arctic*, v. 22, no. 1, (Mar. 1969), p. 34-55
ASTIS # ASTIS 10058
Libraries ACU
Summary This paper deals with the ecology of mice and voles Peromyscus maniculatus, Clethrionomys gapperi and C. rutilus in the subnival environment, mainly on the Alberta plateau but with one plot and some traplines in the **Mackenzie lowlands**, both in the taiga zone where the snow cover is more uniform than in the tundra. Winters 1965-67 measurements of air and subnival (moss layer) temperatures, snow depths and densities, also changes in weight and numbers of species trapped are represented graphically. Mortality rates varied by species and year. The winter weight of all three species is less than in summer. Annual differences in mean body weight were small and not related to differences in population density.

Author(s) Gallaway, B.J. Griffiths, W.B. Craig, P.C. Gazey, W.J. Helmericks, J.W. F49
Title **An assessment of the Colville River delta stock of arctic cisco - migrants from Canada?**
Affiliations
Publication In: Contributions to the science of environmental impact assessment : three papers on the arctic cisco of northern Alaska / Edited by D.W. Norton. - Fairbanks, Alaska : University of Alaska, (1983), p. 4-23
lib. code ASTIS 13824
Libraries ACU
Summary To help interpret observed population changes of Arctic cisco in the Colville River Delta of Alaska, the Deriso model was applied to 15 years of catch and fishing effort records from the local commercial fishery. The model can provide a predicted sequence of catch values that closely mimics the historical record. Although survival and lag time parameters giving the best fit predictions appear reasonable, the high value giving best fit for the recruitment parameter would indicate a strongly density-dependent stock-recruitment relationship, and is suspect. Similar analyses of fishery data collected in future years may help determine whether the observed population fluctuations are attributable to normal population cycles or to environmental variables. The construction of a 3.9 km long causeway in the vicinity, and the operation of the local fisheries are both tentatively discounted as environmental causes for the observed fluctuations, but extreme sea ice conditions in certain years are implicated. A theory that Arctic cisco in Alaska are representatives of a Canadian stock from the **Mackenzie River** is proposed, and the evidence is reviewed.

Author(s) Gates, C. F50
Title **Population ecology of the Mackenzie wood bison**
Affiliations Northwest Territories. Dept. of Renewable Resources [Affiliation]
Publication (1990)
lib. code ASTIS 37203
Libraries
Summary The researcher will undertake a composition survey/census, relocate animals, capture and tag animals, and analyse habitat.

Author(s) Geddes, F.E. F51
Title **Waterfowl migration surveys along the Mackenzie River, Spring 1981**
Affiliations
Publication Interprovincial Pipe Line (N.W.) Ltd.: Calgary, AB (1982)
lib. code QL 685.5 .N67 I58 1982
Libraries ARI
Summary Waterfowl. Oil exploration, Pipelines. **Mackenzie Delta**, NT

Author(s) Geist, V. F52
Title **Phantom subspecies : The wood bison, Bison bison "athabascae" Rhoads 1897 is not a valid taxon, but an ecotype**
Affiliations
Publication *Arctic*, v. 44, no. 4, (Dec. 1991), p. 283-300
lib. code ASTIS 32014
Libraries
Summary The proposal that the "hybrid bison" of Wood Buffalo National Park (WBNP) be exterminated and replaced with "wood bison" has no taxonomic justification. The subspecies Bison bison athabascae Rhoads 1897 is based on the inadequate descriptions and taxonomically invalid criteria - i.e., body size and morphometrics. ….

Author(s) Gratto-Trevor, C.L. F53
Title **Use of Landsat TM imagery in determining important shorebird habitat in the outer Mackenzie Delta, Northwest Territories**
Affiliations
Publication *Arctic*, v. 49, no. 1, Mar. (1996), p. 11-22
lib. code ASTIS 38331
Libraries ACU
Summary Landsat Thematic Mapper (TM) imagery was examined to determine important habitats for shorebirds in the **outer Mackenzie Delta**, Northwest Territories. In June and July 1991 and 1992, 89 ground plots (200 X 200 m) in different habitats were censused for breeding shorebirds. Habitat type in ground plots was determined by observation and compared to the type identified at the site by an unsupervised Landsat classification technique. The most common species of shorebirds breeding in the area were red-necked phalaropes (Phalaropus lobatus) and common snipe (Gallinago gallinago), followed by semipalmated sandpipers (Calidris pusilla), stilt sandpipers (C. himantopus), pectoral sandpipers (C. melanotos), whimbrel (Numenius phaeopus), Hudsonian godwits (Limosa haemastica), lesser golden plovers (Pluvialis dominica), and semipalmated plovers (Charadrius semipalmatus). Long-billed dowitchers (Limnodromus scolopaceus) were rarely seen. Most species were concentrated in areas of low-centre polygons, sedge, and "low terrain" upland tundra (damp and tussocky). However, snipe were most common in dense willow habitat, and semipalmated plovers were found breeding only on sparsely vegetated gravel. Average density of breeding shorebirds in low-centre polygon or "pure" sedge habitat was 82 pairs per sq km in 1991 (SD=73.8), and 49 in 1992 (SD=49.5). Although the Landsat TM imagery analysis used here correctly identified habitat types near the original, intensively surveyed ("ground-truthed") area, it often misidentified habitats at some sites 10 to 30 km away, probably because of irregular flooding and subtle year-to-year differences in water levels in the active outer delta, and edge habitats too narrow to be distinguished by the satellite imagery. However, the technique can identify potential shorebird habitat roughly, and at least eliminate obviously unsuitable areas in large regions of the Arctic.

Author(s) Greenberg, R. Pravosudov, V. Sterling, J. Kozlenko, A. Kontorschikov, V. F54

Title **Divergence in foraging behavior of foliage-gleaning birds of Canadian and Russian boreal forests**

Affiliations

Publication *Oecologia*, v.120, no. 3, (1999), p. 451-462

lib. code ASTIS 47630

Libraries ACU

Summary We compared foraging behavior of foliage-gleaning birds of the boreal forest of two Palaearctic (central Siberia and European Russia) and two Nearctic (**Mackenzie** and Ontario, Canada) sites. Using discriminant function analysis on paired sites we were able to distinguish foliage-gleaning species from the Nearctic and Palaearctic with few misclassifications. The two variables that most consistently distinguished species of the two avifaunas were the percentage use of conifer foliage and the percentage use of all foliage. Nearctic foliage-gleaner assemblages had more species that foraged predominantly from coniferous foliage and displayed a greater tendency to forage from foliage, both coniferous and broad-leafed, rather than twigs, branches, or other substrates. The greater specialization on foliage and, in particular, conifer foliage by New World canopy foliage insectivores is consistent with previously proposed hypotheses regarding the role of Pleistocene vegetation history on ecological generalization of Eurasian species. Boreal forest, composed primarily of spruce and pine, was widespread in eastern North America, whereas pockets of forest were scattered in Eurasia (mostly the mountains of southern Europe and Asia). This may have affected the populations of birds directly or indirectly through reduction in the diversity and abundance of defoliating outbreak insects. Loss of habitat and resources may have selected against ecological specialization on these habitats and resources.

Author(s) Gunn, W.W.H. Livingston, J.A. F55

Title **Bird migrations on the North Slope and in the Mackenzie Valley regions, 1972**

Affiliations LGL Limited, Environmental Research Associates Canadian Arctic Gas Study Limited [Sponsor] Alaskan Arctic Gas Study Company [Sponsor]

Publication Arctic Gas. Biological report series, v. 13 (1974)

lib. code ASTIS 11026

Libraries ACU

Summary These three studies of bird migration and abundance were conducted from the ground and from aerial surveys and include daylight and weather data arrival dates, summaries of bird movements by species, and numbers of birds involved.

Author(s) Gunn, W.W.H. Richardson, W.J. Schweinsburg, R.E. Wright, T.D. F56

Title **Ornithological studies in the Mackenzie Valley, 1973**

Affiliations LGL Limited, Environmental Research Associates Canadian Arctic Gas Study Limited [Sponsor]

Publication Arctic Gas. Biological report series, v. 28 (1975)

lib. code ASTIS 786

Libraries ACU

Summary These surveys were intended to provide a basis upon which waterfowl and large bird populations along the proposed pipeline route could be compared with populations on nearby wetlands. [Ch. I.] The general objective of this study [Ch. II] was to obtain a comprehensive understanding of spring migration of birds through the **Mackenzie Valley**. Specifically, the study sought to determine species, numbers, and peak dates of migration of birds passing through this migration corridor.

Author(s)	Harwood, L.A. Borstad, G.A. F57
Title	**Bowhead whale monitoring study in the southeast Beaufort Sea, July-September 1984**
Affiliations	G.A. Borstad Limited ESL Environmental Sciences Limited Environmental Studies Revolving Funds (Canada) [Sponsor] Canada. Indian and Northern Affairs Canada [Sponsor]
Publication	Environmental Studies Revolving Funds report, no. 009 NOGAP project no. A.07 : Offshore environmental ecosystems monitoring (1985)
lib. code	ASTIS 19279
Libraries	ACU NFSMO NWYIN OORD
Summary	... During the 18-27 August survey, 36 bowheads were observed on transect, 17 bowheads were seen off-transect, and 41 were observed during ferrying flights. Estimated bowhead abundance during this survey was 500 to 800 for the southeast **Beaufort Sea**, and 300 to 500 for west Amundsen Gulf. A total of 42 bowheads was observed on-transect, and 66 were seen during ferrying flights. Estimated bowhead abundance was from 1200 to 1900 in the southeast **Beaufort Sea**, and from 300 to 500 in west Amundsen Gulf. The apparent fluctuations in bowhead abundance in the southeast **Beaufort Sea** coincided with changes in the general distribution and activities of whales observed, and in the oceanography of the area. During the surveys in July, bowheads were generally observed 100 km or further from shore in association with ice, or in ice, or in cold, clear water. Observed activities during July included only diving, swimming at the surface, and resting. ... most animals observed were in relatively large groups in nearshore ice-free or open waters. They were feeding and socializing, and were congregated near Cape Bathurst and in Franklin Bay, where satellite imagery showed vigorous convergent surface circulation (22-23 August); 100 km north of Cape Dalhousie (no image available); and near strong oceanographic fronts marking the edge of the **Mackenzie plane** and an upwelling along the Yukon coast (11-12 September). These types of oceanographic features often attract or concentrate zooplankton in other regions.

Author(s) Harwood, L.A. Ford, J.K.B. F58
Title **Systematic aerial surveys of bowhead whales and other marine mammals in the southeastern Beaufort Sea, August-September 1982**
Affiliations ESL Environmental Sciences Limited Dome Petroleum Limited [Sponsor] Gulf Canada Resources Inc. [Sponsor]
Publication Beaufort E.I.S. reference work, no. RWB22 (1983) [2 microfiches]
lib. code ASTIS 10784.
Libraries ACU
Summary Systematic aerial surveys were conducted in the southeastern **Beaufort Sea** during August 18-24, 1982 and September 5-13, 1982 to examine the relative abundance and distribution of bowhead whales. Additional information collected during the surveys included data on bowhead calf production, movements and behaviour, and data on the relative abundance, distribution and behaviour of white whales, ringed seals and bearded seals. ... Observers recorded a total of 81 bowhead whales during late August, and a total of 102 during early September. ... Most bowheads recorded during both surveys were located in the Yukon Zone .... Estimated numbers of bowheads present during the early September survey were 1112, 163 and 115 in the Yukon, Delta and Tuk Pen zones, respectively. ... The results of the present investigation and past studies in the region indicate that the distribution of bowheads in the southeastern **Beaufort Sea** varies among years. [and] ... also ... that the late summer distribution of bowheads may be related to natural factors such as ice conditions and/or food availability. ... white whales .... were located primarily in shallow water (<20 m) areas offshore of the **Mackenzie Delta** and **Tuktoyaktuk Peninsula**. ... The lack of white whale sightings in nearshore waters of the Yukon Zone suggest that fall migration of this species probably occurred offshore. ... Ringed seals were observed in most areas surveyed during periods of calm seas, suggesting they were widely distributed throughout much of the region during the open water season. ... bearded seals were not observed during all surveys conducted during periods of calm seas. Bearded seals were sighted more frequently in the Tuk Pen Zone than in either the Delta or Yukon zones, but their overall abundance in the latter area was also relatively low and their distribution patchy.

Author(s) Harwood, L.A. Smith, T.G. F59
Title **Whales of the Inuvialuit Settlement Region in Canada's western Arctic : an overview and outlook**
Affiliations
Publication Beaufort Sea Conference 2000 : renewable resources for our children, Sept. 15-18, Inuvik, NT. Arctic, v. 55, suppl. 1, (2002), p. 77-93
lib. code ASTIS 49894
Libraries ACU
Summary The beluga whale (Delphinapterus leucas) and the bowhead whale (Balaena mysticetus) are seasonal migrants to Canada's Western Arctic, occupying summer range in the southeastern **Beaufort Sea** and Amundsen Gulf within the Inuvialuit Settlement Region (ISR). These whales also travel through United States (Alaskan) and Russian offshore waters, which include migration routes and overwintering areas for both species. The beluga has for centuries been an important food resource of the aboriginal people of the **Mackenzie Delta**. From 1990 to 1999, the annual subsistence harvest of beluga in the ISR averaged 111, while only two bowheads were landed during this same period. The minimum size of the Eastern **Beaufort Sea** beluga stock has been estimated at 32 453 whales. The size of the bowhead whales population, based on 1993 data, is estimated at 8200 (95% estimation interval of 7200-9400), constituting more than 90% of the world's remaining bowheads. This population increased at a rate of 3.2% from 1978 to 1993, while sustaining a harvest of about 0.6% per year. To ensure the continued well-being of these whales and their habitats, it is recommended that existing monitoring programs, commitments, and co-management partnerships be nurtured and maintained.

Author(s) Haszard, S.L. F60
Title **Habitat requirements of White-winged and Surf Scoters in the Mackenzie Delta region, Northwest Territories**
Affiliations
Publication *Arctic*, v. 54, no. 4, (Dec. 2001), p. 472-474
lib. code ASTIS 48912
Libraries ACU
Summary … Initial results indicate that white-winged scoter pairs are more abundant than those of surf scoters in both Delta and upland regions. Pairs of both species occupy upland lakes more frequently than Delta lakes and seem to e more abundant on medium and large wetlands than on small wetlands. Although we observed 394 pairs of white-winged scoters and 68 pairs of surf scoters during the two breeding pair surveys, we observed only 68 white-winged scoter broods and 20 surf scoter broods. The broods were distributed approximately equally between Delta and upland lakes. I am currently compiling and analyzing data to verify these initial impressions and evaluate a habitat selection pattern.

Author(s) Haszard, S.L. F61
Title **Distribution and habitat requirements of scoters in the Mackenzie Delta region**
Affiliations
Publication *Arctic*, v. 55, no. 4, (Dec. 2002), p. 414-416
lib. code ASTIS 50686
Libraries ACU
Summary Combined white-winged and surf scoter populations in the boreal forest of northern Alberta, British Columbia, and the Northwest Territories (NT) may have declined by as much as 75% in the past 50 years…. This study examines how specific wetland characteristics affect the abundance, distribution, and productivity of white-winged and surf scoters in part of their core breeding range near Inuvik, NT. In particular, I designed my research to look for evidence of habitat selection by these species. Do female scoters select wetlands that are more productive and have a greater abundance of key food items, or are better suited to providing physical protection for ducklings? Are these types of preferred wetlands widely distributed and available for use by scoters, or are they not very abundant- perhaps limiting scoter productivity?... My results to date indicate where scoters are found during the breeding and brood-rearing periods of the summer. Further analyses of spatial and habitat data from both years must be conducted to contrast characteristics and occupancy of burned and unburned areas and to evaluate whether or not a habitat selection pattern exists. I hope the analyses will allow me to determine what habitat characteristics scoters require to breed successfully in this part of their range. This information, used in conjunction with that for other species, could be used to help mitigate future impacts of proposed developments. It will also provide a baseline from which causes of future changes in scoter abundance and distribution could be determined more easily.

Author(s)	Hatfield, C.T. Stein, J.N. Falk, M.R. Jessop, C.S.	F62
Title	**Fish resources of the Mackenzie River Valley, interim report 1, volume 1**	
Affiliations		
Publication	Winnipeg, Man.: Environment Canada, (1972)	
lib. code	ASTIS 30406	
Libraries		
Summary	In May 1971 the Department of the Environment, Fisheries Service began a four-year investigation into possible effects of northern pipeline construction and other northern development on the fish resources of the **Mackenzie River Valley**. Fish are caught in standard size mesh gill and seine nets at sampling stations on the **Mackenzie**, Liard, Great Bear, Arctic Red and Peel main stems and all significant tributaries crossed by the proposed pipeline routes. Species composition, distribution, age and growth, feeding, length-weight and spawning characteristics are under study. Baseline data on contamination of fish with heavy metals and pesticides are being collected. The compilation of a stream catalogue, covering chemical and physical water quality, water flows, spawning gravel areas and major obstructions to fish migration is underway.	

Author(s)	Hatfield, C.T. Stein, J.N. Falk, M.R. Jessop, C.S. Shepherd, D.N.	F63
Title	**Fish resources of the Mackenzie River Valley, interim report 1, volume II**	
Affiliations		
Publication	Winnipeg, Man.: Environment Canada, (1972)	
lib. code		
Libraries		
Summary	Not Available	

Author(s)	Hawkins, J.S.	F64
Title	**Population status of migratory waterbirds on the Yukon coastal plain and adjacent Mackenzie Delta**	
Affiliations		
Publication	Canadian wildlife service, Environment Canada: Ottawa, ON (1987)	
lib. code	QL 605.5 .Y8 H38 1987	
Libraries	ARI	
Summary	Waterfowl, swans, geese, ducks loons brant. Bird migration. Animal geography. NT	

Author(s) Hawley, V. Hawley, A. Poll, D. Brown, R. F65
Title **The Bluenose caribou herd, 1974-1976**
Affiliations
Publication Edmonton, Alta. : Canadian Wildlife Service, (1979). No final version was ever published.
lib. code ASTIS 43848
Libraries ACU
Summary A three year study (of varying intensity) into the size, composition, seasonal distribution, and movements of the Bluenose Caribou Herd was conducted between April 1974 and December 1976, inclusive, on the 29,000 sq km range lying between the **Mackenzie** and Coppermine **rivers**, Great Bear Lake, and the Arctic Ocean. Our April-May 1974 estimate of approximately 95,000 caribou, derived from the 3,452 caribou counted in the 9,585 sq km transect sample and modified by a confirmatory intensive survey of caribou concentrations wherein 10,142 caribou were counted in a 3,482 sq km transect sample, was considerably higher than the 39,000 caribou estimated during a comparable survey in March 1966, or the 30,000 to 35,000 generally estimated for the 1948-1953 period, and much higher than the 5,000 to 10,000 usually estimated between 1954 and 1960….

Author(s) Helbig, R. Boag, P.T. White, B.N. F66
Title **Stock identification of beluga whales (Delphinapterus leucas) using mitochondrial DNA markers : preliminary results**
Affiliations
Publication Student research in Canada's North : Proceedings of the Second National Student Conference on Northern Studies, Ottawa, November 23-24, 1988 / Edited by J.F. Basinger and W.O. Kupsch. Musk-ox, no. 37, (Winter 1989), p. 122-128
lib. code ASTIS 34288
Libraries ACU
Summary Previous attempts to delineate beluga stocks using morphometrics, marking, and radiotelemetry have met with little success. Defining the genetic relationships of populations is important because there is concern that some stocks already depleted by previous commercial and subsistence whaling cannot sustain current levels of hunting. In addition, although the St. Lawrence population is now protected, it may represent a pocket of less than 500 animals genetically isolated from Arctic belugas. Without gene flow to maintain genetic diversity, inbreeding may be a contributing factor to health problems such as the scoliosis observed in some individuals. The preliminary work presented here demonstrates that mitochondrial DNA (mtDNA) markers will be useful in stock identification. Frozen liver yielded high quality DNA as did skin that had been frozen or preserved in 0.5 M EDTA saturated with NaCl. Yields of 200-500 micro g of total DNA were obtained from 0.2-0.3 g of preserved tissue. Total DNA (1 micro g) was digested with restriction enzymes, the fragments electrophoretically separated and the resultant Southern blots probed with the complete cloned mouse mtDNA. This gave strong autoradiographic signals and the initial results show that the differences in mtDNA restriction fragment lengths between belugas from eastern Hudson Bay and the **Beaufort Sea** clearly distinguish these two populations. In addition, the results suggest that belugas from eastern Hudson Bay can be distinguished from western Hudson Bay animals as well as those from Cumberland Sound, Grise Fiord, and the **Mackenzie Delta**.

Author(s) Hohn, E.O. F67
Title **Observations on the behaviour of certain arctic birds**
Affiliations
Publication *Arctic*, v. 11, no. 2, (1958), p. 93-101
lib. code ASTIS 9810
Libraries ACU
Summary Report on observations on 14 species of birds (loons, old squaw, ptarmigan, plover, jaegers, sandpipers, phalarope, gulls, tern) made in **Mackenzie District** in summer 1955, mostly near the mouth of the Anderson River (69 59 N, 129 W). Calls, alarm or distraction behavior, play, courtship, attack real or feigned, display flights, etc., are noted. Two general observations are included: on distraction displays and falcon hunting habits in the presence of a human intruder.

Author(s) Honour, S. Hickling, K.M. F68
Title **Naturally occurring Brucella suis biovar 4 infection in a moose (Alces alces).**
Affiliations
Publication *Journal of Wildlife Distribution,* v.29(4), (Oct 1993) 596-8
lib. code
Libraries
Summary A debilitated adult female moose (Alces alces) shot east of the **Mackenzie River**, Northwest Territories, Canada, had large fluctuant masses over both carpi. Only the forelimbs were available for examination. Carpal pathology included bilateral bursitis and osteomyelitis of subjacent bone. In addition severe osteomyelitis with fractures was observed in the left lateral and right medial digits. Brucella suis biovar 4 was isolated from the right medial first phalanx. This is believed to be the first reported case of infection with this organism in a wild moose. The bacterium is common in caribou (Rangifer tarandus) in the region.

Author(s) Houston, J. F69
Title **Status of the Spoonhead sculpin, Cottus ricei, in Canada**
Affiliations
Publication *Canadian field-naturalist*, v.104, no. 1, (Jan.-Mar. 1990), p. 14-19
lib. code ASTIS 31271
Libraries ACU
Summary The Spoonhead Sculpin, Cottus ricei, is the most distinct North American member of the genus and on this continent is most closely related to the European Cottus gobei species group. The species is widespread east of the Great Divide ranging into Quebec and north to the mouth of the **Mackenzie River** and other drainages into Hudson and James bays. It has been recorded from all of the Great Lakes, but may be declining in Lake Erie and declining or extirpated from Lake Ontario. Elsewhere, the species is common where found and collection efforts in the 1970s have filled in many information gaps on the distribution in Ontario and Quebec. The distribution of the species appears to be closely related to glacial lakes created at the end of the Wisconsin period of glaciation. Post-glacial dispersion of the species may still be occurring as drainage systems adjust to isostatic rebound.

Author(s) Houston, J. F70
Title **Status of the Darktail Lamprey, Lethenteron alaskense, in Canada**
Affiliations
Publication *Canadian field-naturalist*, v.105, no. 2, (Apr.-June 1991), p. 157-160
lib. code ASTIS 31347
Libraries ACU
Summary The Darktail Lamprey, Lethenteron alaskense, is one of the smaller non-parasitic members of the Petromyzonidae and has only recently been reported in Canada. The only known record for the species in Canada is from the Martin River, a tributary of the **Mackenzie River** in the Northwest Territories.

Author(s) Howkings, J. F71
Title **Breeding bird survey of the whitefish station area, Mackenzie Delta, 1985**
Affiliations
Publication Canadian Wildlife Service, : Delta, B.C. (1986)
lib. code QL 672. 73 Y84 H283 1986 IRCL
Libraries ARI
Summary Birds, bird populations – Yukon Territory and **Mackenzie River Delta**

Author(s) Howland, K.L. F72
Title **Population differentiation among inconnu in the Mackenzie River system : genetic or environmental basis?**
Affiliations
Publication *Information north*, v. 22, no. 4, (Dec. 1996), p. 1-4
lib. code ASTIS 39778
Libraries ACU
Summary … Researchers had speculated for some time that inconnu in the **Mackenzie River system** might represent two different migratory forms: those occurring in the lower **Mackenzie River system** north of Norman Wells were thought to feed and overwinter in coastal areas and spawn in freshwater, following lengthy migrations; whereas those in the Great Slave Lake area were believed to be year-round residents of freshwater and undergo much shorter spawning migrations. Until recently, systematic examination of these suspicions had not been possible. Combined evidence from gillnetting, radio-tracking, and analysis of otolith microchemistry, a relatively new technique, allowed me to confirm these two migratory patterns. Otolith microchemistry analysis is used by fisheries biologists to determine the levels of various trace elements, including strontium, in the otoliths or "ear bones" of fish. Since seawater contains higher concentrations of strontium than freshwater, I was able to identify inconnu that have spent time in salt water by the higher concentrations of strontium that were permanently deposited on their otoliths. In addition to confirming differences in migration patterns, I established that the two forms of inconnu exhibit significant differences in life history traits, such as growth rate, age at maturity, and fecundity.

Author(s) Hudon, J. F73
Title **Survey of the Western Tanager**
Affiliations Provincial Museum of Alberta [Affiliation and Sponsor] Alberta. Dept. of Community Development [Sponsor]
Publication (2001)
lib. code ASTIS 50984
Libraries

Summary …Year two (2) of the project "Characterization of a phenotypically various species, the Western Tanager, at the northern limit of its distribution in northern Alberta and south-central Mackenzie

Author(s) Jalkotzy, P. F74
Title **Fall 2001 Mackenzie Delta aquatics survey**
Affiliations Inuvialuit Environmental & Geotechnical Inc. [Affiliation]
Publication (2001)
lib. code ASTIS 51408
Libraries
Summary This survey was a short-term assessment of aquatic habitats in selected lakes that may be affected by seismic activities during winter 2001-2002. The objective of the study was to obtain environmental information on a sub-sample of fish-bearing lakes to aid in decision-making by operators and regulatory agencies within the Inuvialuit Settlement Region. A total of 6 lakes was identified for inclusion. Parameters related to the potential for fish and fish habitats were assessed. This study also provided background information as to the potential effect of seismic activity on water bodies. The parameters assessed were: (1) dissolved oxygen; (2) carbon dioxide; (3) pH; (4) conductivity; (5) total suspended solids; and (6) nitrogen. Measurements were taken on an established daily schedule to minimize variation due to time-of-day effects. In addition, stream flow measurements, bathymetric surveys, and digital imaging were completed for the selected lakes. Water velocity and total discharge were calculated at inlets and outlets of the lakes using topset flow meters. Bathymetric profiling was conducted with the use of an echosounder that transmits and receives signals from the substrata of the water body.

Author(s) Jelinski, D.E. F75
Title **Seasonal differences in habitat selection by muskrats (Ondatra zibethicus) in a high subarctic environment : Mackenzie Delta, Northwest Territories, Canada**
Affiliations
Publication Thesis (M.Sc.) - University of Calgary, Dept. of Geography, Calgary, Alta., (1984). Supervisor: Hamill, L.
Lib. code ASTIS 34326; QL 737 .R638 J45 1984 THE
Libraries ACU; U. Calgary, ARI
Summary Differences in summer and winter habitat selection by muskrats (Ondatra zibethicus spatulata) in the **Mackenzie Delta**, a heterogeneous high subarctic-low arctic environment, were studied. On the basis of burrow site locations, multivariate analysis of variance revealed that habitats used by muskrats in the two seasons differed significantly. The single discriminant function generated by a discriminant function analysis was strongly correlated with variables describing food, cover, and over-winter survival of muskrats. Muskrats in summer preferred to burrow in closer proximity to shallow water, on gentler slopes, with cover and nearer to Equisetum fluviatile than muskrats in winter. I suggest that the alteration of habitat selection behavior in relation to changes in the seasonal quality of the habitat is a condition whereby habitat breadth narrows in winter. The discriminant function correctly classified 70% of the samples. Food habits corresponded closely with intense utilization of Equisetum fluviatile and Carex aquatilus in summer and roots of submerged aquatic macrophytes in winter. Lake ice severely limited foraging space and in some instances probably resulted in high mortality. The energy demands of reproduction, maintenance, and climatic stress were believed to be responsible for body fat reserves being very low in summer, with substantial storage taking place in winter. Lake habitats were divided into two groups on the basis of their hydrological regimes: (1) stable water level lakes (unconnected lakes); and (2) flowing water lake types (lakes connected to distributary channels). Population densities differed seasonally in these two lake types. Discriminant analysis revealed significant differences in the physical morphometry of the two lake types resulting in structurally different muskrat habitat. Submerged aquatic plant production was generally greater in unconnected lakes. These results may be of considerable aid in assessing the impact of habitat alteration particularly in the event of the hydro-electric development within the **Mackenzie Basin**.

Author(s)	Jessop, C.S.	F76
Title	**Fish resources of the Mackenzie River Valley special report: An intensive study of the fish resources of the two main stem tributaries**	
Affiliations		
Publication	Environmental – Social Program Northern Pipelines Task Force on Northern Oil D: Winnipeg, MB (1973)	
lib. code	SH 224 .N7 J47 1973	
Libraries	ARI	
Summary	Fishery resources, fresh water fishes. Rabbitskin river, NT	

Author(s)	Jessop, C.S.	F77
Title	**An evaluation of the fish resources of the Mackenzie River Valley based on 1974 data**	
Affiliations		
Publication	Dept. of the Environment, Fisheries and Marine Service: Winnipeg, MB (1975)	
lib. code	SH 223 .T25 J47 1975	
Libraries	ARI	
Summary	Fishes, fish resources. **Mackenzie River Valley**, NT	

Author(s)	Jessop, C.S.	F78
Title	**A further evaluation of the fish resources of the Mackenzie River Valley**	
Affiliations		
Publication	Environmental- Social Committee Northern perspective, Task Force on Northern: Ottawa, ON (1974)	
lib. code	TN 880.5 .J45 1974	
Libraries	ARI	
Summary	Fishes, **Mackenzie River Valley**, NT	

Author(s)	Jessop, C.S.	F79
Title	**Echo sounding and fish data from selected sites in the lower Mackenzie River, Northwest Territories**	
Affiliations		
Publication	Central and arctic region, dept. of fisheries and oceans: Winnipeg, MB (1993)	
lib. code	SH 223 .C36 no. 2193	
Libraries	ARI	
Summary	Fishes, marine biology. NT	

Author(s) Koski, W.R. F80
Title **A study of the distribution and movements of Snow Geese, other geese, and Whistling Swans on the Mackenzie Delta, Yukon North Slope, and eastern Alaskan North Slope in August and September, 1976**
Affiliations LGL Limited, Environmental Research Associates Canadian Arctic Gas Study Limited [Sponsor]
Publication (1977)
lib. code ASTIS 30223
Libraries ACU
Summary ... The objectives of this study were to determine the following: (1) the numbers of geese and swans that used the study area during the fall staging period, (2) the concentration sites of these birds, (3) the seasonal chronology according to which the geese and swans used the study area and the concentration sites, (4) the brood sizes and the adult-to-juvenile ratios of these birds, and (5) the year-to-year variation in each of the above variables.

Author(s) Krebs, C.J. F81
Title **Growth Studies in the reindeer (Rangifer tarandus) with an analysis of population changes in the Mackenzie Delta herd over the period 1938-1958**
Affiliations
Publication Thesis (M. A.) University of British Columbia (1959)
lib. code SF 401 .R4 K92 1959 THE
Libraries UBC, ARI
Summary Reindeer farming in the **Mackenzie Delta**.

Author(s) Kutz, S.J. Hoberg, E.P. Nishi, J.S. Polley, L. F82
Title **Development of the muskox lungworm, Umingmakstronglyus pallikuukensis, in the slug, Deroceras laeve, under arctic field conditions with comments on the impact of climate change**
Affiliations
Publication Paper presented at the Wildlife Disease Association 47th Annual Conference, Aug. 10, (1998).
lib. code ASTIS 45324
Libraries
Summary Umingmakstrongylus pallikuukensis was first recognized in 1988 in muskoxen west of Kugluktuk, NT. The prevalence approaches 100% in adult muskoxen in this region yet the parasite is absent from the arctic islands. First stage larvae in feces develop to third stage larvae (L3) in at least 4 terrestrial and freshwater gastropods found near Kugluktuk. Development rates to L3 depend on temperature. Field studies of larval development in D. laeve were done during the summer of 1997. Slugs infected late June to mid July contained L3 by 4 to 6 weeks post infection while those infected July 31 or later did not produce L3 before winter. Recovery in September of live L3 from the vegetation of June 19 and July 3 experiments confirmed laboratory findings of larval emergence from slugs. U. pallikuukensis in muskoxen is a temperature dependent system in which larval development and patterns of parasite transmission and distribution may be influenced by change in global temperatures. Temperature records indicate a 50 year warming trend in the Mackenzie Disrict of 1.29 C. U. pallikuukensis in muskoxen offers a theoreteical and applied model system to elucidate the complex linkage of global climate change to wildlife health, emerging helminthic disease, and the potential to impact populations of arctic ruminants.

Author(s) Latour, P. F83
Title **Wildlife response to forest fire burns in the Mackenzie Valley**
Affiliations Northwest Territories. Dept. of Renewable Resources [Affiliation]
Publication (1993)
lib. code ASTIS 36014
Libraries
Summary The researcher will assess the winter abundance of furbearing species in burns of difference ages and describe the vegetational characteristics of the burns.

Author(s) Lawrence, M.J. Lacho, G. Davies, S. F84
Title **A survey of the coastal fishes of the southeastern Beaufort Sea**
Affiliations
Publication Canadian technical report of fisheries and aquatic sciences, no. 1220
Technical report - Canada. Dept. of Fisheries and Oceans. Western Region, no. 172
(1984)
lib. code ASTIS 15679
Libraries ACU
Summary Fish samples were collected with gillnets, beach seines and hoopnets during surveys conducted in the spring, summer and fall open-water seasons in 1978, 1979 and 1980 along the southern **Beaufort Sea** coast between **Richards Island** to the west and liverpool Bay to the east. Samples taken were analyzed to determine, on a species basis, seasonal distribution and relative abundance, age- and length-frequency distribution, sexual maturity, growth and feeding habits. In conjunction with fish sampling, depth, temperature, salinity, TDN, TDP, chlorophyll a, suspended particulate concentration and other physical and chemical environmental parameters were measured to delineate fish habitat features. Surface water quality within the estuary was variable depending upon distance from the **Mackenzie River**, time since spring freshnet, wind velocity, local bathymetry and exposure of sites to wind and currents. The ranges for some water quality features for spring, summer and fall sampling periods are given.

Author(s) LGL Limited, Environmental Research Associates F85
Title **Aerial surveys of bird populations along the route of the proposed gas pipeline in the Mackenzie District, Northwest Territories, 1972**
Affiliations Northern Engineering Services Company [Sponsor]
Publication (1972)
lib. code ASTIS 30236
Libraries ACU
Summary ... This study was undertaken to provide quantitative data about waterfowl populations in the **Mackenzie Valley.** Aerial surveys were used since this technique allowed large areas to be surveyed quickly and efficiently. Surveys were flown along all proposed pipeline routes in the **Mackenzie Valley**, **south of the Delta**. This allowed comparison of the various route sections in terms of their importance to waterfowl. The **Mackenzie River** itself was surveyed since this is a major transportation corridor which will undoubtedly be heavily used during the pipeline construction phase. Several other areas were surveyed since they were thought to be potentially important areas for waterfowl production. If certain areas support higher than average waterfowl populations, then efforts should be made to disturb them as little as possible.

F86

Author(s) LGL Limited, Environmental Research Associates
Title **Spring migration of birds in the upper Mackenzie Valley**
Affiliations Northern Engineering Services Company [Sponsor]
Publication (1972)
lib. code ASTIS 30225
Libraries ACU
Summary The purpose of this study was to determine arrival dates, species and numbers of birds involved in spring migration through the upper **Mackenzie Valley**. Migration through this area is poorly documented, although it has long been known as a corridor for birds arriving from their wintering grounds in the south (Cooke 1915). Since the bird fauna of the **Mackenzie Valley and the Delta** is essentially eastern or an extension of the fauna of northern Manitoba, Saskatchewan and Alberta, a number of woodland species can be expected to arrive at various times in the spring. Many of the species known only as migrants in the prairie provinces, especially arctic shorebirds and waterfowl, can also be expected to pass through the area enroute to their breeding grounds further north.

F87

Author(s) LGL Limited, Environmental Research Associates
Title **Preliminary waterfowl disturbance studies, Mackenzie Valley**
Affiliations Northern Engineering Services Company [Sponsor]
Publication (1972)
lib. code ASTIS 30232
Libraries ACU
Summary Continued use of small lakes by light aircraft might have adverse effects on local waterfowl populations, depending on the degree of use by the aircraft, species composition and density of waterfowl, and time of year. Preliminary experiments were conducted on two lakes in the **Mackenzie Valley area** to determine the reactions of waterfowl to repeated aircraft disturbance in late summer. In addition, waterfowl counts were made at the Department of Transport float base at Norman Wells, which is subject to heavy air traffic all summer, and on the lake immediately to the east southeast, which is on the path of low flying aircraft approaching or leaving DOT lake.

F88

Author(s) LGL Limited, Environmental Research Associates
Title **Exhibit 14 (d) : 7.0 Environmental impact of the project, 7.2. Long-term changes (operational phase), 7.27 Birds**
Affiliations Northern Engineering Services Company [Sponsor]
Publication (1973)
lib. code ASTIS 30238
Libraries ACU
Summary Section 1 - The Arctic coast and tundra south to the bottom of the **Mackenzie Delta**. ... Section 2. From the bottom of the **Mackenzie Delta** to 60 degrees N. Latitude. ... The following comments on the ornithological impact of the operational phase of the proposed pipeline follow the above sequence, preceded by a general overview.

Author(s) Lockwood, S.F. Bickham, J.W. F89
Title **Genetic stock assessment of spawning arctic cisco (Coregonus autumnalis) populations by flow cytometric determination of DNA content.**
Affiliations
Publication *Cytometry* v.12 no. 3, (1991) 260-7.
lib. code
Libraries
Summary Intraspecific variation in cellular DNA content was measured in five Coregonus autumnalis spawning populations from the **Mackenzie River drainage**, Canada, using flow cytometry. The rivers assayed were the Peel, Arctic Red, Mountain, Carcajou, and Liard rivers. DNA content was determined from whole blood preparations of fish from all rivers except the Carcajou, for which kidney tissue was used. DNA content measurements of kidney and blood preparations of the same fish from the Mountain River revealed statistically indistinguishable results. Mosaicism was found in blood preparations from the Peel, Arctic Red, Mountain, and Liard rivers, but was not observed in kidney tissue preparations from the Mountain or Carcajou rivers. The Liard River sample had significantly elevated mean DNA content relative to the other four samples; all other samples were statistically indistinguishable. Significant differences in mean DNA content among spawning stocks of a single species reinforces the need for adequate sample sizes of both individuals and populations when reporting "C" values for a particular species.

Author(s) Lutra Associates Ltd. F90
Title **Survey of fish users in Dene and Metis communities in and near the Mackenzie River watershed**
Affiliations Canada. Dept. of Indian Affairs and Northern Development [Sponsor]
Publication (1989)
lib. code ASTIS 36230
Libraries
Summary The Survey of Fish Users in Dene and Metis Communities In and Near the **Mackenzie River Watershed** was commissioned by the Dept. of Indian and Northern Affairs mainly as a result of reports of abnormal fish from domestic fishermen in **Fort Good Hope** during the construction of the Norman Wells oil pipeline between 1982 and 1985. During the summer of 1988, 202 Dene and Metis households involved in the domestic fishery were interviewed in 11 **Mackenzie Valley communities** to determine the extent and scope of fish abnormalities and related impacts. The findings of the survey are documented in summary form in Volume 1 of this report. Volume II of the report contains the findings for each community surveyed. The survey was conducted by Lutra Associates Ltd. of Yellowknife. Working with Lutra, were Dene and Metis researchers in each of the 11 communities surveyed, Dr. Peter Usher of P.J. Usher Consulting Services and Dr. Aaron Sekerak of LGL Environmental Research Associates.

Author(s) Maarouf, A.R. F91
Title **Spring climate and migratory arctic-breeding geese**
Affiliations
Publication In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, (1994) / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994), p. 372-376
lib. code ASTIS 36886

Libraries ACU
Summary …Objective: to examine a relatively long record of spring and summer climate conditions in the **Mackenzie District** that could influence the nesting and breeding success of migratory geese.

Author(s) MacDonald, B. F92
Title **Waterbird ecology, vegetation landcover classification, and ground-based waterfowl research**
Affiliations Ducks Unlimited Canada [Affiliation and Sponsor]
Publication (2001)
lib. code ASTIS 50992
Libraries
Summary To conduct a survey on the waterbird ecology, vegetation landcover classification, and ground based waterfowl research within the Inuvialuit and Gwich'in Settlement Areas of the lower **Mackenzie River**.

Author(s) Maiers, L.D. Friesen, M.K. Wiens, A.V. Clayton, J.W. F93
Title **Use of DNA microsatellites in beluga whale (Delphinapterus leucas) population genetics**
Affiliations
Publication Canadian technical report of fisheries and aquatic sciences, no.2115 (1996)
lib. code ASTIS 42887
Libraries ACU
Summary The potential of nuclear DNA microsatellite analysis for use as a marker for population genetic studies of beluga whales (Delphinapterus leucus) was tested. One microsatellite locus was amplified in beluga samples from five different locations using primers developed for the long-finned pilot whale (Globicephala melas). The distribution of genotypes among whales sampled at each location was in agreement with the Castle-Hardy-Weinberg equilibrium. The test could not be performed on the St. Lawrence whales where only two alleles were found distributed as 17 homozygotes and 1 heterozygote. Examination of the five alleles amplified revealed significant allele frequency differences among beluga from Alaska, **Mackenzie Delta**, Nastapoka River, and St. Lawrence River. Comparison of the allele frequencies among males and females where there were sufficient samples (Alaska, **Mackenzie Delta**, and Nastapoka River) showed no significant differences. Significant allele frequency differences were not found among whales sampled at Pt. Lay, Alaska and whales sampled at Norton Sound, Alaska. This result, however, may be a reflection of the small sample size (n=13) from Norton Sound.

Author(s) Martell, A.M. Dickinson, D.M. Casselman, L.M. F94
Title **Wildlife of the Mackenzie Delta region**
Affiliations
Publication Occasional publication - Boreal Institute for Northern Studies. University of Alberta, 15, (1984)
lib. code ASTIS 13974
Libraries ACU
Summary ... The following report was written with the purpose of firstly synthesizing information from published historical accounts with that of more recent papers in an annotated list of all vertebrate wildlife species that occur or have been reported in the Delta Region, with a brief discussion of some of these species; and secondly, of providing a list of references that for the most part are readily available to the public. References to less easily obtained consultants reports and unpublished manuscript reports have been kept to a minimum.

Author(s) Martell, A.M. Pearson, A.M. F95
Title **The small mammals of the Mackenzie Delta region, Northwest Territories, Canada**
Affiliations
Publication *Arctic*, v. 31, no. 4, (Dec. 1978), p. 475-488
Contribution - Boreal Institute for Northern Studies, no. 58
lib. code ASTIS 2036
Libraries ACU
Summary The paper reports on 3800 small mammals taken in taiga and tundra east of the **Mackenzie River Delta** between 1971 and 1974. Local distributions are given for all 100 species of small mammals recorded in the region, plus two accidentals. In addition, abundance, body and cranial measurements, and reproductive information is presented for the 8 species collected during the study. The taxonomic status of Clethrionomys rutilus platycephalus is discussed.

Author(s) McCart, P.J. (Editor) F96
Title **Classification of streams in Beaufort Sea drainages and distribution of fish in Arctic and Sub-Arctic drainages**
Affiliations Aquatic Environments Limited Canadian Arctic Gas Study Limited [Sponsor]
Alaskan Arctic Gas Study Company [Sponsor]
Publication Arctic Gas. Biological report series, v. 17, (1974) 176pp.
lib. code ASTIS 327
Libraries ACU
Summary In this paper, we present information describing the physical, chemical and biological characteristics of Arctic streams in **Beaufort Sea** drainages in Alaska and the Yukon Territory, from the Kuparuk River east to the **Mackenzie Delta**. ... In this study, we have classified streams in the study area into three broadly based categories (Mountain Streams, Spring Streams, and Tundra Streams) largely on the basis of their origin. ... The study [presented in Ch. II] is divided into three main sections. Section 1 is a list of watersheds and the fish species found in each, Section 2 lists each fish species and all locations for which data are available. Section 3 consists of maps showing the major drainages, the locations of the alternative corridors ... the locations of major drainages ... and the distribution pattern of each fish species.

Author(s) McCart, P. F97
Title **Studies to determine the impact of gas pipeline development on aquatic ecosystems**
Affiliations Aquatic Environments Limited Canadian Arctic Gas Study Limited [Sponsor]
Alaskan Arctic Gas Study Company [Sponsor]
Publication Arctic Gas. Biological report series, v. 39 (1977)
Lib. code ASTIS 935
Libraries ACU
Summary The four reports in this volume are concerned with the potential damage to water quality and to fish in watercourses during construction and testing of the proposed Arctic Gas pipeline. The effects of methanol on the fertilization process of chum salmon, and its toxicity to the life stages of benthic macroinvertebrates are both reported. Fisheries investigations along the route of the proposed Arctic Gas pipeline from Crowsnest Pass to Kingsgate, B.C., and along the Arctic Gas Cross Delta pipeline route in the **Mackenzie Delta** are reported.

Author(s)	McCart, P.J.	F98
Title	**A review of the systematics and ecology of Arctic char, Salvelinus alpinus, in the western Arctic**	
Affiliations	Aquatic Environments Limited	
Publication	Canadian technical report of fisheries and aquatic sciences, no. 935 (1980)	
lib. code	ASTIS record 5860	
Libraries	ACU	
Summary	... This document synthesizes the available data describing Arctic char in **Beaufort Sea** drainages in Alaska and Canada including the **Mackenzie River** and its tributaries. The major purpose of the document is to provide a detailed basis for future studies of Arctic char in the western Arctic, for the assessment of the potential impact of development, and for the management of the species	

Author(s)	McCart, P.J.	F99
Title	**Fish and fisheries of the Mackenzie systems**	
Affiliations	P. McCart biological consultants ltd.	
Publication	(1985)	
lib. code	QP 1 .P37 M44 1985	
Libraries	ARI	
Summary	Stream ecology. Fisheries.	

Author(s)	McLeod, C.L. O'Neil, J.P.	F100
Title	**Major range extensions of anadromous salmonids and first record of chinook salmon in the Mackenzie River drainage**	
Affiliations		
Publication	*Canadian journal of zoology*, v. 61, no. 9, Sept. 1983, p.2183-2184	
lib. code	ASTIS 10663	
Libraries	ACU	
Summary	Spawning migrations of chum salmon ... and Arctic cisco ... in the Liard River system (**Mackenzie River drainage**) within the Northwest Territories and British Columbia were documented during the period 1978 to 1981. These species have not been reported previously from the Liard River. The points of capture, as far upstream as the Grand Canyon of the Liard, represent a major southerly range extension in the **Mackenzie River drainage** and upstream migrations of nearly 2000 km from the **Beaufort Sea**. The first record of a chinook salmon ... from the **Mackenzie River drainage** is reported also. The specimen was collected in the Liard River, Northwest Territories, and was probably a stray, accompanying a spawning escapement of chum salmon.	

Author(s)	Melton, D. Ealey, M. Buckland, L. Calverly, T.	F101
Title	**Wildlife and fisheries habitat survey at Ranger Oil's Exploratory Drilling Project near Tulita (Fort Norman)**	
Affiliations	Golder Associates [Affiliation] Ranger Oil Ltd. [Sponsor]	
Publication	(1997)	
lib. code	ASTIS 43554	
Libraries		
Summary	The main objective was to establish baseline wildlife and fisheries habitat conditions prior to start of Ranger Oil's winter exploration drilling program. All sampling was done over a 2-3 day period in mid-September.	

Author(s) Metikosh, S. Brezenski, J.S. Stoklosar, S.A. Crabbe, S.J. Mason, K. F102
Title **Fish presence, habitat conditions and sensitivity to pipeline activities for each of 41 freshwater watercourses crossed by a proposed NWT pipeline following the west side of the Mackenzie Delta**
Affiliations Golder Associates
Publication (2001)
Lib. code ASTIS 50944
Libraries
Summary Objectives: To collect baseline information in the Gwich'in Settlement Area on fish and fish habitat in the vicinity of a conceptual pipeline project. To better understand the existing status of fish and fish habitat in the study area; To predict environmental effects; and to support the preparation of environmental protection plans.

Author(s) Mullen, M.W. McNeil, D.H. F103
Title **Biostratigraphic and paleoclimatic significance of a new Pliocene foraminiferal fauna from the central Arctic Ocean**
Affiliations
Publication *Marine micropaleontology*, v. 26, no. 1-4, (Dec. 1995), p. 273-280
Lib. code ASTIS 45256
Libraries
Summary A Pliocene benthic foraminiferal fauna containing a previously unknown species association was found in the basal section of a piston core collected from the crest of Northwind Ridge (NWR) in the central Arctic Ocean. The fauna is dominated by Epistominella exigua, Cassidulina reniforme, Eponides tumidulus, Cibicides scaldisiensis, Lagena spp., Cassidulina teretis, Eponides weddellensis, Bolivina arctica, and Patellina corrugata. The presence of Cibicides scaldisiensis in the assemblage and the occurrence of Cibicides grossus higher in the core are indicative of an early Pliocene age. The morphologically distinctive species Cibicidoides sp. 795 of McNeil (in press) which occurs in the NWR core sample was previously known only from Oligocene through Miocene deposits in the **Beaufort-Mackenzie Basin** of Arctic Canada. Ehrenbergina sp. A and Cibicidoides aff. C. sp. 795, also present in the core, are new and endemic to the Arctic late Miocene and early Pliocene. These species, and possibly others, are survivors of the late Miocene (Messinian) sea-level crisis, which caused a significant faunal turnover in the Arctic Ocean. The predominantly calcareous assemblage indicates deposition above the calcium carbonate compensation depth in an upper bathyal environment. Paleogeographic affinities for the bulk of the assemblage indicate probable connections between the Arctic and the North Atlantic Oceans, but the endemic species identify environmental differences or partial isolation of the western Arctic Ocean. The species association suggests a cold but milder paleoclimate than that which existed during Pleistocene glacial intervals.

Author(s) Mulvey, R.H. F104
Title **Predaceous nematodes of the family Mononchidae from the Mackenzie and Porcupine river systems and Somerset Island, N.W.T., Canada**
Affiliations
Publication *Canadian journal of zoology*, v. 56, no. 8, (Aug. 1978), p.1847-1868
lib. code ASTIS 5243
Libraries ACU
Summary Paramonochus arcticus n.gen., n.sp., Coomansus fletcherensis n.sp., and Mononchus superbus n.sp. from the **Mackenzie** and Porcupine river systems and Somerset Island are described and illustrated.

... Other monochids from the river and lake samples are described and illustrated including Coomansus gerlachei and Monochus maduei are reported for the first time in Canada. A new genus Parahadronchus is defined with Parahadronchus adamanicus (Jairajpuri, 1969) n.comb. as its type species, and generic diagnoses and a key to the 23 recognized genera of Monochidae are included.

Author(s) Mulvey, R.H. Anderson, R.V. F105
Title **Benthic species of Dorylaimus Dujardin 1845 (Nematoda: Dorylamidae) and Arctidorylaimus n.gen. (Arctidorylaimidae n.fam.) from the Mackenzie and Porcupine river systems, Northwest Territories, Canada**
Affiliations
Publication *Canadian journal of zoology*, v. 57, no. 4, (Apr. 1979), p. 743-755
lib. code ASTIS 5297
Libraries ACU
Summary Arctidorylaimidae n.fam. and Arctidorylaimus n.gen. are proposed to accommodate A. arcticus n.sp., a dorylaimid with longitudinal body ridges from aquatic habitats. A diagnosis of the family and genus, key to closely related genera, and description and illustration of the new species are provided. ... Dorylaimus lineatus, a new record for Canada, and Dorylaimus stagnalis are described from Canadian populations and their diagnostic characters compared and illustrated. The genus Dorylaimus is reviewed and a key, supplemented with tabulated characters and references, is provided for all valid species. Dorylaimus amplexor and Dorylaimus sulcatus are placed in species inquirendae.

Author(s) Mulvey, R.H. Nickle, W.R. F106
Title **Taxonomy of mermithids (Nematoda: Mermithidae) of Canada and in particular of the Mackenzie and Porcupine river systems, and Somerset Island, N.W.T., with descriptions of eight new species and emphasis on the use of the male characters in identification**
Affiliations
Publication *Canadian journal of zoology*, v. 56, no. 6, (June 1978), p.1291-1329
lib. code ASTIS 5236
Libraries ACU
Summary Twenty-four described mermithids are listed as known members of the Canadian fauna. Five of these are redescribed, and eight new species are described .... A taxonomic key is provided to separate the 10 genera to which the 24 species belong. Keys identify the species of the genera Gastromermis, Hydromermis, and Neomesomermis. Morphology of the male head and genitalia are critically analysed and consistent male characteristics incorporated into four keys.

Author(s) Mychasiw, L. F107
Title **Map the vegetation and determine the use of various habitats of bison, Mackenzie Bison Sanctuary**
Affiliations Northwest Territories. Dept. of Renewable Resources [Affiliation]
Publication (1984)
lib. code ASTIS 20025
Libraries
Summary Not available

Author(s) Nicholson, B.J. Gignac, L.D. Bayley, S.E. Vitt, D.H. F108
Title **Boreal wetlands : effects on peatland bryophye communities. A progress report**
Affiliations
Publication In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, 1994, p. 295-304 (1994)
lib. code ASTIS 36878
Libraries ACU
Summary The research objective of our group at the University of Alberta is to create a mathematical model which will predict the effect of climate change on bryophyte communities in peatlands of the **Mackenzie River Basin**. The basis of the model, called the Predictive Indicator Community Model (PIC Model), is a series of 3-D graphs of the response of selected indicator species along important environmental gradients. ... The most important gradients affecting peatland distribution in the **Mackenzie River Basin** are pH and height above the water table. ... Although slightly secondary, climate, particularly precipitation variables, mean annual temperature, and length of the growing season are also closely related to the geographical distribution of peatlands. ... The PIC Model has now been assimilated for the **Mackenzie Basin**….

Author(s) Nishi, J. F109
Title **Population and disease studies**
Affiliations Northwest Territories. Dept. of Resources, Wildlife and Economic Development [Affiliation and Sponsor]
Publication (1999)
Lib. code ASTIS 45405
Libraries
Summary The objectives of this study are: 1) to test biochemical assays for detecting anthrax spores in the environment and to determine their distribution, 2) to measure calf, yearling, and bull:cow ratios during the post-calving period, 3) collect tissue samples from bison to be used for genetic documentation and the monitoring of the **Mackenzie herd** for the presence of brucellosis and tuberculosis.

Author(s) Norton, P. F110
Title **Distribution, abundance and behaviour of white whales in the Mackenzie estuary**
Affiliations
Publication Environmental Studies Research Funds: Ottawa, ON (1986)
lib. code TN 873 .C2 N67 1986
Libraries ARI
Summary White whale - Research

Author(s) Norton, P. F111
Title **White whale use of the southeastern Beaufort Sea, July - September 1984**
Affiliations
Publication Canadian technical report of fisheries and aquatic sciences, no. 14011 (1985)
NOGAP project no. B.01 : Effects of vessel noise and traffic on arctic marine mammals (1985)
lib. code ASTIS 18368
Libraries ACU OORD
Summary This report presents data collected on white whales (Delphinapterus leucas) during six systematic aerial surveys of the southeastern **Beaufort Sea** during July, August and September, 1984. The first survey coincided with the period when white whales concentrated in the **Mackenzie Estuary**, yet 40.8 white whales/1,000 sq/km were observed offshore. White whale abundance in the offshore **Beaufort** generally increased from early July through to the third week of July (99.7/1,000 sq km), and then declined. Cow-neonate pairs were frequently recorded offshore. White whales may have started moving into Alaskan waters as early as mid-July, although the results suggest that most migrated from the region between late July and mid-September. The July 21-23 survey results were used to calculate a minimum estimate of 7,081 animals in the study area; this estimate does not include whales in Amundsen Gulf, and has not been corrected for unseen animals or for reduced detectability of white whales in outer portions of the transect strip. Calving and feeding may occur offshore.

Author(s) Oliver, D.R. McClymont, D. Roussel, M.E. F112
Title **A key to some larvae of Chironomidae (Diptera) from the Mackenzie and Porcupine River watersheds**
Affiliations
Publication Ottawa : Fisheries and Marine Service, Fisheries and Environment Canada, (c1978).
iv, 73p.
Technical report - Canada. Fisheries and Marine Service, no. 791
Technical report - Canada. Fisheries and Marine Service. Western Region, no. 113
lib. code ASTIS 1402
Libraries ACU
Summary Chironomid larvae were collected and identified from the **Fort Simpson** and **Mackenzie Delta** areas, Northwest Territories, and the Old Crow area, northern Yukon Territory. Illustrated keys based on these larvae are presented with brief notes on some of the species. Approximately 140 taxa in 75 genera and six subfamilies are keyed. Most of the taxa keyed inhabit medium- to large-sized rivers.

Author(s) Percy, J.A. F113
Title **Effects of crude oil on arctic marine invertebrates**
Affiliations
Publication Marine ecology : Mackenzie Delta and Tuktoyaktuk Peninsula. Environmental-Social Committee Northern Pipelines, Task Force on Northern Oil Development report, no. 74- 22, p. 31-99
lib. code ASTIS 17940
Libraries ACU
Summary ... This study is designed to yield information about potentially harmful interactions between some of the dominant marine invertebrates found in shallow coastal waters in the vicinity of the **Mackenzie Delta**, and Arctic crude oil. Two Arctic crude oils have been utilized, one from Norman Wells and the other from the Atkinson Point Well, located on the **Tuktoyaktuk Peninsula** adjacent to the study area. A sample of Venezuelan crude (an oil that has received considerable study regarding its biological impact) has recently been obtained and used for comparative purposes in some experiments. ... Arctic marine invertebrates vary considerably in their tolerance of crude oils. Benthic species are generally tolerant of high concentrations of seawater soluble components of the oil. Indications are that planktonic species may be more sensitive and are killed at low to moderate concentrations of the oil. ... The overall general effect of a major oil spill will probably be the selective elimination of sensitive species from the habitat coupled with an increase in numbers of the more tolerant species as competition decreases. The natural balance of the ecosystem will probably not be re-established for several years.

Author(s) Percy, R. F114
Title **Anadromous and fresh water fish of the outer Mackenzie Delta**
Affiliations
Publication Beaufort Sea Project: Victoria, BC (1974)

lib. code QL 626.5 .N7 P47 1974
Libraries ARI
Summary Fishes, distribution of animals, animal geography. Offshore oil and gas development. NT

Author(s) Percy, R. F115
Title **Fishes of the outer Mackenzie Delta**
Affiliations
Publication Victoria, B.C. : Beaufort Sea Project, Dept. of the Environment, (1975) vi, 114 p. Technical report - Beaufort Sea Project, no. 8
APOA project no. 72 : Beaufort Sea Environmental Program. Report, no. 8
lib. code ASTIS 2999; GC 413 .P47 1975 no. 8
Libraries ACU NFSMO; ARI
Summary Baseline information was gathered in 1974 and 1975 on 23 species of fresh-water, anadromous and marine fishes in the outer **Mackenzie Delta** and **nearshore Beaufort Sea**. The biological data presented include numerical abundance, summer and winter distributions, nursery areas, food habits, migration and age-length relationships. The possible impact of offshore exploratory drilling to the fish resources is discussed. Although the major impact would arise from an oil well blowout, the cumulative effects of other disturbance factors, such as seismic activity, disposal of drilling fluids and "housekeeping waters" will also be significant over the long term.

Author(s) Percy, R. Eddy, W. Munro, D. F116
Title **Anadromous and freshwater fish of the outer Mackenzie Delta : interim report of the Beaufort Sea Project Study B2, December 1974**
Affiliations Freshwater Institute (Canada) Beaufort Sea Project (Canada) [Sponsor]
Publication Victoria, B.C. : Beaufort Sea Project, (1975?). vi, 51 p.
lib. code ASTIS 44217
Libraries ACU
Summary Biological data were collected on the freshwater and anadromous fish resources of the outer **Mackenzie River delta** and **nearshore Beaufort Sea**. Numerical abundance, percent composition and distributions are described for 23 species of fish. (List of fish species and distribution follows). Nursery areas are described. Within the outer delta, brackish coastal regions appear to be most important as nursery areas.

Author(s) Poole, K. F117
Title **Mackenzie Sanctuary lynx study**
Affiliations Northwest Territories. Dept. of Renewable Resources [Affiliation]
Publication (1989)
lib. code ASTIS 30483
Libraries
Summary Ms. Poole determined the home range size and movement patterns of lynx. Habitat use was also studied. To do this she monitored the animals from light aircraft and using radio tracking. She also conducted track counts and analyzed carcasses which were provided by local trappers. Finally this information was related to data on snowshoe hare densities.

Author(s) Poole, K.G. F118
Title **Lynx management and research in the NWT, 1988-89**
Affiliations
Publication Manuscript report - Northwest Territories. Dept. of Renewable Resources (1989)
lib. code ASTIS 36108
Libraries
Summary This report summarizes lynx harvest trends, and management and research programs conducted during 1988-89 in the NWT. A total of 2037 pelts were harvested in the 1987-88 season, up 25% over the previous year, and average pelt price was $390. Indications for the 1988-89 season are that the harvest increased substantially. A total of 181 lynx carcasses were collected from trappers from Fts. Simpson, Providence and Smith to: 1) determine the most reliable pelt length (measured from the tip of the nose to the base of the tail) to separate kittens from older animals, 2) examine age and sex ratios in the harvest, and 3) examine body condition and reproductive rates. ... A lynx live-trapping and radio-collaring program was initiated in the **Mackenzie Bison Sanctuary** in March 1989. The study was designed primarily to examine the importance of refugia, untrapped reservoirs of habitat, by examining home range size, distribution, habitat use and dispersal patterns. A 125 sq. km area was trapped in March 1989 using Freemont leg snares and Soft-catch padded traps, and 15 lynx were captured, 11 males and 4 females. Radio-collars were placed on 10 of these lynx. …This study will be ongoing.

Author(s)	Porsild, A.E.	F119
Title	**Report on the reindeer and the Mackenzie Delta reindeer grazing reserve, July-August 1947**	
Affiliations		
Publication	National Museum of Canada: Ottawa, ON (1947)	
lib. code	SF 401 .R4 P67 1947 RARE	
Libraries	ARI (RARE BOOKS)	
Summary	Reindeer – **Mackenzie River region**, NT	

Author(s)	Poston, H.J.	F120
Title	**Waterfowl populations observed along the proposed gas pipeline route Richards Island to N.W.T.-Alberta border**	
Affiliations	Canadian Wildlife Service	
Publication	Ottawa : Canadian Wildlife Service, (1977) vi, 78p.	
lib. code	ASTIS 296; QL 685.5 .N67 P67 1977	
Libraries	SSU; ARI	
Summary	A four-mile-wide corridor extending 865 linear miles and including 2300 wetland basins along the proposed **Mackenzie Valley** gas pipeline route (1973) was surveyed by aircraft to document waterfowl and aquatic bird numbers and species. ... Detailed maps and charts delineate individual and groups of wetlands that provide essential requirements for significant numbers of waterfowls and aquatic birds. These data suggest that pipeline routing does not directly influence the more valuable wetland habitats of the region.	

Author(s)	Pruitt, W.O.	F121
Title	**Snow as a factor in the winter ecology of the barren ground caribou (Rangifer arcticus)**	
Affiliations		
Publication	*Arctic*, v. 12, no. 3, (Sept. 1959), p. 159-179	
lib. code	ASTIS 9832	
Libraries	ACU	
Summary	Discusses the effects of snow cover on the behavior, migration and species survival of caribou, from field studies in southern **Mackenzie** and Keewatin Districts during the winter 1957-58. Snow observation records were taken at 114 stations, caribou distribution was plotted during low altitude flights, and ground observations made of their behavior in relation to snow conditions. Correlations were found between areas of heavy caribou concentration and the snow hardness, density and thickness. Caribou appear to have sensitivity thresholds: approx. 50 gm/sq cm hardness for forest snow and 500 gm/sq cm for lake snow; approx. 0.19-0.20 density for forest snow and 0.25-0.30 for lake snow; and approx. 60 cm thinkness. When these thresholds are exceeded, the animals move to areas of softer, lighter and thinner snow. Location of the winter range and the timing, direction, speed and routes of annual migrations are intimately related to snow cover characteristics. Protection of vegetation in areas of favorable snow conditions may be of prime importance to the survival of caribou. Further research is needed.	

Author(s)	Reist, J.D.	F122
Title	**An overview of the possible effects of climate change on northern freshwater and anadromous fishes**	
Affiliations		
Publication	In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994), p. 377-385	
Lib. code	ASTIS record 36887	
Libraries	ACU	
Summary	The major effects of climate change will be as follows: 1) Shifts in Distribution - Southerly distributed warm water fishes will likely colonize accessible more northerly regions as physiological needs are optimized. Northerly distributed arctic fishes may experience reduction of geographic range and/or extirpation from areas presently occupied. 2) Shifts in Abundance and Growth - Growth rates will change as the range of physiological temperature changes. This, in turn, may result in earlier maturation and other factors affecting abundance. Thus, locally increased abundance of fish favoured by increased temperature can be expected. In a similar fashion, decreased abundance of fish not so favoured will occur. As well, decreased availability of cool water refugia will result in decreased abundance of fish requiring such habitats. 3) Shifts in Fisheries Yield - As a direct consequence of both of the above factors, the yields of important fisheries will change locally. 4) Shifts in Ecosystem Structure and Function - Other components and processes of the aquatic ecosystem will change in ways similar to those described above for fish. In turn, these will affect factors such as productivity of lower trophic levels. Such shifts will have indirect effects on fish abundance, growth and productivity. 5) Cumulative Effects - the direct effects on fish populations and the indirect effects stemming from coincident changes in the ecosystem may additively or multiplicatively cumulate to result in substantive effects on fish. In a similar fashion, other anthropogenic effects such as contaminant loading and exploitation will cumulate as well.	

Author(s)	Reist, J.D. Bond, W.A.	F123
Title	**Life history characteristics of migratory coregonids of the lower Mackenzie River, Northwest Territories, Canada**	
Affiliations	Freshwater Institute (Canada)	
Publication	NOGAP project no. B.03 : Critical western arctic freshwater habitats Finnish fisheries research, no. 9, (1988), p. 133-144	
lib. code	ASTIS 30956	
Libraries	OORD	
Summary	Five coregonid species occurring in the lower **Mackenzie River Basin,** Northwest Territories, Canada, are important in fisheries: Coregonus nasus (broad whitefish), C. clupeaformis complex (lake whitefish), C. sardinella complex (least cisco), C. autumnalis (Arctic cisco), and Stenodus leucictbys (inconnu). The degree of anadromy, length of migration and other life history traits differ among the species complicating management of them.	

Author(s) Reist, J.D. Low, G. Johnson, J.D. McDowell, D. F124

Title **Range extension of bull trout, Salvelinus confluentus, to the central Northwest Territories, with notes on identification and distribution of Dolly Varden, Salvelinus malma, in the western Canadian Arctic**

Affiliations

Publication *Arctic*, v. 55, no. 1, (Mar. 2002), p. 70-76

lib. code ASTIS 49262

Libraries ACU

Summary The presence of bull trout (Salvelinus confluentus) is reported from four locations in the Sahtu Settlement Area of the Northwest Territories centered about 64°30'N and 125°00'W. These reports extend the geographical range of this species approximately 500 km north of the previous northernmost published localities in the southern Northwest Territories (~61°N, 125°W, Prairie Creek, Liard River drainage)….

Author(s) Rempel, L.L. Smith, D.G. F125

Title **Postglacial fish dispersal from the Mississippi refuge to the Mackenzie River basin**

Affiliations

Publication *Canadian journal of fisheries and aquatic sciences*, v. 55, no. 4, Apr. (1998), p. 893-899.

lib. code ASTIS 47386

Libraries ACU

Summary Wisconsinan glaciation had a profound impact on fish faunas in North America, and deglaciation led to the dispersal of approximately 28 species from the Mississippi glacial refuge into the **Mackenzie River basin**. A hypothesized dispersal 11 500 years ago via glacial lakes Agassiz and Peace is difficult to verify and hydrologic linkage between these lakes was sporadic and short lived. Geomorphic evidence indicates that glacial Lake Agassiz drained into the **Mackenzie basin** via the Clearwater River, Saskatchewan, 9900 years ago and created a second opportunity for fish dispersal northward. Fish distribution data indicate a 96% similarity between Mississippi species in the **Mackenzie basin** and species occupying the former Agassiz-Clearwater corridor. Fifteen species dispersed into the headwaters of the Clearwater River during hydrologic linkage to Lake Agassiz and are now isolated above an 18.5 m waterfall. Previous genetic data suggest lake trout (Salvelinus namaycush) used the Agassiz-Clearwater corridor for two-way dispersal between Beringia and the Great Lakes basin. Lake whitefish (Coregonus clupeaformis) populations of Mississippi origin are distinguished by a marker allele of glucose-3-phosphate dehydrogenase, G3PDH-l*b, that is absent from modern populations within the former Lake Peace region and the distribution of Mississippi whitefish across Canada is best resolved by our Agassiz-Clearwater dispersal hypothesis. Our research substantially alters the interpretation of fish biogeographic patterns in Canada and generates testable hypotheses for future studies.

Author(s) Renewable Resources Consulting Services F126
Title **Preliminary assessment of the outer Mackenzie River Delta alternate gas pipeline route**
Affiliations
Publication (1974?)
lib. code ASTIS 30270
Libraries ACU
Summary The proposed Outer **Mackenzie Delta** pipeline route traverses four habitat regions including the tundra of the Arctic coastal plain, the outer **Mackenzie River Delta**, **Richards Island** and adjacent tundra at the base of **Tuktoyaktuk Peninsula**, and extensive northern coniferous forest extending to the Thunder River. Key species inhabiting these areas are barren-ground caribou of the Porcupine Herd, moose, grizzly bear and foxes west of the Delta, beluga whales in the Delta, reindeer, grizzly bear and foxes on **Richards Island** and the tundra east of the **Mackenzie River**, and woodland caribou, moose, bears and beaver in the coniferous forest regions.

Author(s) Richard, P. Orr, J. Heide-Jorgenson, M.P. Dietz, R. Deguise, S. Pike, D. F127
Title **Biological sampling and satellite tagging of beluga and narwhal**
Affiliations Canada. Dept. of Fisheries and Oceans. Central and Arctic Region [Affiliation]
Publication (1997)
lib. code ASTIS 45982
Libraries
Summary Objectives: Beluga whale (Delphinapterus leucas) and narwhal (Monodon monoceros) will be captured so that satellite tags and flipper bands can be attached. During the restraint period the animals will be sexed; skin and blood samples taken and morphometric data collected. Waters: **Mackenzie River Delta** and **east Beaufort Sea**, Cumberland Sound, and northern Baffin waters near Arctic Bay or Pond Inlet.

Author(s) Riewe, R.R. F128
Title **Interactions between wildlife, trapper-hunters and seismic lines in the Mackenzie Valley region, N.W.T., Canada**
Affiliations
Publication Indian and Northern Affairs Canada: Winnipeg, MB (1979)
lib. code QH 541.5 .P6 Z9 R54 1979
Libraries ARI
Summary Wildlife areas – Canada. Trapping. **Mackenzie Valley region**, Aubry-Colville Lakes, NT

F129

Author(s) Riewe, R.R.
Title **Interactions between wildlife, trapper-hunters and seismic lines in the Mackenzie valley region, N.W.T., Canada. Part I: Aubry-Colville lakes**
Affiliations R & R Research Limited Arctic Land Use Research Program (Canada) [Sponsor]
Publication Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 9 (1979)
lib. code ASTIS 4248
Libraries ACU SSU
Summary The objective of this study was to determine if and how the distribution and movement of game and fur-bearing animals are affected by seismic lines. As a corollary, the study was to ascertain to what extent seismic lines are used by trapper-hunters in preference to traditional routes. In order to obtain this information, it was necessary to first examine the effects of seismic lines upon the vegetation and small mammals which support the game and fur. This study was conducted in the vicinity of Aubry and Colville Lakes, N.W.T. ... 27 May to 31 August 1976, 7 April to 10 May 1977 and 1 to 24 August 1977. ... I have seen no evidence that seismic lines in the area benefit the wildlife or the trapper-hunters of Colville Lake. On the other hand, I find it difficult to believe [they] ... have reduced the carrying capacity of the region for the fur-bearers or game animals. It is difficult ... to predict ... accumulative effect ... (particularly for caribou) if additional seismic operations were conducted.

F130

Author(s) Robertson, I. Millar, J.D.
Title **White whale monitoring in the Mackenzie Estuary, 1983**
Affiliations Ian Robertson Consulting Ltd. Esso Resources Canada [Sponsor] Dome Petroleum Limited [Sponsor] Gulf Canada Resources Inc. [Sponsor]
Publication (1984)
lib. code ASTIS 49874
Libraries ACU
Summary In June and July 1983 reconnaissance and systematic aerial surveys were undertaken to monitor the arrival, distribution and abundance of white whales in the **Mackenzie River Estuary**.

F131

Author(s) Roney, K. Serger, H.
Title **Waterfowl and shorebird nesting habitat study in the Mackenzie Delta, Northwest Territories**
Affiliations Royal Saskatchewan Museum [Affiliation]
Publication (1995)
lib. code ASTIS 38614
Libraries
Summary The researchers conducted an aerial survey of the **Mackenzie Delta** area to note the nesting habitats of waterfowl and shorebirds. Photographs (slides and video) were taken as well as notes and sketches that will be applied to the design and planning of an exhibit for the Royal Saskatchewan Museum. A small plant collection (2-3 specimens of the most common plant species) was obtained to serve as models for the production of artificial plants for the exhibit.

Author(s)	Rusek, J.	F132
Title	**Blissia glabra gen.n., sp.n. (Collembola: Isotomidae) from northwestern Canada**	
Affiliations		
Publication	*Canadian journal of zoology*, v. 63, no. 9, Sept. (1985), p.2077-2082.	
lib. code	ASTIS	
Libraries	ACU	
Summary	Blissia glabra, a new genus and species from the **Mackenzie River Delta** south of Inuvik, N.W.T., is described. The new genus is related to Tetracanthella Schott, 1891 (Isotomidae). Morphological characters as seen with light and scanning electron microscopes are described and figured.	

Author(s)	Ruttan, R.A. Wooley, D.R.	F133
Title	**A study of furbearers associated with proposed pipeline routes in the Yukon Territory and Mackenzie River Valley, 1971**	
Affiliations	Renewable Resources Consulting Services Canadian Arctic Gas Study Limited [Sponsor]	
Publication	Canadian Arctic Gas Study Ltd. : Alaskan Arctic Gas Study Co., (1974). 117 p., [15] leaves of col. plates : ill., maps Arctic Gas. Biological report series, v. 8	
lib. code	ASTIS 14298	
Libraries	ACU	
Summary	The basic objectives of the program were to obtain an inventory and evaluation of the fur-bearer habitat traversed by the proposed routes and to conduct preliminary assessments of important populations. Preliminary study of the trapping economy in all communities along the route was also included. A systematic study of the effects of seismic roads, the only existing disturbances comparable to a pipeline right-of-way, on small mammal populations was conducted. Observations of the use of seismic roads by small mammals was also recorded.	

Author(s)	Salomons, M.	F134
Title	**Birds of the Mackenzie Delta**	
Affiliations	Aurora Research Institute [Affiliation]	
Publication	(2001)	
lib. code	ASTIS 51427	
Libraries		
Summary	In order to complete a field guide to the birds of the **Mackenzie Delta**, a checklist of bird species found in the **Mackenzie Delta** was developed and research was done into local knowledge and history about different species. The checklist was verified by talking to local residents, by reviewing oral history transcripts and by literature reviews. The Field Guide was released in August 2002.	

Author(s)	Searing, G.F. Richardson, W.J. F135
Title	**A study of seabirds in the coastal Beaufort Sea area, 1972 and 1974 : volume I**
Affiliations	LGL Limited, Environmental Research Associates Canadian Wildlife Service [Sponsor]
Publication	LGL Limited, Environmental Research Associates, (1975). xviii, 243 leaves : ill., maps (1 folded)
lib. code	ASTIS 44231
Libraries	ACU
Summary	Data on the distribution and movements of seabirds and other birds in the southeastern **Beaufort Sea** area were gathered during 1972 and 1974. Data collected during offshore aerial surveys conducted over the **Beaufort Sea** during 1974 were analysed in relation to ice-cover conditions; the results of such analysis indicated the distributions and movements of birds offshore during a year of above-average ice cover. It was found that the distributions of most species are related to the amount of ice cover present and that birds generally prefer areas of at least partly open water. Maps of species distributions and abundances in relation to ice-cover conditions were prepared for offshore areas. Densities were calculated for all species and species groups observed during aerial transect surveys. Densities of ducks were found to decrease radically after June; it was speculated that this decrease was related to the timing of the initiation of nesting activities, at which time many ducks move ashore. An overabundance of males in the male-female ratio of eiders remaining offshore after June supported this speculation. … The results of migration watches conducted during 1972 along the coast, primarily during fall, provided a general overview of the migrational patterns along the coast of many of the species present in the **Beaufort Sea** area. These data are presented in relation to the wind conditions that prevailed. Birds that were migrating into headwinds were observed more frequently and in greater numbers than were birds that were migrating with tailwinds. Reasons for this apparent relationship between migrating birds and winds are considered. The limitations of migration watches of this type are discussed. The data were summarized and analysed on a species-by-species basis and are presented in an annotated list of species.

Author(s)	Sekerak, A.D. Stallard, N. Griffiths, W.B. F136
Title	**Distribution of fish and fish harvests in the nearshore Beaufort Sea and Mackenzie Delta during ice-covered periods, October-June**
Affiliations	LGL Limited, Environmental Research Associates Environmental Studies Research Funds (Canada) [Sponsor]
Publication	Ottawa : ESRF, (1992). xix, 157, 313, 54 p. : maps Environmental Studies Research Funds report, no. 117
lib. code	ASTIS 40788; SH 320 .S45 1992
Libraries	ACU; ARI
Summary	This study defines various types of fish overwintering habitats and associated fish assemblages in the **Mackenzie Delta-nearshore Beaufort Sea** region on the basis of existing scientific data and information on fish harvest and harvesting areas in the region. Harvesting information was analysed for the communities of Fort McPherson, **Arctic Red River**, **Aklavik**, **Inuvik** and **Tuktoyaktuk**. Eight general types of fish overwintering habitat were identified. Characteristics used to define habitat types included amount of free water, connections with adjacent waterbodies, temperature, salinity, dissolved oxygen and in a few cases conductivity and pH. … [different habitats and corresponding fish species are discussed]

Author(s) Sergeant, D.E. Brodie, P.F. F137
Title **Identity, abundance, and present status of populations of white whales, Delphinapterus leucas, in North America**
Affiliations
Publication *Journal of Fisheries Research Board of Canada*, v. 32, no. 7, (1975), p.1047-1054
lib. code ASTIS 38906
Libraries ACU
Summary White whales, Delphinapterus leucas, in the North American arctic number at least 30,000 animals. Largest herds identified are about 10,000 animals in western Hudson Bay, at least as many in Lancaster Sound, and at least 5000 summering in the **Beaufort Sea**. Hunting in the Canadian arctic has decreased in the last decade from 1000 or more to about 500 annually and is clearly well below sustainable yields except in one locality, Cumberland Sound, where the local population of white whales has never recovered from historic depletion. The species is most vulnerable when concentrated in river estuaries in summer, probably for reproduction. The species' range has shrunk in the St. Lawrence estuary, a change that can be associated with hydroelectric developments in the last decade. The effects of oil exploration, drilling, and island building in shallow water in the **Mackenzie Delta** are under study, and developments in oil and gas could have an influence on other populations in the Canadian arctic. Tourism related to this species is increasing, without undue disturbance to date.

Author(s) Sergeant, D.E. Hoek, W. F138
Title **Biology of bowhead, Balaena mysticetus, and white whale, Delphinapterus leucas, in the Beaufort Sea : interim report of Beaufort Sea Project Study A4, December 1974**
Affiliations Arctic Biological Station Beaufort Sea Project (Canada) [Sponsor]
Publication Interim report - Beaufort Sea Project, December (1974)
lib. code ASTIS 44213
Libraries ACU
Summary ... Bowhead, Balaena mysticetus and white whales, Delphinapterus leucas, migrate into the eastern **Beaufort Sea** from the west, arriving in May or June through leads in the pack ice. They depart westward again during September in open water. … Bowheads spend the summer in oceanic water around Banks Island and off the mainland coast in the neighborhood of Cape Parry and Cape Bathurst. Many white whales are found in the same waters, but in July they move to the warm estuarine water off the **Mackenzie River** where calving is believed to occur and where feeding intensity is low. There is a hunt for white whales in the **Mackenzie Delta** which for many years has taken an average of about 200 animals per year, but bowheads are not now taken from the Canadian coasts of the **Beaufort Sea**. The 1974 study funded by industry has added the following elements: (1) ERTS satellite pictures were studied from March to June inclusive in order to determine how whales enter the area and the relation of their distribution to varying amounts of pack ice. (2) An additional survey was made of white whale numbers in the **Mackenzie Delta** in July, and of out-migration in September. (3) Systematic surveys were made of whales in the offshore ice for the first time. Made by other agencies, for other purposes (counting seals or seabirds), these gave good information on distribution of both species of Cetecea but probably incomplete information on their numbers.

Author(s) Shotton, R. F139
Title **Fish survey 1972 base data report**
Affiliations Environment Protection Board Canadian Arctic Gas Study Limited [sponsor]

Publication (1973)
lib. code SH 224 .N75 S564 1973
Libraries ARI
Summary Fisheries resources, fishes. **Mackenzie Valley pipeline**.

Author(s) Sieben, B.G. Spittlehouse, D.L. Benton, R.A. McLean, J.A. F140
Title **A first approximation of the effect of climate warming on the white pine weevil hazard in the Mackenzie River drainage basin**
Affiliations
Publication In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994) p. 316-328
lib. code ASTIS 36881
Libraries ACU
Summary Growing degree day accumulations above 7.2 C during summer (heat sums) can be used as an indicator of potential range of the white pine weevil, Pissodes strobi (Peck)… A technique based on published growing degree day normals and calculated heat sum lapse rates was used to map growing degree day accumulations above 7.2 C throughout the **Mackenzie Basin** for the present climate and a 2.2 C warming scenario. Accumulations were classified into hazard classes of high, medium and low to indicate the potential for weevil development. A 2.2 C warming across the basin resulted in the area of the high hazard class increasing from 24 to 51% and the range of the weevil moving northward in latitude and upward in elevation.

Author(s) Sims, R.A. F141
Title **Reindeer at Mackenzie: A selected annotated bibliography**
Affiliations
Publication Indian and northern affairs Canada: Ottawa, ON (1983)
lib. code TD 195 .49 B43 1987; also: QL 737 U5 1983
Libraries ARI
Summary Reindeer – **Mackenzie** – environmental studies - maps

Author(s) F.F. Slaney & Company F142
Title **1972 environmental field program Taglu - Richards Island, Mackenzie Delta. Part 3 : Wildlife : interim report**
Affiliations Imperial Oil Limited [Sponsor]
Publication F.F. Slaney & Co., (1973)
lib. code ASTIS 40930
Libraries ACU
Summary ... Studies of bird populations were conducted in the Study Area from May 19 to September 18, 1972. These studies included ground and aerial surveys aimed at determining the characteristics of bird populations occurring within the Study Area subdivisions, as well as the frequency of bird occurrence within each of the mapped vegetation units. Surveys were carried out during winter and during pre-nesting, nesting and post-nesting periods of the summer. ... The mammal study was designed to determine the presence and distribution of mammalian species within the Study Area. The distribution portion of the study was to determine the interrelationships between various mammalian species and vegetation present within the Study Area. ... Ground surveys involved observation, trapping and transects. Aerial surveys were utilized for observation of animals and dens over

extensive areas.

Author(s)	F.F. Slaney & Company Imperial Oil Limited	F143
Title	**1972-1974 environmental program Mackenzie Delta, N.W.T. : volume 4 : birds**	
Affiliations	F.F. Slaney & Company Imperial Oil Limited [Sponsor] Gulf Oil Canada [Sponsor] Shell Canada Limited [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]	
Publication	Vancouver, B.C. : F.F. Slaney & Co., (1974). Part of a seven volume set.	
lib. code	ASTIS 30276; TD 195 .G3 F47 1974	
Libraries	ACU, ARI	
Summary	The primary purpose of the bird program was to locate and evaluate habitats critical to important species of birds within the region affected by the development. The extent of critical habitats in nearby portions of the delta was also to be determined and preliminary observations on the relationship of key bird species to their habitat obtained. The significance of wildlife species to local, resident and non-resident people was to be determined. Emphasis during all phases of study was to be placed on rare or endangered species and those with high commercial, recreational or subsistence values. Activities included aerial and ground survey of staging waterfowl in the spring, aerial survey of breeding waterfowl and other birds, post-nesting survey of waterfowl, fall aerial survey of staging waterfowl, small bird breeding census, bird utilization interviews, and opportunistic observations on bird-noise-aircraft interactions.	

Author(s)	F.F. Slaney & Company	F144
Title	**1972-1974 environmental program, Mackenzie Delta, N.W.T. : volume 5 : mammals**	
Affiliations	Imperial Oil Limited [Sponsor] Gulf Oil Canada [Sponsor] Shell Canada Limited [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]	
Publication	F.F. Slaney & Co., (1974). Part of a seven volume set.	
lib. code	ASTIS 30277; TD 195 .G3 F47 1974	
Libraries	ACU; ARI	
Summary	... Field work was aimed at determining indices of mammal abundance and the identification and description of habitats important to mammals near areas of possible natural gas development on **Richards Island**, adjacent deltaic islands, offshore islands and the Parsons Lake area. Emphasis was placed on species of high commercial, recreational, or subsistence value and on rare and endangered species.	

Author(s)	Solberg, J.	F145
Title	**Western Canada cooperative waterfowl banding program - Mills Lake station**	
Affiliations	United States. Fish and Wildlife Service [Affiliation and Sponsor] Canadian Wildlife Service [Sponsor]	
Publication	(1998)	
lib. code	ASTIS 44690	
Libraries		
Summary	Preseason banding of 2,000 Mallards, 1,500 northern Pintails and 1,000 of all other waterfowl species at each of the 18 banding stations in Canada [Mills Lake Marsh on the **Mackenzie River** (18km west of Ft. Providence)].	

Author(s)	Sparling, P.D. Sparling, J.Y.	F146
Title	**Discussion paper: the domestic fishery in the Mackenzie River Delta**	
Affiliations		
Publication	P. Sparling Consulting, : Winnipeg, Man.: (1988)	
lib. code	SH 224 .N6 S62 1988	
Libraries	ARI	
Summary	Fisheries, **Mackenzie River Delta** region, NT	

Author(s)	Stager, J.K.	F147
Title	**Reindeer herding as private enterprise in Canada**	
Affiliations		
Publication	*Polar record*, v. 22, no.137, (May 1984), p. 127-136	
Lib. code	ASTIS 14454	
Libraries	ACU	
Summary	After unsuccessful introductions of reindeer into Canada during the early decades of this century, a herd brought from Alaska in 1935 was maintained successfully under government management (latterly under the Canadian Wildlife Service) for almost 40 years in the **Mackenzie Delta region**, Northwest Territories. Sold in 1974 into private ownership, the herd has since increased substantially in size; new management techniques have been developed to herd, handle and slaughter the animals.	

Author(s)	Stein, J.N.	F148
Title	**An evaluation of the fish resources of the Mackenzie River Valley as related to pipeline development: Volume I 1973**	
Affiliations		
Publication	Environmental – Social committee, Northern Pipelines Task Force on Northern Oil: Ottawa, ON (1973). Report # 73 - 1	
lib. code	SH 174 .E83 1973	
Libraries	ARI	
Summary	Fishes, fishery resources, fishery conservation. Sediments. Effect of pollution. NT	

Author(s)	Stephenson, S. Low, G. Reist, J.	F149
Title	**Documenting changes in abundance of various species in areas of the Mackenzie River Basin**	
Affiliations	Canada. Dept. of Fisheries and Oceans [Affiliation] Low, G. [Investigator] Reist, J. [Investigator]	
Publication	(2000)	
lib. code	ASTIS 48635	
Libraries		
Summary	Objectives: To document changes in abundance of various species in areas of the **Mackenzie River Basin** and to check for positive identification.	

Author(s)	Stevens, W.E.	F150
Title	**The Northwestern muskrats of the Mackenzie Delta, Northwest Territories, 1974-48**	
Affiliations		
Publication	Canadian Wildlife Service: Otatwa, ON (1953)	
lib. code	SK 470 .S84 1953	
Libraries	ARI	
Summary	Muskrats. NT	

Author(s)	Stewart, D.B. Low, G. Taptuna, W.E.F. Day, A.C.	F151
Title	**Biological data from experimental fisheries at special harvesting areas in the Sahtu Dene and Metis settlement area, NWT : volume 1 : the upper Ramparts and Little Chicago areas of the Mackenzie River**	
Affiliations	Arctic Biological Consultants Canada. Dept. of Fisheries and Oceans [Sponsor]	
Publication	Canadian data report of fisheries and aquatic sciences, no. 1020, (1997)	
lib. code	ASTIS 44588	
Libraries	ACU	
Summary	Twenty-eight Special Harvesting Areas (SHA) for fish were established under the Sahtu Dene and Metis Comprehensive Land Claim Agreement. These areas are the sites of important traditional fisheries by participants in the agreement. In 1995, to facilitate the management of these fisheries, the Department of Fisheries and Oceans began a five-year study to collect biological data from fish populations harvested in the 15 SHA's outside Great Bear Lake. During July and September 1995, eleven species of fishes were collected from the **Mackenzie River** at the Little Chicago (SHA 1) and the Upper Ramparts (SHA 2). This report presents data on the number and weight of fish caught per unit of sampling effort; on the age, length, weight, sex, and maturity of the fish; and on the concentrations of mercury, arsenic and selenium found in the muscle, kidney, and liver tissues of broad whitefish (Coregonus nasus) and inconnu (Stenodus leucichthys).	

Author(s)	Stewart, R.E. Leighton, H.G. Marsh, P. Moore, G.W.K. Ritchie, H. Rouse, W.R. Soulis, E.D. Strong, G.S. Crawford, R.W. Kochtubajda, B.	F152
Title	**The Mackenzie GEWEX Study: The Water and energy cycles of a major North American River Basin**	
Affiliations		
Publication	*Bulletin of the American Meteorological Society* Vol. 79, 2665 – 2683 (1998)	
lib. code		
Libraries		
Summary	Not Available	

Author(s)	Stewart, D.B. Macdonald, G.	F153
Title	**A Survey of the Fisheries Resources of the Central Northwest Territories**	
Affiliations	Fisheries and Environment Canada, western Region, Winnipeg, Manitoba	
Publication	(December 1978)	
lib. code		
Libraries		
Summary	Not Available	

Author(s) Strange, N.E. F154

Title **Migration, reproduction and feeding of lake whitefish, broad whitefish and arctic cisco in the Mackenzie River-Beaufort Sea region : a review of the literature**

Affiliations North/South Consultants Inc. Canada. Dept. of Fisheries and Oceans [Sponsor]

Publication NOGAP project no. B.03 : Critical western arctic freshwater habitats. 47 p. (1985)

lib. code ASTIS 20879

Libraries MWFW OORD ACU

Summary Lake whitefish, broad whitefish and arctic cisco from the **Mackenzie** are discussed with respect to migration, reproduction and feeding. All three species are anadromous, showing definite migrations to spawning grounds, as well as to feeding, overwintering and nursery areas (juveniles). All are fall spawners and move from overwintering areas to spawning grounds upstream in the **Mackenzie River** and its tributaries. ... The importance of three habitats is discussed: (1) the Delta region ... (2) freshwater systems (lakes and streams) ... (3) coastal areas, especially bays and lagoons, along **Richards Island**, **Tuktoyaktuk Peninsula** and the Yukon coast.

Author(s) Tallman, R.F. F155

Title **Temporal partitioning of a migratory corridor to spawning sites by arctic coregonid fishes : comparison of traditional and scientific knowledge**

Affiliations

Publication In: Circumpolar information exchange : Shrinking the circumpolar community, Arctic Division, American Association for the Advancement of Science, 44th Arctic Science Conference, Program and proceedings, September 15-18, 1993, Whitehorse, Yukon, p. 69. Cover title: Program & abstracts : Circumpolar information exchange. Abstract only. (1993)

lib. code ASTIS 32902

Libraries ACU

Summary To test the hypothesis formulated from traditional knowledge, that circumpolar Arctic coregonid species such as broad whitefish, Arctic cisco and inconnu, would migrate to spawn in a species specific seasonal pattern, we used gillnets to monitor spawning run timing at Arctic Red River, a tributary of the **Mackenzie River**, NWT. Catch per unit effort, length and weight were recorded for all species. Sex ratio, gonad weight and sexual maturity stage were recorded additionally for the coregonid species. The pattern of migration in terms of numbers and state of sexual maturity was distinct by species. Mature inconnu migrated in low numbers upstream into Arctic Red River during the months of July, August and September. Mature lake whitefish migrated upstream in large numbers in the week following the onset of ice cover on September 20. The following week, spent inconnu left the system. Mature ciscoes, least and Arctic, migrated upstream during the next two weeks while spent lake whitefish migrated downstream. Mature broad whitefish migrated near the end of October and left the system at the end of November. The results correspond closely to the pattern described by local fishermen, whom we interviewed. The correlation between traditional knowledge and the observed species specific patterns suggests that temporal partitioning is a consistent trait of the coregonids. The result shows that, in spite of climatic extremes, Arctic aquatic systems have organization and predictability at a level usually associated with temperate systems.

Author(s)	Tallman, R.	F156
Title	**Broad whitefish population study and traditional knowledge**	
Affiliations	Freshwater Institute (Canada) [Affiliation]	
Publication	(1993)	
lib. code	ASTIS 40238	
Libraries		
Summary	The researchers will work with other scientists to examine the broad whitefish of the **Mackenzie River** and associated tributaries of the Arctic Red and Peel Rivers. Features such as population size, migration, growth, age of sexual maturity and mortality will be examined. A study of the traditional knowledge of broad whitefish and fishing in the **Mackenzie River** will also be developed.	

Author(s)	Tallman, R. Howland, K. Little, A. MacDonald, F. Chiperzak, D. Niditchie, G.	F157
Title	**Collect eggs and sperm, and to study genetics, growth, population, demographics and life history of inconnu**	
Affiliations	Canada. Dept. of Fisheries and Oceans. Central and Arctic Region [Affiliation]	
Publication	(1996)	
lib. code	ASTIS 46492	
Libraries		
Summary	Purpose of the study: i. Collect eggs and sperm and establish 25 genetic families from each area and compare developmental variation between the families of the two stocks. ii. Compare growth of young of the year inconnu from two discreet stocks. iii. Determine the demographic characteristics and life history of inconnu within the Slave River. iv. Determine a suite of traits that will assist in differentiating fish stocks that enter the **Mackenzie River** inconnu fishery. v. Determine inter-population variability in population traits such as growth, fecundity, age at maturity and mortality. Waters: Valid only for waters in the following area: Arctic Red River and adjacent lakes (67 26 N, 133 45 W), Peel River and adjacent lakes (67 42 N, 134 32 W), Slave River near Fort Smith (60 00 N, 111 53). Species: Objectives i, ii: Inconnu, Stenodus leucichthys; Objective iii: Inconnu, Stenodus leucichthys; Objectives iv, v: Inconnu, Stenodus leucichthys.	

Author(s)	Tallman, R. Reist, J.D. [Editors]	F158
Title	**The proceedings of broad whitefish workshop: the biology, traditional knowledge, and scientific management of broad whitefish (coregonus nasus (Palla)) in the lower Mackenzie River**	
Affiliations	Fisheries Joint Management Committee [Affiliation] Dept. of Fisheries and Oceans. [Affiliation]	
Publication	National Research Council, Canada: Winnipeg (1997)	
lib. code	QL 638 .Y8 T35 1997	
Libraries	ARI	
Summary	Whitefish- **Lower Mackenzie River Basin**.. Whitefish management. Whitefish traditional knowledge. Stock structure. Cregonids. Mackenzie River, NT	

Author(s) Toda, M.J. Tanno, K. F159
Title **The convergence of habitat structure in tundra collembolan communities (Insecta : order Collembola)**
Affiliations
Publication *Canadian entomologist*, v.115, no. 9, (Sept. 1983), p.1129-1145
lib. code ASTIS 12049
Libraries ACU
Summary Habitat structure of two collembolan communities, one at Barrow, Alaska, U.S.A., the other at **Tuktoyaktuk** in the **Mackenzie Delta**, Canada, has been analyzed in relation to microtopographies characteristic of tundra regions. Multivariate statistical techniques, cluster analyses (UPGMA), and principal component analyses (PCA) reveal various ecological changes in component species. In spite of such local variations in component species, the two communities show similar patterns of habitat structure that are organized principally along a gradient of environmental moisture.

Author(s) Treble, M. F160
Title **Comparison of scale and fin-ray age determinations for broad whitefish (Coregonus nasus) from the Mackenzie River, NWT [Un comparaison des déterminations de l'âge basées sur les écailles et sur les rayons des nageoires pour le corégone (Coregonus nasus) dans la rivière Mackenzie, T.N.-O.]**
Affiliations
Publication Proceedings of the Third National Student Conference on Northern Studies, Ottawa, October 23-24, 1991 / Edited by Walter O. Kupsch and James F. Basinger. Musk-ox, no. 39, special publication, (1992), p. 231 (Abstract only) [English and French]
lib. code ASTIS 34195
Libraries ACU
Summary Prior to undertaking a study of the population dynamics of the **Mackenzie River** broad whitefish, a reliable method of age determination had to be established. Underestimation of true ages has been documented when using scales to age older individuals of other coregonid species. Two locations in the lower **Mackenzie River** area were sampled and scales as well as pelvic fin rays were collected from 98 fish. Analysis of age determinations from these structures indicates that scales underestimated ages of broad whitefish. The older the fish the greater the underestimation of scale ages. At approximately age 13 scales were underestimating age by between one to four years. Precision of the age determinations was tested using Beamish and Fourniers' index of average per cent error (APE). Paired t-tests showed a significant difference in ages between structures. For the entire sample, mean scale and fin-ray ages differed by over two years (8.5 and 10.7 respectively, $p<0.001$). APE also differed significantly: .056 for scales and .031 for fin-rays at $p<0.001$, using a paired t-test. Thus it is concluded that pelvic fin-rays are the preferred structure for age determinations of broad whitefish from the **Mackenzie River**, NWT.

Author(s) Treble, M.A. F161
Title **Broad whitefish (Coregonus nasus) of the lower Mackenzie River: biological characteristics, commercial and substistence harvest trends, and local management issues**
Affiliations
Publication Thesis (Master's) Natural resources Institute, University of Manitoba: Winnipeg, MN (1996)
lib. code QL 638 .S2 T74 1996 THE

Libraries ARI (thesis cabinet)
Summary Coregonus, fish populations, whitefishes. **Mackenzie river** NT

Author(s) Treble, M.A. Tallman, R.F. F162
Title **An assessment of the exploratory fishery and investigation of the population structure of broad whitefish (Coregonus nasus) from the Mackenzie River Delta, 1989-1993**
Affiliations
Publication Canadian technical report of fisheries and aquatic sciences, no.2180, (1997)
lib. code ASTIS 42888
Libraries ACU
Summary Biological data from broad whitefish (fork length, age, gonadosomatic index and instantaneous mortality) were analysed to assess the impact of an exploratory fishery carried out in the **Mackenzie River Delta** between 1989 and 1993. … The data suggest that the broad whitefish population might be separated, with larger mature spawners gathering in the main channels prior to spawning and smaller, immature or resting fish staying in side channels away from strong currents. From this analysis we conclude that the size and structure of the broad whitefish population(s) found in this area are stable at the current level of total harvest (commercial and subsistence combined).

Author(s) Vanderpost, J.M. F163
Title **Preliminary studies on methanol oxidizing bacteria from the Mackenzie River, N.W.T.**
Affiliations
Publication Environmental Protection Service, Northwest Region, (1978)
lib. code ASTIS 2583
Libraries ACU
Summary This study was part of a **Mackenzie Valley** pipeline environmental assessment as a result of proposals to use methanol as an antifreeze in pipeline hydraulic testing and to release the waste methanol into the local waters after testing was completed. Methanol utilizing microorganisms were isolated from **Mackenzie River** water and their growth rates, respiration rates, and methanol utilizing rates were investigated. Respiration was found to occur at temperatures as low as 1.1 C. It was concluded that oxygen depletion problems would probably not occur as a result of releasing methanol to the **Mackenzie River**, but that acute toxicity to various life forms might pose a more serious threat to the river's ecology.

Author(s) Voelzer, J.F. F164
Title **To determine size and species composition of duck populations, Mackenzie River drainage**
Affiliations United States. Fish and Wildlife Service [Affiliation]
Publication (1984)
lib. code ASTIS 19927
Libraries
Summary Not Available

Author(s) Voelzer, J.F. F165
Title **To determine size and species composition of duck populations, Mackenzie River drainage**
Affiliations United States. Fish and Wildlife Service [Affiliation]
Publication (1984)

lib. code ASTIS 19927
Libraries
Summary Not Available

Author(s) Voelzer, J. F166
Title **Aerial survey of breeding populations of migratory birds to determine size, species composition and distribution, Mackenzie River drainage**
Affiliations United States. Fish and Wildlife Service [Affiliation]
Publication (1985)
lib. code ASTIS 19800
Libraries
Summary Not Available

Author(s) Voelzer, J. F167
Title **Conduct aerial surveys for waterfowl in order to determine size and distribution of these breeding populations, Mackenzie River drainage**
Affiliations United States. Fish and Wildlife Service [Affiliation]
Publication (1986)
lib. code ASTIS 20109
Libraries
Summary Not Available

Author(s) Voelzer, J. F168
Title **Joint U.S./Canada May waterfowl breeding ground surveys**
Affiliations United States. Fish and Wildlife Service [Affiliation]
Publication (1989)
lib. code ASTIS 30455
Libraries
Summary Mr. Voelzer determined the size & species composition of breeding waterfowl on the **Mackenzie River**. He did this through an aerial survey and concentrated his studies on ducks.

Author(s) Voelzer, J. F169
Title **Waterfowl breeding ground surveys**
Affiliations United States. Fish and Wildlife Service. Waterfowl Population Survey [Affiliation]
Publication (1990)
lib. code ASTIS 37275
Libraries
Summary The researcher will determine size and species composition of breeding waterfowl in **Mackenzie River**.

Author(s) Voelzer, J. F170
Title **U.S. and Canada May waterfowl population surveys**
Affiliations United States. Fish and Wildlife Service. Waterfowl Population Survey [Affiliation]
Publication (1991)
lib. code ASTIS 37373
Libraries
Summary The researcher will determine size and species composition of breeding waterfowl in **Mackenzie**

River.

Author(s) Voelzer, J.F. F171
Title **Cooperative United States/Canada waterfowl population survey**
Affiliations United States. Fish and Wildlife Service [Affiliation]
Publication (1993)
lib. code ASTIS 36491
Libraries
Summary The researcher will determine the size and species composition of the breeding population of ducks and other waterfowl in the **Mackenzie River** drainage basin.

Author(s) Voelzer, J. F172
Title **Cooperative US/Canadian waterfowl population surveys**
Affiliations United States. Fish and Wildlife Service [Affiliation]
Publication (1994)
lib. code ASTIS 38600
Libraries
Summary The size and species composition of the breeding population of ducks and other waterfowl was determined in the **Mackenzie River** Drainage.

Author(s) Voelzer, J. F173
Title **Cooperative US/Canadian waterfowl population surveys**
Affiliations United States. Fish and Wildlife Service [Affiliation and Sponsor]
Publication (1995)
lib. code ASTIS 39105
Libraries
Summary Determine the size and species composition of the breeding population of ducks and other waterfowl in the **Mackenzie River Drainage** by aerial survey.

Author(s) Voelzer, J. F174
Title **Cooperative U.S./Canada waterfowl population surveys**
Affiliations United States. Fish and Wildlife Service [Affiliation and Sponsor]
Publication (1996)
lib. code ASTIS 40339
Libraries
Summary To determine by aerial survey, the size and species composition of the breeding population of ducks and other waterfowl in the **Mackenzie River drainage**.

Author(s) Voelzer, J.F. F175
Title **Cooperative US/Canada waterfowl population surveys**
Affiliations United States. Fish and Wildlife Service [Affiliation and Sponsor]
Publication (1997)
lib. code ASTIS 42223
Libraries
Summary Determine and monitor the size and species composition of breeding population of ducks and other waterfowl in the **Mackenzie River drainage** by conducting aerial surveys.

F176

Author(s) Voelzer, J.F.
Title **Operational waterfowl banding station**
Affiliations United States. Office of Migratory Bird Management [Affiliation] Cooperative Canada/U.S. Waterfowl Banding Program [Sponsor]
Publication (1998)
lib. code ASTIS 44673
Libraries
Summary To obtain representative sample of ducks from Yellowknife [and Rae] banding reference area. ... our main interest is in sampling mallard and pintail populations. Historically, banding samples have been low in the areas east of the sedimentary portions of the **Mackenzie Valley** so there is a great deal of interest in recoveries of all species banded in the area. To allay fears of the introduction of noxious weeds, we use only cleaned grains as bait in our traps in all northern locations.

F177

Author(s) Voelzer, J.F.
Title **Cooperative U.S./Canada waterfowl population surveys**
Affiliations United States. Office of Migratory Bird Management [Affiliation] United States. Fish and Wildlife Service [Sponsor]
Publication (1998)
lib. code ASTIS 44638
Libraries
Summary Ongoing study to determine and monitor size and species composition of the breeding population of ducks and other waterfowl in the **Mackenzie River drainage** by conducting aerial surveys.

F178

Author(s) Voelzer, J.F.
Title **Cooperative U.S./Canada waterfowl population surveys**
Affiliations United States. Fish and Wildlife Service [Affiliation and Sponsor]
Publication (1999)
lib. code ASTIS 45359
Libraries
Summary Aerial survey to determine the size and composition of the breeding population of ducks and other waterfowl in the **Mackenzie River drainage**.

F179

Author(s) Voelzer, J.F.
Title **Determine and monitor the size and species composition of breeding population of ducks and other waterfowl in the Mackenzie River drainage**
Affiliations United States. Fish and Wildlife Service [Affiliation and Sponsor]
Publication (2002)
lib. code ASTIS 51253
Libraries
Summary The annual survey to determine the size and species composition of the breeding population of ducks and other waterfowl in the **Mackenzie River drainage** from Fort Smith to **Tuktoyaktuk**.

Author(s) Walton-Rankin, L. F180
Title **An inventory of moose habitat of the Mackenzie Valley and northern Yukon**
Affiliations Canadian Wildlife Service
Publication Mackenzie Valley Pipeline investigations. 39 p. (1977)
lib. code ASTIS 294; QL 737 .U55 W35 1977
Libraries ACU, ARI
Summary Moose movements were studied in a broad corridor along the **Mackenzie River Valley** from the British Columbia border to the Alaska border. All sightings of moose and moose signs were recorded and revealed that the islands of the **Mackenzie River** were important moose winter range. Browse surveys were also carried out and willow was discovered to be the most important species, providing over half (52.1%) of the total diet.

Author(s) Wazura, K.W. Strong, J.T. Glenn, C.L. Bush, A.O. F181
Title **Helminths of the beluga whale (Delphinapterus leucas) from the Mackenzie River Delta, Northwest Territories**
Affiliations
Publication *Journal of Wildlife Distribution*. v. 22 no. 3 (Jul. 1986), 440-2
lib. code
Libraries
Summary Not Available

Author(s) Weaver, P. F182
Title **Beluga reproduction in the Mackenzie Delta**
Affiliations
Publication Presentation at the Northern Studies Symposium, Oct. 31, (1983).
lib. code ASTIS 27144
Libraries
Summary … The following information is obtained from each hunter-killed beluga: standard morphological measurements; sex; teeth, mandibles and eyes; reproductive organs (male and female); tissues samples for heavy metal analysis. The following information is collected where possible: stomach content, blood samples, milk from lactating females, and observable parasites. All information is collected from available fetuses and calves. With the addition of corollary information (weather, time and location of capture, water condition and turbidity, observable prey species), a reasonably complete data set is acquired.

Author(s) Westworth, D.A. F183
Title **Impact of seismic activity on muskrat populations on the Mackenzie Delta**
Affiliations
Publication Indian and Northern Affairs: Ottawa, ON (1977)
lib. code TD 195 .P4 W47 1977
Libraries ARI (Bay A)
Summary Seismic prospecting, seismic surveys, prospecting. Muskrats. **Mackenzie Delta**, NT

Author(s)	Westworth, D.A.	F184
Title	**Effects of seismic activity on the behaviour and activity of muskrats on the Mackenzie Delta**	
Affiliations		
Publication	Northern Affairs Program, Indian and Northern Affairs: Ottawa, ON (1980)	
lib. code	TD 195 .P4 W47 1977	
Libraries	ARI (Bay A)	
Summary	Seismic activity, effects on wildlife. Muskrats. **Mackenzie Delta**, NT	

Natural Value Theme: Hydrology

H1

Author(s)	Anderson, J.C.
Title	**Hydrologic studies in the Mackenzie Delta region, N.W.T., 1978**
Affiliations	Canada. Northern Roads Environmental Working Group [Sponsor]
Publication	Ottawa : Glaciology Division, Environment Canada, (1979)
lib. code	ASTIS 8220
Libraries	ACU
Summary	Hydrologic investigations continued during the 1978 open water season at eight watersheds in the taiga and tundra zones of the eastern **Mackenzie Delta region**, N.W.T. Data were gathered on snowpack water equivalent, river channel and culvert icings, precipitation, air temperature, river discharge, suspended sediment and water temperature. In the taiga zone, late winter snowpack water equivalent and culvert ice accumulations were of intermediate magnitude in comparison with past years' observations. Snowmelt ... peak discharge was only moderate when compared with that of former years and well below 50-year design curve values. Two noteworthy extremes were the lateness of snowmelt in the taiga zone, and the very low discharge of most rivers by mid- or late summer as a result of a month-long drought in July. A reconnaissance of stream crossings along the entire route of the proposed **Inuvik-Tuktoyaktuk highway** was done during the snowmelt flood period ...

H2

Author(s)	Anderson, J.C.
Title	**Hydrologic studies in the Mackenzie Delta region, N.W.T., 1979**
Affiliations	National Hydrology Research Institute (Canada). Snow and Ice Division Canada. Northern Roads Environmental Working Group [Sponsor]
Publication	Ottawa : National Hydrology Research Institute, (1980)
lib. code	ASTIS 8218; TD 227 .N62 A64
Libraries	ACU; ARI
Summary	Data were gathered on snowpack water equivalent, river channel and culvert icings, precipitation, air temperature, river discharge, suspended sediment and stream water temperature. ... In both taiga and tundra, late winter snowpack water equivalents were low. ... Relatively low suspended sediment concentrations were measured during the spring flood. A reconnaissance of stream crossings along the Mackenzie and Dempster Highways from **Inuvik** to the N.W.T.-Yukon border in early May revealed very few problem areas from a hydrologic viewpoint.

H3

Author(s)	Anema, C. et al.
Title	**Water chemistry of some lakes and channels in the Mackenzie Delta and on Tuktuyaktuk Peninsula, NWT, 1986**
Affiliations	
Publication	Dept. of Fisheries and Oceans: Winnipeg, MB 1990
lib. code	GB 1630 .N4 W37 1990
Libraries	ARI
Summary	Limnology, NT.

Author(s)	Bigras, S.C.. H4
Title	**Hydrochemical aspects of lakes and channels in the Mackenzie Delta, N.W.T.**
Affiliations	National Hydrology Research Institute: Saskatoon, SK
Publication	(1988)
lib. code	GB 992 .N8 B54 1988
Libraries	ARI
Summary	Water quality – Environmental aspects. Water pollution. **Mackenzie River Delta**, NT

Author(s)	T. Blench and Associates Ltd. H5
Title	**April, 1975 flow distribution and hydraulic parameters : Mackenzie River - lower Delta**
Affiliations	Northern Engineering Services Company [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]
Publication	Edmonton, Alta. : T. Blench Assoc. Ltd., (1975).
lib. code	ASTIS 31610
Libraries	ACU
Summary	... The specific objectives of this study are: (1) To measure the late-winter discharge of main, lower-delta channels that the proposed CAGSL pipeline may traverse. (2) To measure and compute the hydraulic parameters of each channel at the flow measurement stations. (3) To retrieve river-bed material samples and analyze grain sizes. (4) To investigate the velocity distribution in the deep holes at East Twin Channel and North Reindeer channel. (5) To measure ice thicknesses and observe the character of the Lower Delta ice cover. (6) To cross-section Shallow Bay at the proposed crossing location to determine the geometry and the portion that is susceptible to ice freezing fast to the bed.

Author(s)	Bliss, L.C. Wein, R.W. H6
Title	**Botanical studies of natural and man modified habitats in the eastern Mackenzie Delta region and the Arctic Islands**
Affiliations	University of Alberta. Dept. of Botany Arctic Land Use Research Program (Canada) [Sponsor]
Publication	(1972?)
lib. code	ASTIS 40675
Libraries	ACU
Summary	…Natural recovery of plants in lowland sections of winter roads is rapid but in upland areas natural recovery the following summer is minimal. In these areas and where the peat surface has been removed, reseeding as snow melts in spring is desirable. Tests with 7 fertilizers and fertilizer combinations showed that a combination of 100 lbs/acre/100 kg/ha of nitrogen and phosphorus provided good plant growth on mineral and organic soils. Fertilizers also enhanced seed production. Of the 16 species tested in 1970, only 7 were vigorous after the first winter. Of these timothy, meadow foxtail, and slender wheatgrass had the best height growth and red fescue Kentucky bluegrass and Canada bluegrass provided the best cover the second year. These native grasses rapidly establish themselves after disturbance and thus are being used in combination with introduced species in further testing. In the High Arctic little increase (0 to 20%) in the active layer results from surface disturbance in most sparsely vegetated areas. In lowland sites with 199% plant cover, the active layer increases 25 to 50% but subsidence was seldom encountered. Although reinvasion of disturbed sites is slow, reseeding does not seem appropriate because of scarcity of normal seed production and slow rates of seedling development. As in the Low Arctic, the addition of nitrogen and phosphorus fertilizer stimulates plant growth…

Author(s)	Boyes, D.	H7
Title	**Modelling flooding hydrology on the Mackenzie Delta**	
Affiliations	University of Western Ontario. Dept. of Geography [Affiliation]	
Publication	(1990)	
lib. code	ASTIS 38131	
Libraries		
Summary	The researcher and team propose to provide a better understanding of the present fluvial regime in the area and a method of assessing the effects of uncontrollable influences such as global warming and controllable factors such as hydro-electric and pipeline development.	

Author(s)	Boyes, D. M.	H8
Title	**Morphometry, spatial analysis and development of lakes on the Mackenzie Delta plain**	
Affiliations	University of Western Ontario. Dept. of Geography [Affiliation]	
Publication	(1999) (Thesis – PH.D)	
lib. code	GB 1207 .M2 B69 1999 THE	
Libraries	ARI	
Summary	Not available	

Author(s)	Boyes, D. M.	H8
Title	**Morphometry, spatial analysis and development of lakes on the Mackenzie Delta plain**	
Affiliations	University of Western Ontario. Dept. of Geography [Affiliation]	
Publication	(1999) (Thesis – PH.D)	
lib. code	GB 1207 .M2 B69 1999 THE	
Libraries	ARI	
Summary	Not available	

Author(s)	Brooks, G.	H9
Title	**Contemporary channel characteristics and behaviour along the lower reaches of major tributaries of the Mackenzie River (from Norman Wells to the Mackenzie Delta)**	
Affiliations	Geological Survey of Canada. Terrain Sciences Division [Affiliation]	
Publication	(1993)	
lib. code	ASTIS 35837	
Libraries		
Summary	The research will provide basic information on the characteristics of the rivers and valleys that are major tributaries emptying into the **Mackenzie River**. The tributaries to be studied include the Carcajou, Mountain, Hume, Ramparts, Hare Indian, Ontaratue, Arctic Red and Peel Rivers. Little is known about the lower 5-7 km portion of these rivers. The information collected will be obtained from both aerial photographs as well as ground surveying.	

Author(s)	Brown, R.D. Braaten, R.O.	H10
Title	**Spatial and temporal variability of Canadian monthly snow depths, 1946-1995**	
Affiliations		
Publication	*Atmosphere-ocean*, v. 36, no. 1, (1998), p. 37-54	
lib. code	ASTIS 48867	
Libraries	ACU	
Summary	This paper describes the database, the methods used both for quality control and to reconstruct missing data, and presents an analysis of the spatial and temporal characteristics of the data over the 1946-1995 period. Principal component analysis of monthly snow depths revealed that snow depths varied coherently over relatively large regions of Canada, with dominant centres of action located over the West Coast, Prairie, Yukon-**Mackenzie**, southern Ontario, northern Québec and Maritime regions. In many cases, nodes of coherent snow depth variations were associated with corresponding nodes of coherent snow cover duration fluctuations, with the two time series exhibiting significant positive correlations. Winter and early spring snow depths were observed to have decreased significantly over much of Canada in the 1946-1995 period, with the greatest decreases occurring in February and March. These depth decreases have been accompanied by significant decreases in spring and summer snow cover duration over most of western Canada and the Arctic. The snow depth changes were characterized by a rather abrupt transition to lower snow depths in the mid-1970s that coincided with a well-documented shift in atmospheric circulation in the Pacific-North America sector of the Northern Hemisphere.	

Author(s)	Brunskill, G.J.	H11
Title	**The chemistry, mineralogy, and rates of transport of sediments in the Mackenzie and Porcupine River watersheds, N.W.T. and Yukon, 1971-73.**	
Affiliations		
Publication	Environment Canada, Fisheries and Marine Services: Winnipeg, MB (1975)	
lib. code	SH 37 .T255 C54 1975	
Libraries		
Summary	Sediment transport in watersheds.	

Author(s)	Bullas, J.	H12
Title	**Freeze up and break up in the Arctic: A climate change indicator?**	
Affiliations		
Publication	Environment Canada, Yellowknife (2000)	
lib. code		
Libraries		
Summary	Not Available	

Author(s) Burford, J.E. Stewart, R.E. H13
Title **The sublimation of falling snow over the Mackenzie River Basin**
Affiliations
Publication *Atmospheric research*, v. 49, no. 4, (Nov. 1998), p. 289-313
lib. code ASTIS 45104
Libraries
Summary The sublimation of falling snow may be an important component of the atmospheric water budget of the **Mackenzie River Basin** and many parts of the Arctic. To investigate this issue, a simple sublimation model is used along with surface precipitation observations and sonde data obtained during the autumn 1994 **Beaufort** and Arctic **Storms** Experiment (BASE). Model results are then compared with actual precipitation measurements at **Inuvik** and **Tuktoyaktuk**, sites in Northern Canada, to approximate mass loss due to sublimation. The sublimation results are found to vary in concert with cloud base height, precipitation intensity aloft and the nature of the precipitation. Atmospheric conditions are furthermore examined over a wide range of the Arctic, especially the **Mackenzie River Basin**, to assess to what degree the results can be generalized. The presence of a relatively dry near-surface layer, a favourable environment for sublimation, is a key feature of most sites during the early autumn storm period. Estimates of sublimational mass losses are found over **Inuvik** and **Tuktoyaktuk** using sonde derived cloud base heights and temperature and humidity profiles. Sublimation losses for such sites are found to be of the order of 40-60%, which shows that sublimation is indeed a significant process over the **Mackenzie Basin** and needs to be well handled in climate models. However, increasing the vertical resolution of the sublimation model to that of climate scales can dramatically affect predicted sublimation amounts; how to properly account for sublimation then remains a difficult task.

Author(s) Burgess, M. Judge, A. Taylor, A. Allen, V. H14
Title **Ground temperature studies of permafrost growth at a drained lake site, Mackenzie Delta**
Affiliations
Publication The Roger J.E. Brown memorial volume : proceedings of the Fourth Canadian Permafrost Conference, Calgary, Alberta, March 2-6, 1981 / Edited by H.M. French. NRCC - National Research Council of Canada, no. 20124, (1982), p. 3-11
lib. code ASTIS 12150
Libraries ACU
Summary **Illisarvik lake** on **Richards Island**, **Mackenzie Delta**, Canada, was artificially drained in order to investigate the growth of permafrost. Twenty-four boreholes were hydraulically drilled to depths ranging from 15 to 92 m below lake level and were instrumented with temperature cables. Monitoring of ground temperatures beneath the lake and surrounding shore-lines prior to drainage delineated a bow-shaped talik extending up to 32 m below lake bottom. …Two years of post-drainage temperature monitoring revealed (iv) that the former talik had completely frozen at nearshore sites (10 m thick or less), whereas, (v) only 5 to 6 m of new permafrost had formed at central sites, and (vi) in the unfrozen sections temperatures were close to 0 degrees C. A 2-dimensional finite element computer simulation of the formation and growth of Illisarvik suggests a minimum lake age of 900 to 1000 years.

Author(s)	Burn, C.	H15
Title	**Investigation of the frost heave regime in subaqueous near shore environments, Mackenzie Delta, Beaufort Sea region, N.W.T.**	
Affiliations	University of British Columbia Geological Survey of Canada. Terrain Sciences Division [Sponsor]	
Publication	(1987)	
lib. code	ASTIS 21345	
Libraries		
Summary	Objective: To determine seasonal frost heave regimes beneath shallow lakes in the **Mackenzie Delta** near **Inuvik**. To conduct laboratory simulation of the freezing of sea bottom sediments of varying salinities under several thermal regimes. Itinerary: September, October, November, 1987, Crown Land: 68 19 N, 133 50 W, N.R.C. and South Lakes area, 68 28 N, 133 50 W, off **east channel**.	

Author(s)	Burn, C.	H16
Title	**Frost heave of subaqueous lake-bottom sediments, Mackenzie delta, Northwest Territories**	
Affiliations	Dept. of Geography, University of British Columbia,: Vancouver B.C.	
Publication	(1988,1989)	
lib. code	GB 648.15 .B87	
Libraries	ARI	
Summary	Frost heaving, lake sediments. **Mackenzie River Delta**, NT	

Author(s)	Burn, C.R.	H17
Title	**Ground ice development in sediments of the Mackenzie Delta area**	
Affiliations	University of British Columbia. Dept. of Geography [Affiliation]	
Publication	(1991)	
lib. code	ASTIS 38058	
Libraries		
Summary	The researcher and his team will continue to examine the hydrology of frost heave in the environment of a lake bottom. They will also conduct their study in land environments in the **outer Delta** and examine the distribution of ice in the upper layers of permafrost.	

Author(s)	Burn, C.	H18
Title	**Permafrost investigations in western Arctic Canada**	
Affiliations	University of Ottawa. Dept. of Geography [Affiliation]	
Publication	(2001)	
lib. code	ASTIS 51441	
Libraries		
Summary	Field research was concentrated on sites at: (1) Illisarvik, the experimental drained lake on **Richards Island**, **Mackenzie Delta area**; (2) Garry Island; (3) near **Inuvik**; and (4) near Paulatuk. At Garry Island and near **Inuvik**, ground temperatures and ground movement associated with the annual warming and cooling of the ground and development of ice wedges were monitored. At Paulatuk, rocks that have been blasted by snow carried by strong winds are being studied. …	

Author(s) Canada. Northern Roads Environmental Working Group H19
Title **Northern highways hydrology studies, Mackenzie River basin, 1977**
Affiliations Canada. Northern Roads Environmental Working Group [Sponsor]
Publication Hydrologic studies in the Mackenzie Delta region, N.W.T., 1977: a progress report / J.C. Anderson and B.J. Grey. - Hydrologic studies along the Liard Highway, spring and summer, 1977: a progress report / B.J. Grey and J.N. Jasper. (1978)
lib. code ASTIS 8219
Libraries ACU
Summary [1] Hydrologic investigations were continued during the 1977 open water season at a number of small watersheds along the route of the Mackenzie Highway in the east **Mackenzie Delta region**, N.W.T. 1977 was a year of hydrologic extremes in several respects. Winter season icings within culverts were relatively large, and two complete culvert blockages occurred between **Inuvik** and km 1512.4. Snowmelt floods were of generally high magnitude, particularly in the tundra .... In contrast, extremely low discharge was observed at most sites by late summer, ... owing to the warm, dry weather .... Flood maxima for the study basins in 1977 were compared with 50-year design flood estimates proposed for the region. The design floods were not exceeded in the taiga zone.

Author(s) M.A. Carson & Associates H20
Title **1992 progress report on sediment-related aspects of northern hydrocarbon development**
Affiliations Canada. Inland Waters Directorate [Sponsor]
Publication NOGAP project no. C.11 : Sediment-related aspects of northern hydrocarbon development (1993), 45 p.
lib. code ASTIS 35024; TC 227 .N6 S44 1993
Libraries ACU OORD; ARI
Summary The main objectives of IWD's current NOGAP work are: to develop a model of delta hydrology and hydraulics, investigate and model sediment flux, document contaminant levels, and develop a hydrologic information database system for the **Mackenzie Delta**. Hydrologic, hydraulic, and sediment transport aspects of NOGAP studies are being handled by IWD-NWT technical and professional staff. Investigation of certain aspects of sediment-related topics, particularly those involving source fate and effect of contaminants bound to sediment, sediment source and deposition areas, delta sedimentation, and delta channel stability, require outside expertise. This expertise is being accessed through partnerships with other agencies and contracts with university and private sector consultants.

Author(s) Carson, M.A. H21
Title **Suspended sediment data analysis : [bullet] Mackenzie Delta, NWT : 1992-93 update [bullet] westbank tributaries, Mackenzie River, NWT**
Affiliations M.A. Carson & Associates Canada. Inland Waters Directorate [Sponsor]
Publication (1993)
lib. code ASTIS 35030; TC 427 .N8 C47 1993
Libraries ACU OORD; ARI
Summary The primary purpose of this sediment program is to obtain mathematical relationships that will allow predictions of sediment concentration at delta stations in the absence of actual sampling. This task is a prerequisite to the development of a sediment adjunct to the one-dimensional hydraulic model being developed for the delta. The preliminary analysis is encouraging in indicating strong correlations between sediment concentrations at different stations in the delta. It is tentatively proposed that sediment concentrations at all east-central stations in the delta could be predicted from sampled concentrations at **Inuvik**, and, hopefully, concentrations on the west side might be predictable from Peel River station.

Author(s)	Carson, M.A.	H22
Title	**Sediment flux model for the Mackenzie Delta**	
Affiliations	M.A. Carson & Associates Canada. Environmental Services Directorate [Sponsor]	
Publication	(1994)	
lib. code	ASTIS 51036	
Libraries	ACU	
Summary	This report summarizes a statistical module used for predicting suspended sediment loads at nine stations along three transects of the **Mackenzie Delta**: three stations each at the delta-head, at mid-delta and at the Outer Delta. Sediment loads are computed from the product of daily discharge and daily mean sediment concentration for the period May to October 1982-88, and extended to 1974-90….	

Author(s)	Carson, M.A.	H23
Title	**Evaluation of Mackenzie Delta sediment regime**	
Affiliations	M.A. Carson & Associates Canada. Environmental Services Directorate [Sponsor]	
Publication	(1994)	
lib. code	ASTIS 50962	
Libraries	ACU	
Summary	…The **Mackenzie**, Arctic Red and Peel **Rivers** contribute a mean annual suspended sediment load of about 127 million tonnes (Mt) to the head of the delta. About 112 Mt of sediment is estimated to leave the lower subaerial delta into tidal and offshore areas, of which 100 Mt leaves along the three main channels that diverge at the head of **Richards Island** (**East, Middle and Reindeer channels**). This estimate of about 15 Mt of net sedimentation compares with an estimate of about 30 Mt based on sedimentation data for levees, lake-basins and lake beds. Some part of this discrepancy in net sedimentation may be due to overestimation of sediment loads at the Outer Delta stations because of simulated 1-D discharges that are too high in high flows. However, the discrepancy between the two figures is within the usual limits of statistical uncertainty. Not all of the 112 Mt that leaves the delta for offshore is, however, derived from the delta-head inputs. Based on data for point bar deposition and bank erosion, it is estimated that about 40% (about 50 Mt) of the suspended sediment input to the delta is deposited within delta channels and compensated by entrainment of existing sediment within the delta in the form of channel bank erosion. Added to the deposition away from channels, this means that about 80 Mt of the input load is deposited within the upper subaerial delta. This is about 63% of the suspended sediment input. An additional 5 Mt of sandy bed load supplied at the delta head is believed to accumulate largely within the main channels of the subaerial delta, with little reaching offshore…. Any increase in sediment-bound pollutants supplied to the delta head would be expected to have most impact within the delta itself, rather than offshore, given the large amount of deposition of up-basin sediment within the delta and the associated exchange of sediment within the main delta channels. Sediment from the basin upstream of the delta is thus "diluted" when it is delivered offshore by older sediment entrained by channel erosion within the delta itself….	

Author(s) Carson, M.A. Jasper, J.N. Conly, F.M. H24

Title **Magnitude and sources of sediment input to the Mackenzie Delta, Northwest Territories, 1974-94**

Affiliations

Publication *Arctic*, v. 51, no. 2, (June 1998), p. 116-124

lib. code ASTIS 43031

Libraries ACU

Summary Hydrometric and sediment data collected by Environment Canada in the **Mackenzie Basin** during the period 1974-94 have been analyzed to produce detailed estimates of sediment inputs to the **Mackenzie Delta**, based largely on sediment rating equations. The mean annual sediment supply to the delta is determined as 128 million tonnes (Mt), of which about 4 Mt is sandy bed material moved in by the **Mackenzie River** itself. Virtually all of this sediment (more than 99%) is supplied to the delta during the May-October period, the peak months being May (27%), June (36%), and July (19%). About 17% of the fine-sediment load is supplied by the Peel River; the rest is delivered by the **Mackenzie**. The largest single contributor to the **Mackenzie River** wash load (103 Mt) is the Liard River (41 Mt). The preliminary estimate of the contribution of the other west-bank tributaries, in combination, is about 36 Mt, though this figure is probably too low. The precision of these estimates using the sediment rating approach (compared to time-integration during months with reasonable sampling frequency) is about 10% for the mean monthly sediment loads and about 5% for the mean annual sediment load during the 1974-94 period. The absolute accuracy of sediment load estimates is more difficult to assess because published flow data for delta inflow stations are acknowledged to be much less reliable for the spring breakup period than for other times of the year.

Author(s) Chatwin, S.C. Rutter, N.W. H25

Title **Upper Mackenzie River valley**

Affiliations

Publication In: Field trip guidebook - International Conference on Permafrost, 3rd, Edmonton, Alberta, July 10-13, (1978), no. 2

lib. code ASTIS 3720

Libraries

Summary

Author(s)	Church, M.	H26
Title	**Reconnaissance of hydrology and fluvial characteristics of rivers in the Mackenzie Valley, Northwest Territories and in northern Alberta**	
Affiliations	Mackenzie Valley Pipe Line Research Limited [Sponsor]	
Publication	(1971)	
lib. code	ASTIS 31622	
Libraries	ACU	
Summary	Information for this report was derived from two sources: (1) analysis of maps and air photo mosaics; (2) analysis of streamflow data provided by government agencies. No field reconnaissance was undertaken. Two types of information were given major consideration; the estimation of peak stage in the rivers, and the estimation of maximum bed scour that may result. These are major criteria for design of river crossings. Historical records of streamflow and river behaviour are totally lacking for most of the rivers to be considered in this report. As a result, flow estimates have had to be based on estimates of watershed runoff potential, and on considerations derived from river channel appearance. ... the presence of permafrost may modify runoff formation in the watershed, and may affect the behaviour of the river channel during floods. Second, the nival regimen of the rivers produces major spring snowmelt floods - sometimes compounded by river ice jams. Finally, the extensive occurrence of muskeg in watersheds in the southern portion of the Northwest Territories, and in northern Alberta, has a major influence on runoff formation and flood potential in these areas. The report is divided into two systematic sections which discuss, respectively, the hydrology of the study region and the hydraulics of rivers in the study region.	

Author(s)	Davies, K.F.	H27
Title	**Mackenzie River input to the Beaufort Sea**	
Affiliations		
Publication	Beaufort Sea Project, Dept. of the Environment: Victoria, BC (1975)	
lib. code	GC 413 .D38 1975	
Libraries	ARI	
Summary	Stream flow – Sediment transport. **Mackenzie River watershed**, NT	

Author(s)	Davidson, S.	H28
Title	**Sediment transport in the Mackenzie plume**	
Affiliations		
Publication	ASA Consulting Ltd. : Dartmouth, NS (1998)	
lib. code	GC 380.2 .S4 D38 1988	
Libraries	ARI	
Summary	Marine sediments and sediment transport into the **Beaufort sea**.	

Author(s) Dery, S.J. Taylor, P.A. H29
Title **Thermodynamic effects of blowing snow in the atmospheric boundary-layer**
Affiliations
Publication Proceedings of the Hydro-Ecology Workshop on the Arctic Environmental Strategy Action on Water, May 1996, Banff, Alberta / Edited by D. Milburn. NHRI symposium, no. 16, (1997), p. 293-302
lib. code ASTIS 41438
Libraries ACU
Summary A seasonal snowcover blankets much of the **Mackenzie River Basin** during wintertime. In such an environment, the frequency of blowing snow events can be relatively high and can have important meteorological and hydrological impacts. Apart from the transport of snow, the thermodynamic impact of sublimating blowing snow in air near the surface must be investigated. Using a fetch-dependent blowing snow model that incorporates prognostic equations for a spectrum of sublimating snow particles, temperature and humidity profiles, it is found that the sublimation of blowing snow can lead to ambient air temperature decreases of 1C and significant water vapour increases in the atmospheric boundary-layer (ABL), particularly at long fetches. This results in sublimation rates being substantially reduced with fetch despite ongoing transport of snow by wind, with typical snow removal rates of several millimetres snow water equivalent per day over open Arctic tundra conditions. Horizontal transport and redistribution of snow by wind can be, however, more significant snow removal processes.

Author(s) Dewis, F.J. H30
Title **Relationship between mineralogy and trace element chemistry in sediments from two fresh water deltas and one marine delta within the Mackenzie River drainage basin**
Affiliations
Publication Thesis (M.Sc.) - University of Calgary, Dept. of Geology, Calgary, Alta., (1971). Supervisor: Levinson, Alfred A.
lib. code ASTIS 34330
Libraries ACU
Summary Sediment samples from two northern Alberta fresh water deltas and from the marine **Mackenzie River delta** were analysed for mineralogical composition and abundance of the trace elements B, Cu, Zn, Ni, Li and Mn. In both the marine and fresh water deltas the total clay content of the samples correlated highly with the trace elements studied. The concentration of B and total clay in the bottom sediments from all three deltas was found to increase with distance from the mouth of each delta. The variations in trace element concentrations in the two fresh water deltas are a result of variations in total clay content… Mineralogical and chemical differences in the source material of the fresh water and marine deltas are believed to be responsible for the differences between the fresh water and marine delta sediments rather than any adsorption mechanism. The low temperature of the **Mackenzie River delta** environment may be a factor in the lack of boron adsorption in the marine delta.

Author(s) Droppo, I.G. Jeffries, D.S. Jaskot, C. Backus, S.M. H31
Title **The prevalence of freshwater flocculation in cold regions : a case study from the Mackenzie River Delta, Northwest Territories, Canada**
Affiliations
Publication *Arctic*, v. 51, no. 2, (June 1998), p. 155-164
lib. code ASTIS 43034
Libraries ACU
Summary The **Mackenzie River Delta** (MRD) is used as a case study for evaluating the extent to which flocculation may play an important role in the transport of sediment and associated contaminants in arctic regions. Samples were collected for nondestructive analysis of particle/floc size, major ions, particulate organic carbon (POC), dissolved organic carbon (DOC), bacterial counts, and suspended solid (SS) concentrations. On-site measurements were made for pH, conductivity, and temperature. … It is hypothesized that water temperature, suspended solid concentration, and bacteria are the important factors in controlling flocculation within the Delta.

Author(s) Dyke, L. H32
Title **Permafrost distribution in river, delta and coastal environments in the Mackenzie River drainage basin**
Affiliations
Publication In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994), p. 284-285
lib. code ASTIS 36876
Libraries ACU
Summary The delta front provides the most dynamic sedimentary environment of the entire river system…..... Climatic change will have three potential effects on ground temperature and permafrost distribution: 1. Change in average annual air temperature. ... It is therefore conceivable that a climate warming of a few degrees could eventually raise these ground temperatures above 0 C and thaw icebonded ground throughout the delta. 2. Change in river temperature. ... This may be the environment to experience the greatest change in response to a climate warming. 3. Change in snowfall. Estimates of this are subject to the most uncertainty. Lower snowfalls may accompany warmer temperatures but lower snow accumulations in vegetated areas may compensate for the increased average annual temperature and produce little change in the average annual ground temperature.

Author(s) Environment Canada H33
Title **Mackenzie River water levels and the flooding of delta lakes**
Affiliations
Publication (1988)
lib. code GB 1399.5 .C2 M37 1988a
Libraries ARI
Summary Water – Flooding – **Mackenzie river watershed**. **Mackenzie River, Mackenzie Delta**, NT

Author(s) Erickson, P. Fowler, B. H34
Title **The flux of suspended particulates, petroleum related hydrocarbons, trace metals and nutrients from the Mackenzie River during the winter season : a pilot study of the East Channel**
Affiliations Arctic Laboratories Limited Canada. Northern Environment Directorate [Sponsor]
Publication Ottawa : DIAND, (1987). Environmental studies - Canada. Dept. of Indian Affairs and Northern Development, no. 48
(NOGAP project no. A.05 : Physical environment : process and impacts)
lib. code ASTIS 28127
Libraries ACU OORD
Summary Water and suspended particulates were collected through the ice in the **East Channel** of the **Mackenzie River** about 30 km upstream from **Kittigazuit Bay** in April 1985 and early February 1986 to estimate the winter dissolved and particulate fluxes of trace metals, nutrients and petroleum related hydrocarbons to the **Beaufort Sea**. In February 1986 samples were also collected in the **Main, Middle and Reindeer Channels** to compare fluxes in the other major channels. Samples were collected using conventional discrete sampling methods as well as a new time- integrating, microprocessor controlled in situ pump.

Author(s) Esso Resources Canada H35
Title **Beaufort Sea freeze-up and break-up patterns**
Affiliations
Publication Presented at Tuktoyaktuk, N.W.T. Joint Tuk-Industry Task Force, 81/08/26 (1981)
lib. code ASTIS 45512
Libraries ACU
Summary Typical conditions during freeze-up in the **Beaufort Sea Mackenzie Delta region** are shown…

Author(s) Falkner, K.K. Guay, C. Simpkins, J. Jacobson, J. H36
Title **Tracking arctic river water by geochemical means : Mackenzie Delta case study**
Affiliations Oregon State University. College of Oceanic and Atmospheric Sciences [Affiliation]
Publication (1994)
lib. code ASTIS 38784
Libraries
Summary The researchers tracked the fate of the **Mackenzie River** waters through the **Delta** and into the Arctic Ocean by using natural geochemical markers. Water samples were collected by drilling through the ice at 50 locations along the main channel of the river and out over the shelf. This information is important for understanding the circulation of the Arctic Ocean waters the processes of global climatology, and the distribution of ocean contaminants.

Author(s) Fissel, D.B. Melling, H. H37
Title **Interannual variability of oceanographic conditions in the southeastern Beaufort Sea**
Affiliations
Publication Canadian contractor report of hydrography and ocean sciences, no. 35 (1990)
lib. code ASTIS 44114; GC 11.2 .C3 no. 35
Libraries ACU NFSMO; ARI
Summary Interannual variations in summertime oceanic conditions in the **southeastern Beaufort Sea** have been studied through analysis of temperature and salinity data collected between 1950 and 1987. Causes for observed oceanic variations have been sought in variations in wind, ice cover and river discharge over the same period….

Author(s)	French, H.M. Heginbottom, J.A.	H38
Title	**Guidebook to permafrost and related features of the northern Yukon and Mackenzie Delta, Canada**	
Affiliations	International Geographical Union. Commission on the Significance of Periglacial Phenomena [Sponsor]	
Publication	Guidebook - Alaska. Division of Geological and Geophysical Surveys, 3. (1983) 186p.	
lib. code	ASTIS 12695; GB 648 .15 G85 1983	
Libraries	ACU; ARI	
Summary	The primary objective of this guide is to illustrate permafrost conditions and associated geomorphic phenomena existing in the northern interior Yukon and **Mackenzie Delta** regions of northwestern Canada. Completion of the Dempster Highway makes it possible to undertake an integrated transect through this vast region .... The transect is of particular interest because it (a) encompasses the zones of sporadic, discontinuous and continuous permafrost, (b) traverses alpine, intermontane, and lowland area, (c) includes both glaciated and unglaciated terrain, and (d) passes from the northern boreal forest through both alpine timberline and northern tree line to arctic tundra. ...	

Author(s)	GEWEX	H39
Title	**Proceedings of the 7th Scientific Meeting of the Mackenzie GEWEX Study (MAGS)**	
Affiliations		
Publication	(2001)	
lib. code	QC 981.8 .C5 M32 2001	
Libraries	ARI	
Summary	Hydrology, Mackenzie GEWEX study, NT	

Author(s)	Gibson, J.J.	H40
Title	**Isotope hydrology and geochemistry of a high-boreal wetland, Manners Creek watershed, District of Mackenzie, N.W.T.**	
Affiliations		
Publication	Thesis (M.Sc.) - Dept. of Earth Sciences, University of Waterloo, Waterloo, Ont., (1991).	
lib. code	ASTIS 32278	
Libraries		
Summary	Investigations conducted during 1989 and 1990 in the Manners Creek watershed, District of Mackenzie, N.W.T. focused on establishing baseline hydrological information for an ongoing research program at the site. Preliminary physical monitoring of thaw season groundwater and surface water movement, and characteristics of permafrost and active-layer development, in addition to stable isotope and geochemical sampling, have provided insight into the hydrology of a discontinuous-permafrost high-boreal wetland.	

Author(s) Gibson, J.J. Bursey, G.G. H41
Title **Stable isotopes as an indicator of watershed vapour losses in northern Canada**
Affiliations
Publication Communication presented at the Central Canada Geological Conference, University of Waterloo, February 19-21, (1992)
lib. code ASTIS 33027
Libraries
Summary Evaporation studies are being conducted at sites in northern Canada as an aid to determination of natural water balance in boreal and arctic terrain. A stable isotope-mass balance approach, incorporating evaporative isotopic enrichment measured in surface reservoirs, is utilized in quantifying vapour losses. The application of the technique in two disparate northern environments reveals inherent differences in the hydrologic balances at each site, and also intra-basinal variations related to local drainage hierarchy. …Investigations conducted during 1990 in the Manners Creek watershed, a 400-500 km^2 boreal wetland catchment near **Fort Simpson**, District of Mackenzie, N.W.T., indicate total vapour losses comprised 70 to 80% of basin outflows, with evaporation accounting for 15 to 25% of this amount. Evaporative losses accounted for 90+% of outflows from shallow wetland lakes. …

Author(s) Gibson, J.J. Edwards, T.W.D. Prowse, T.D. H42
Title **Hydrology of a high-boreal wetland with discontinuous permafrost, District of Mackenzie, N.W.T.**
Affiliations
Publication Program with abstracts - Geological Association of Canada, v. 16, (1991), p. A44 (Abstract only)
lib. code ASTIS 32280
Libraries ACU
Summary Investigations in the **Manners Creek watershed**, near **Fort Simpson**, District of Mackenzie, N.W.T. began in July 1989 as part of a planned long-term study of high-boreal wetland hydrology in discontinuous permafrost terrain. Field work conducted from March to September 1990, in a 5 sq. km catchment tributary to Manners Creek, focused on determining mechanisms and pathways of surface/groundwater movement, and evaporation utilizing physical, hydrochemical and isotopic techniques. The Manners Creek sub-basin is morphologically similar to the larger basin, having an upper, poorly drained wetland where groundwater flow and evaporation dominate, and a well-drained lower basin, where channelized surface flow is dominant. Permafrost is restricted primarily to north-facing slopes and locations with thick unsaturated peat. Shallow saturated flow in north-facing slopes is confined to the active layer, which gradually deepens though the thaw season to depths of < 1 metre. South-facing slopes, typically unfrozen and unsaturated, permit rapid infiltration of snow melt and precipitation. Preliminary data reveal significant isotopic distinction between local precipitation and surface/groundwater. An isotope-mass balance of the lake in the upper sub-basin will be used to evaluate groundwater/lake interaction.

Author(s) Gibson, J.J. H43

Title **Isotope hydrology and geochemistry of a high-boreal wetland, Manners Creek watershed, District of Mackenzie, N.W.T.**

Affiliations

Publication Thesis (M.Sc.) - Dept. of Earth Sciences, University of Waterloo, Waterloo, Ont., (1991).

lib. code ASTIS 32278

Libraries

Summary

Investigations conducted during 1989 and 1990 in the Manners Creek watershed, District of Mackenzie, N.W.T. focused on establishing baseline hydrological information for an ongoing research program at the site. Preliminary physical monitoring of thaw season groundwater and surface water movement, and characteristics of permafrost and active-layer development, in addition to stable isotope and geochemical sampling, have provided insight into the hydrology of a discontinuous-permafrost high-boreal wetland. Groundwater discharge from permafrost slopes was identified as the principle source of baseflow in tributary creeks despite the fact that permafrost underlies only 10-25% of the basin area. Non-permafrost slopes were characteristically unsaturated throughout the thaw season. Peak spring discharge in tributary creeks occurred between April 21 and 24, 1990, and comprised 50-60% active-layer groundwater (including winter discharged icings), and 40-50% snowmelt water. During spring freshet and event rainfalls, streamflow is rapidly fed by extensive finger-like pipe networks in permafrost slopes. Extended streamflow recessions (30-35 days following spring freshet peak) are attributed to groundwater ridging induced by snowmelt/event water infiltration over larger areas of permafrost slopes. The oxygen-18 and deuterium contents of surface waters and groundwaters reflect seasonal changes in the isotopic compositions of precipitation and subsequent alteration due to evaporation and mixing. Precipitation and groundwaters define a local meteoric water line (delta 2H = 7.6 delta 18O - 7) while surface waters define a local evaporation line (delta 2H = 5 delta 18O - 64). Stable isotope-mass balance calculations provide estimates of evaporations and outflow at various levels of the basin drainage network. Areally weighted vapour loss is estimated at 70-80% (240-270 mm/yr) of mean annual precipitation (355 mm), with evaporation accounting for 15-25% of this amount. Lake evaporation is estimated at 350-420 mm/yr.

Author(s) Harry, K.F. Parent, L.E. H44

Title **Liard River Hydroelectric Project : a study of climatic effects in the Mackenzie Delta**

Affiliations

Publication S.l. : British Columbia Hydro and Power Authority], (1980). 1 v.

ASTIS # ASTIS 13812

Libraries ACU

Summary

In this report, elements of climate and weather in both the **Mackenzie River basin** and the **Mackenzie River delta** and of discharge characteristics of the **Mackenzie River** are discussed in relation to freeze-up and break-up patterns in the lower reaches of the river. The examination of the radiation data indicates that temperatures might be expected to rise more slowly in the spring and to cool more slowly in the fall under controlled flow conditions. It is also shown, however, that times of significant ice changes in the delta tend to vary greatly depending on basin climate and river discharge and that day to day meteorological effects (travelling weather systems, sea breeze effects, etc.) exert a considerable control on delta climate. Because of the many variations caused by these latter elements, the long-term impact of radiation changes that might result from altered ice patterns on the delta will be very difficult to identify.

Author(s) Hay, M.B. H45
Title **Diatom-based model for reconstruction of paleohydrology in the Mackenzie Delta, Northwest Territories, Canada**
Affiliations Kingston, Ont. : Queen's University
Publication Thesis (M.Sc.) - Queen's University, Dept. of Biology, Kingston, Ont., (1996)
lib. code ASTIS 43178; QE 39.5 .P27 H39 1996 THE
Libraries ARI
Summary Estimation of past discharge from major arctic watersheds is critical for understanding long-term natural variability and response of large watersheds to climatic change. Coastal delta floodplain lakes are tightly coupled to the discharge variation of their associated river systems. Fossil diatom assemblages within the lake sediments should provide integrative records of these interactions. Surface sediments and environmental variables were collected from 77 lakes in the **Mackenzie Delta**, N.W.T. (Canada), representing lakes having continuous connection with the **Mackenzie River** (no-closure), lakes that flood each spring (low-closure), and lakes that flood only every few years (high-closure). High-closure lakes differed significantly ($P<0.05$) from the no-closure and low-closure lakes in surface area, as well as winter methane and sulfate concentrations. Elevated winter methane concentrations represent high summer lake production, whereas elevated winter sulfate concentrations reflect strong river influence and reduced anaerobic decomposition. Canonical variate analysis (CVA) significantly separated lake categories along a 'strong river influence/low summer lake production' to 'weak river influence/high summer lake production' gradient. Canonical correspondence analysis (CCA) of the surface diatom assemblages showed the river influence/production gradient to account for a significant amount of variation within the diatom assemblages. Epiphytic taxa diatom taxa were associated with the macrophyte-rich high-closure lakes, whereas the turbid, river-dominated lakes were characterized by diverse benthic Nitzschia and Navicula assemblages….

Author(s) Hay, M.B. Smol, J.P. Pipke, K.J. Lesack, L.F.W. H46
Title **A diatom-based paleohydrological model for the Mackenzie Delta, Northwest Territories, Canada**
Affiliations
Publication *Arctic and alpine research*, v. 29, no. 4, (1997), p. 430-444
lib. code ASTIS 45466
Libraries ACU
Summary Floodplain lakes are tightly coupled to their associated river systems and their sediment records should provide integrative records of this interaction. Surface sediments and selected limnological variables were collected from 77 **Mackenzie Delta lakes** representing three categories of river influence: lakes having continuous connection with the **Mackenzie River** (n=23); no-closure), lakes that flood every spring but lose connection during the summer (n=26; low-closure), and lakes that flood only during an extreme spring flood stage (n=28; high-closure). Summer lake production, using winter methane concentration as a proxy, and river influence were identified as the principal limnological gradients separating delta lakes. This river influence/primary production gradient also accounted for the greatest amount of variation within the surface sediment diatom assemblages. The diatom flora of the Mackenzie Delta lakes was dominated by benthic taxa, particularly the genera Nitzschia and Navicula, with a greater abundance of stalked, epiphytic taxa in the high-closure lakes. A robust predictive model was developed for inferring lake production from fossil diatom assemblages. The model provides a tool for estimating long-term changes in river influence and lake dynamics from the sediment record of Mackenzie Delta lakes. Diatom-inferred river influence changes within these records may then by linked with past river discharge variability.

Author(s) Haykin, S. H47
Title **Radar observations in support of the Mackenzie GEWEX Study (MAGS)**
Affiliations McMaster University. Communications Research Laboratory [Affiliation]
Publication (1999)
ASTIS # ASTIS 48457
Libraries
Summary The **Mackenzie GEWEX** Study (MAGS) is the Canadian component of an international effort called the Global Energy and Water Cycle Experiment (GEWEX). GEWEX supports a World Climate Research Program to observe, understand, and model the hydrological cycle and energy fluxes in the atmosphere, at land surface, and in the upper oceans. The goal of the program is to reproduce and predict, by means of suitable models, the changes in the global hydrological cycle, its impact on atmospheric and surface dynamics, and changes in regional hydrological processes and water resources and their response to changes in the environment, such as the increase in greenhouse gases. Radar measurements taken are currently being analyzed, to better understand and characterize the cloud and precipitation systems encountered at **Fort Simpson** during field experiments, and to develop and validate models applicable over larger regional areas.

Author(s) Haykin, S. Hudak, D. Nissen, R. H48
Title **Radar observations in support of the Mackenzie GEWEX Study (MAGS)**
Affiliations McMaster University. Communications Research Laboratory [Affiliation]
Publication (1998)
ASTIS # ASTIS 46756
Libraries
Summary The **Mackenzie GEWEX** Study (MAGS) is the Canadian component of the international effort called the Global Energy and Water Cycle Experiment (GEWEX). MAGS supports a World Climate Research Program to observe, understand, and model the hydrological cycle and energy fluxes in the atmosphere, at the land surface, and in the upper oceans. One goal of the program is to reproduce and predict (by means of suitable models) the variations of the global hydrological regime. Having achieved this, a second goal is to predict the impacts of the global variations on atmospheric and surface dynamics. A third goal is to reproduce and predict variations in regional hydrological processes and water resources. Finally, the last goal is to predict the response of regional hydrological processes and water resources to changes in the environment such as the increase in greenhouse gases. In 1998, radar measurements were taken during experimental periods in August/September/October and in early December, within 75 km of the **Fort Simpson** airport.

Author(s) Hemstock, R.A. H49
Title **Ice engineering pertinent to the oil industry**
Affiliations Imperial Oil Limited. Production Research and Technical Service Department
Publication (1967)
ASTIS # ASTIS 31604
Libraries ACU
Summary This report deals with physical properties of ice, e.g. the strength of ice covers, freeze-up and breakup of lakes and rivers and the Arctic seas. This includes not only the physical changes in the buildup and breakdown of ice covers but also the forecasting of such changes. There is also interest in the pressures on (man-made) structures due to ice movement in sheets and in floes and under varying climatic conditions. This report attempts to collect in one place the fundamentals of ice engineering that are the result of many years of research in Canada, Russia, the United States and Japan. Several references are cited which in turn provide an extensive bibliography. Recommendations are given for engineering investigation in areas of particular interest to Imperial.

Author(s)	Hunter, J.A.M. MacAulay, H.A. Gagne, R.M. Burns, R.A. Harrison, T.E. Hawkins, J.P.	H50
Title	**Drained lake experiment for investigation of growth of permafrost at Illisarvik, Northwest Territories - initial geophysical results**	
Affiliations		
Publication	Current research - Geological Survey of Canada, paper 81- 1C, p. 67-76	
lib. code	ASTIS 8033	
Libraries	ACU	
Summary	This report deals with a portion of the pre-drainage program in which the Geological Survey of Canada seismic section was involved.	

Author(s)	Jasper, J.N. Kerr, J.A.	H51
Title	**An historic N.W.T. flood: 1988 flooding in the Liard and Mackenzie River Basins.**	
Affiliations	Environment Canada, Yellowknife	
Publication	(1992)	
lib. code	GB 1399.5 .C2 J37 1992	
Libraries	ARI	
Summary	Floods – Liard River, **Mackenzie river**, NT	

Author(s)	Jasper, J.N. Kerr, J.A.	H52
Title	**Routing : Mackenzie River and delta**	
Affiliations		
Publication	In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994), p. 254-271	
lib. code	ASTIS 36873	
Libraries	ACU	
Summary	... Current goals for applying the 1-D model to the **Mackenzie Mainstem** are as follows: forecast high-water levels during navigation season (June 1 to mid-October, plus late May in upper part of basin); forecast low-water levels during low-water part of navigation season (August 1 to mid-October); define high-water levels during breakup period (late April/early May for early breakup years in the upper basin, to mid-June for years with late breakup in the lower basin); analyze winter flows (mid-October to noted breakup period). ... EC-NWT encourages contacts by researchers regarding cooperative efforts and model water level and flow results, to support joint analyses of related physical and biological processes on the Liard and **Mackenzie rivers**, in the **Mackenzie Delta**, and in the nearshore **Beaufort Sea** area.	

Author(s)	Kamphuis, J.W. Moir, J.R.	H53
Title	**On ice breakup and ice jamming along the Mackenzie River**	
Affiliations		
Publication	In: Proceedings, Canadian Society for Civil Engineering 1982 Annual Conference, Edmonton, Alberta, May 27-28, 1982. - [S.l.] : CSCE, 1982, v. 3, p.1247-1263	
lib. code	ASTIS 13196	
Libraries	NFSMO	
Summary	The breakup of ice along the **Mackenzie River** between **Fort Simpson** and **Fort Good Hope** was studied from a dedicated aircraft in 1979, 1980 and 1981. More than 20 major ice jams were observed during their formation, stationary position and breakup. All observed jams displayed the same major characteristics and hence it is possible to generalize about ice melting, breakup and jamming. This paper describes the ice melting process, prior to any ice movement. It discusses the ice jamming process and the various parameters that affect this process. It also addresses several environmental factors influencing the detail character of the jams.	

Author(s)	Kay, A.E. Allison, A.M. Botha, W.J. Scott, W.J.	H54
Title	**Continuous geophysical investigation for mapping permafrost distribution, Mackenzie Valley, N.W.T., Canada**	
Affiliations		
Publication	In: Permafrost : Fourth International Conference, proceedings, July 17-22, 1983. - Washington, D.C. : National Academy Press, (1983), p. 578-583	
lib. code	ASTIS 14741	
Libraries	ACU	
Summary	A continuous inductive conductivity survey using a 10 m station interval was carried out over a distance of 868 km along the Interprovincial Pipe Line route in the **Mackenzie River Valley**, N.W.T. … The study provides a case history for delineating frozen ground along a route that traverses a zone of scattered discontinuous permafrost and a zone of widespread discontinuous permafrost. Terrain conductivity meters were used to measure apparent conductivities along the entire proposed pipeline route. Air photo interpretation was used to map the terrain type distribution along the pipeline route. This information was correlated with vegetation, topographic, and geophysical data to delineate the boundaries of frozen ground. This interpretation was checked by boreholes drilled at an average spacing of 1 borehole every 4 km. … Statistical analyses were obtained between the occurrence of frozen ground and different terrain types. The results of the analyses indicate that soil texture is a major controlling factor in the occurrence of frozen ground.	

Author(s)	Kelly, E.	H55
Title	**Technical Background Report: Water Quality.**	
Affiliations	Mackenzie River Basin Board	
Publication	(April 2002)	
lib. code		
Libraries		
Summary	Not Available	

Author(s)	Kelly, E.	H56
Title	**Technical background Report: Contaminants**	
Affiliations	Mackenzie River Basin Board	
Publication	(May 2002)	
lib. code		
Libraries		
Summary	Not Available	

Author(s)	Kerr, J.	H57
Title	**Future water levels and flows for Great Slave and Great Bear Lakes, Mackenzie River and Mackenzie Delta**	
Affiliations		
Publication	In: Mackenzie Basin Impact Study (MBIS). Cohen, S. (ed.), 73 – 91 (1997) [see ASTIS 41639]	
lib. code		
Libraries		
Summary	Not available	

Author(s)	King, M.S.	H58
Title	**The influence of clay-sized particles on seismic velocity for Canadian Arctic permafrost**	
Affiliations		
Publication	*Canadian journal of earth sciences*, v. 21, no. 1, (Jan. 1984), p. 19-24	
lib. code	ASTIS 13538	
Libraries	ACU	
Summary	Seismic-wave velocities have been measured on 37 unconsolidated permafrost samples as a function of temperature in the range -16 to +5 degrees C. During testing, the specimens were subjected to a constant hydrostatic confining stress of 0.35 MPa (50 psi) under drained conditions. At no stage was a deviatoric stress applied to the permafrost specimens. At temperatures below -2 degrees C the compressional-wave velocity was observed to be a strong function of the fraction of clay-sized particles, but only a weak function of porosity. At temperatures above 0 degrees C the compressional-wave velocity was observed to be a function only of porosity, with virtually no dependence upon the fraction of clay-sized particles….	

Author(s)	Kokelj, S.	H59
Title	**The growth of aggradational ice in sediments of the Mackenzie Delta, N.W.T.**	
Affiliations	Carleton University. Dept. of Geography and Environmental Studies [Affiliation]	
Publication	(1999)	
lib. code	ASTIS 48444	
Libraries		
Summary	This project looks at the development of near-surface ground ice in sediments in the **Mackenzie Delta area.** Overall this research looked at the chemical and physical characteristics of the near-surface ice-rich zone, and will: (1) investigate the development through time of near-surface ground ice; (2) measure its variability and relationship with surface features (vegetation, micro-topography); and (3) investigate the geo-chemical characteristics of this near-surface ice-rich zone. Over 80 permafrost core sections were recovered in the summer of 1999; sample analysis is ongoing…. This information can contribute to understanding the influence of permafrost on forest structure and may increase our ability to predict the occurrence of near-surface ground ice.	

Author(s) Kokelj, S. H60
Title **Near-surface ground ice in sediments of the Mackenzie Delta region, NWT**
Affiliations
Publication (2000)
lib. code ASTIS 50031
Libraries
Summary This project looks at the physical and chemical characteristics of near-surface ground ice in sediments of the **Mackenzie Delta area**. Permafrost cores were obtained along transects perpendicular to shifting channels in the **Mackenzie Delta**. This type of sampling showed near-surface ground ice accumulation over time and the site characteristics that favor ground ice accumulation. A relationship has been established between ground ice and vegetation type indicating that vegetation communities may be used to predict the amounts of near-surface ground ice in sediments of the **Mackenzie Delta**. Field data also suggest that ground ice development influences spruce forest succession in the **Mackenzie Delta**, through the tilting and eventual toppling of trees. Cores were also obtained from sites at Navy Road near **Inuvik** where active layer development has been documented since the late 1960s (Mackay, 1995). The record of active layer history (Mackay, 1995) has given the investigation of near-surface ground ice development over 10 year time scales, while the tentative identification of deep thaw unconformity at the site may provide a stratigraphic marker at the millennial time scale. From early results, it looks like the near-surface ice-rich zone of permafrost is nutrient-rich relative to the base of the active layer. This finding may be important in understanding fire ecology in permafrost lands, since after intense burns, active layer thickness increases, resulting in the thaw of near-surface permafrost.

Author(s) Kovacs, A. Mellor, M. H61
Title **Sea ice pressure ridges and ice islands**
Affiliations
Publication APOA project no. 17 : Beaufort Sea pressure ridge and ice island scouring. Report, no. 1 (Technical note - CREARE, Inc., no. 122) (1971)
lib. code ASTIS 2550
Libraries ACU NFSMO
Summary The environmental conditions of ice-covered polar seas are described, with special emphasis on the pressure ridges and ice islands encountered in **Mackenzie Bay** and the **Beaufort Sea**. Techniques for determining the geometric configurations and the physical and mechanical properties of sea ice structures and ice islands are described. Profiles of pressure ridges were determined by surface surveys, drill hole probes, and side-looking sonar scanning; results are given for several multi-year ridges and one first-year ridge. Supplementary information obtained from dives under the ice is also given. Corresponding data are given for ice islands, with particular attention being given to contact between the ice and the sea bed. Measurements of temperature, salinity, tensile strength and compressive strength are given for ice taken from old pressure ridges, and factors influencing the interpretation of test data are discussed. The main report closes with a brief discussion of some of the findings. The appendices give complete diving reports, and a full report on the performance of the SR.N6 Hovercraft.

Author(s)	Lapointe, M.F.	H62
Title	**Aspects of channel bathymetry and migration patterns in the Mackenzie Delta, NWT**	
Affiliations		
Publication	Environment Canada: Ottawa, ON (1985)	
lib. code	GB 1230 .M3 L36 1985	
Libraries	ARI	
Summary	Migration of rivers, **Mackenzie Delta**	

Author(s)	Lapointe, M.F.	H63
Title	**Deep scour holes on the bed of the Mackenzie Delta channels, NWT**	
Affiliations		
Publication	National Hydrology Research Institute, Environment Canada: Ottawa, ON (1986)	
lib. code	TC 427 .N8 L38 1986	
Libraries	ARI	
Summary	Scour. Channels (Hydraulic engineering). River channels. **Mackenzie River**, NT	

Author(s)	Lapointe, M.F.	H64
Title	**Mackenzie Delta channel dynamics: miscellaneous data**	
Affiliations		
Publication	National Hydrology Research Institute, Environment Canada: Ottawa, ON (1986)	
lib. code	GB 709 .M2 L42 1986	
Libraries	ARI	

Author(s)	Lawford, R.G.	H65
Title	**Knowns and unknowns in the hydroclimatology of the Mackenzie River Basin**	
Affiliations		
Publication	In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, 1994, p. 173-196	
lib. code	ASTIS 36868	
Libraries	ACU	
Summary	A number of studies within MAGS (Mackenzie GEWEX Study) are designed to complement regional GEWEX (Global Energy and Water Cycle Experiment) projects in river basins in different climates around the world. ... Hydroclimatology involves a consideration of all aspects of the time-averaged characteristics of meteorological and hydrologic processes. This paper examines the seasonal and annual links between meteorological and hydrological factors in the **Mackenzie River Basin**.	

Author(s) Lesack, L.F.W. Marsh, P. Hecky, R.E. H66
Title **Spatial and temporal dynamics of major solute chemistry among Mackenzie Delta lakes**
Affiliations
Publication *Limnology and oceanography*, v. 43, no. 7, (1998), p.1530-1543
lib. code ASTIS 47585
Libraries ACU
Summary The **Mackenzie Delta** of the Canadian arctic is a complex environment, containing ~25,000 lakes, where annual river flooding may exert a considerable degree of control over the ecological characteristics of lakes in the system. The solute composition of 92 lakes representing differing frequencies and durations of flooding was determined from among three clusters of lakes distributed over a north-south (N-S) gradient along the eastern margin of the delta. The solute compositions yield an end-member system of dominant solutes (shifting among Ca^{++} plus HCO_3^-, Mg^{++} plus HCO_3^-, Ca^{++} plus SO_4^{--}) in correspondence with a gradient from frequently flooded lakes to infrequently flooded lakes. This end-member system is consistent between years and along the N-S elevational gradient of the delta. The solute composition of the frequently flooded lakes appears to be stable among years, while the composition among infrequently flooded lakes is not stable. The end-member system is consistent with the seasonal dynamics in solute composition observed for three lakes, representing differing flooding regimes, plus the dynamics of the nearest main distributary channel. The dominance of local hydrological and biogeochemical processes in about one-third of the lakes in the delta, where flooding occurs less frequently than every year, is not consistent with a common paradigm where flooding from river channels is thought to dominate the annual flushing, nutrient replenishment, and reinitialization of lacustrine ecosystems on the floodplains of major world rivers.

Author(s) Lewis, C.P. H67
Title Estimation of suspended sediment concentrations in natural water bodies from Secchi disk measurements
Affiliations
Publication Thesis (B.A.) University of British Columbia, (1970)
lib. code GC 380 .S28 L48 1970
Libraries UBC, ARI
Summary Sedimantation and deposition in the **MacKenzie delta**. Method: Secchi disk (light measurement)

Author(s) Macdonald, R.W. Carmack, E.C. H68
Title **The role of large-scale under-ice topography in separating estuary and ocean on an arctic shelf**
Affiliations Canada. Dept. of Fisheries and Oceans
Publication *Atmosphere-ocean*, v. 29, no. 1, (Mar. 1991), p. 37-53
lib. code ASTIS 30976
Libraries OORD
Summary The **Mackenzie Shelf** in the **Canadian Beaufort Sea** receives large amounts of freshwater runoff in winter and, yet, it also produces ventilating water masses by brine rejection from growing ice. We examine physical and chemical data to see how these contradictory processes can occur juxtaposed on the shelf. Measurements of salinity and delta ^{18}O both from ice cores and the water column are used to infer the separation into two convective regimes due to the under-ice topography of the system of large pressure ridges that forms at the boundary between landfast ice and pack ice. Outside this ridge system the ice cover is subject to frequent openings due to offshore ice motion. The inner regime is thus dominated by the impoundment of **Mackenzie River water**, whereas the outer regime is subject to brine enhancement. This paper compares freezing processes and system evolution for these two regimes in winter.

Author(s) Macdonald, R.W. Carmack, E.C. Paton, D.W. H69
Title **Using the delta ^{18}O composition in landfast ice as a record of arctic estuarine processes**
Affiliations
Publication *Marine chemistry*, v. 65, no. 1-2, (May 1999), p. 3-24
lib. code ASTIS 4527145271
Libraries
Summary Estuaries that produce substantial amounts of ice differ from those that do not. First, ice formation and melting make important contributions to salt and freshwater budgets and thereby influence water circulation. Second, ice cover provides a physical barrier which severely restricts the air-sea exchange of properties and energy. Here, we show how the oxygen isotope composition (delta ^{18}O) in landfast ice at the end of winter provides a record of surface water properties throughout winter. Two arctic estuaries are contrasted: the **Mackenzie estuary** which faces directly onto a broad, open shelf and the Husky Lakes estuary which comprises a series of basins that exchange with one another and the shelf through narrow channels.

Author(s) Macdonald, R.W. H70
Title **Composition and modification of water masses in the Mackenzie shelf/estuary**
Affiliations Institute of Ocean Sciences, Sidney, B.C.
Publication (1989)
lib. code GC 298 .M23 C65 1989 IRCL
Libraries ARI
Summary Water masses. **Mackenzie River Delta**.

Author(s) Macdonald, R.W. Thomas, D.J. H71
Title **Chemical interactions and sediments of the western Canadian arctic shelf**
Affiliations Institute of Ocean Sciences, Patricia Bay Seakem Oceanography Ltd.
Publication Continental shelf research, v. 11, no. 8-10, (1991), p. 843-863
lib. code ASTIS 35198
Libraries OORD
Summary The **Canadian Beaufort Shelf** is the largest continental shelf on the North American side of the Arctic and is the most brackish of all Arctic shelves. Chemical data both site-specific and from the Arctic Ocean interior are reviewed for evidence of chemical processes which occur at the shelf-seabed/water interface. The important material sources to this region include the **Mackenzie River**, shore erosion, primary production, and long-range atmospheric transport….

Author(s) Mackenzie River Basin Committee (Canada) H72
Title **Mackenzie River Basin study report**
Affiliations
Publication (1981)
Lib. code ASTIS 8830
Libraries ACU
Summary The report is supplemented by nine separate technical reports:1 Sensitive Areas: Literature Review WATDOC References, 2 Alluvial Ecosystems, 3 Spring Breakup, 4 Hydrometeorologic Network Design, 5 Hydrometeorologic Network Design: Background Reports, 6 Slave River Delta, 7 Athabasca Sand Dunes in Saskatchewan, 8 Daily Hydrologic Model User Manual, 9 Water Quality (1983 publication date).

H73

Author(s) Mackenzie Valley Pipe Line Research Limited
Title **Feasibility study : 1971 : back-up data : volume 11 - pipe line construction**
Affiliations
Publication Calgary, Alta. : Mackenzie Valley Pipe Line Research Limited, (1971)
lib. code ASTIS 32006
Libraries ACU
Summary This document consists of several different reports, one of which is relevant here: 4-21) Reconnaissance of hydrology and fluvial characteristics of rivers in the **Mackenzie Valley**, Northwest Territories and in Northern Alberta, Church, M., University of British Columbia, September 1, 1971.

H74

Author(s) Marsh, P.
Title **Mackenzie Delta, Lake hydrology progress report**
Affiliations
Publication Cold Regions Section, National Hydrology Research Institute, Environmrnt Canada: Ottawa, Ont. (1985)
lib. code GB 708 .N6 M37 1985
Libraries ARI
Summary Hydrology. **Mackenzie delta**, NT

H75

Author(s) Marsh, P.
Title **Sediment regime of lakes in the Mackenzie Delta**
Affiliations National Hydrology Research Institute (Canada) [Affiliation]
Publication (1988)
lib. code GB 1399.5 .C2 M37 1988b
Libraries ARI
Summary Lake sediments. **Mackenzie delta**, NT

H76

Author(s) Marsh, P.
Title **Mackenzie Delta hydrology and ecosystem interactions**
Affiliations National Hydrology Research Institute (Canada) [Affiliation]
Publication (1991)
lib. code ASTIS 38112
Libraries
Summary The research will study changes in the water levels of a variety of lakes in the **Mackenzie Delta**. Investigations will include consideration of factors controlling the lake levels, introduction of floodwater from the **Mackenzie River**, rainfall onto the lake, snowmelt runoff into the lakes and evaporation from the lakes.

Author(s)	Marsh, P.	H77
Title	**Mackenzie Delta hydrology and ecosystem interactions**	
Affiliations	National Hydrology Research Institute (Canada) [Affiliation]	
Publication	(1992 or 1993)	
lib. code	ASTIS 40253	
Libraries		
Summary	This ongoing study is aimed at understanding the factors controlling water levels and the availability of nutrients in a variety of lakes in the **Mackenzie Delta**. This work will allow us to better understand the natural **Mackenzie Delta ecosystem**, and to make better predictions of the effect of environmental change on the **Delta**. Cores of sediment will be collected from lake bottoms to determine how much sediment has been deposited over the last 30 years.	

Author(s)	Marsh, P.	H78
Title	**Snow accumulation/runoff in high latitude permafrost basins**	
Affiliations	National Hydrology Research Institute (Canada) [Affiliation]	
Publication	(1999)	
lib. code	ASTIS 48465	
Libraries		
Summary	…The long term objective of these studies is to improve the ability to predict weather, climate and water resources. … Work in 1999 concentrated on measuring (or estimating) all water entering into and being stored in the two research basins (Trail Valley Creek and Havikpak Creek). This included snowfall, blowing snow into/out of the basin, sublimation of snow during blowing events, rainfall, evaporation, stream flow and meltwater storage. Results from 1998 clearly show that storage of meltwater in snow pack, unfrozen soil and stream channels can be very large. This results in a long delay between snow melt and stream runoff. Ongoing work will compare results from a number of different years, so that we can understand the changes from year to year and compare results from areas on either side of the tree line. This work provides important data needed to test computer models used to predict the impact of climate on these environments. In addition to this work, analysis on the timing and magnitude of spring break in the **Mackenzie Delta** has been looked at since the mid 1960s. This work has clearly shown that the date of spring breakup has increased dramatically, with breakup occurring some 2 to 3 weeks earlier than in the 1960s while there has been no observed changes in the magnitude of the spring peak water level.	

Author(s) Marsh, P. Hey, M. H79
Title **The flooding hydrology of Mackenzie Delta lakes near Inuvik, N.W.T., Canada**
Affiliations
Publication *Arctic*, v. 42, no. 1, (Mar. 1989), p. 41-49
lib. code ASTIS 28968
Libraries ACU
Summary The hydrologic regime of lakes in the **Mackenzie Delta** is controlled primarily by lake sill elevations and water levels in the **Mackenzie River distributary channels**. The resulting variations in lake regime have important effects on the water, sediment, and nutrient balance of delta lakes, and therefore on the biologic regime of each lake. Analysis of 12-25 years of **Mackenzie River East Channel** water levels allowed the documentation of the relationship between flooding regime and sill elevation for lakes in the study area near **Inuvik**, N.W.T. These data showed that in this portion of the delta, the timing of the spring rise in water levels is very consistent, with peak levels, for example, occurring on 3 June with a standard deviation of only 4 days. The magnitude of the spring flood varies greatly from year to year, and as a result only 67% of lakes in the study area flood annually in the spring, while the remaining lakes have a flood frequency of greater than 1 year and less than 4 years. …The no-, low- and high-closure lakes were found to represent 12, 55, and 33% respectively of all lakes in the study area. Variations in the hydrologic regime of the **Mackenzie River** could occur in the future due to hydro-electric development, climate change, or rising sea level. Even small changes in **Mackenzie River levels** could result in a significant modification to the hydrologic regime of delta lakes. The effects on the viability of these lakes, or their chemical and nutrient balances, are not well known.

Author(s) Marsh, P. Schmidt, T. H80
Title **Influence of a Beaufort Sea storm surge on channel levels in the Mackenzie Delta**
Affiliations
Publication *Arctic*, v. 46, no. 1, (Mar. 1993), p. 35-41
lib. code ASTIS 32531
Libraries ACU
Summary A storm surge in the **Canadian Beaufort Sea** during September 1985 resulted in a maximum water level of 1.73 m asl and a maximum surge component of 1.38 m at **Tuktoyaktuk**. This surge resulted in rises in channel water levels of 1.05 m in the outer delta, 0.66 m in the middle delta and 0.16 m in the upper delta, with the peak water levels at these stations lagging 4, 17, and 21 hours respectively behind the peak water level in the **Beaufort Sea**. This surge clearly illustrates a number of points. First, throughout the **Mackenzie Delta** increased water levels resulting from surges must be taken into account when calculating channel discharge from a stage-discharge relationship. Second, storm surges play an important role in the flooding of delta lakes. However, further work is required to illustrate the relative importance of flooding by the **Mackenzie River** versus storm surge related flooding. Third, the surge of September 1985 illustrates the potential effect of rising sea level….

Author(s)	Michel, F.A. Fritz, P. H81
Title	**Environmental isotopes in permafrost related waters along the Mackenzie Valley corridor**
Affiliations	
Publication	In: Proceedings - International Conference on Permafrost, 3rd, Edmonton, Alberta, July 10-13, 1978. Ottawa : National Research Council of Canada, 1978-79, v. 1, p. 207-211 (1979)
lib. code	ASTIS 1515
Libraries	ACU
Summary	Water from samples representing five cores, collected along the **Mackenzie Valley Corridor**, was analysed for its ^{18}O and tritium contents. ... In all cases, tritium was found only at the surface and no measurable amounts were detected below about 3 meters. Similarly the ^{18}O contents decreased from about delta ^{18}O = -23 per mil SMOW at the surface to about delta ^{18}O = -31 per mil SMOW at depth.

Author(s)	Michel, F.A. Fritz, P. H82
Title	**Significance of isotope variations in permafrost waters at Illisarvik, N.W.T.**
Affiliations	
Publication	The Roger J.E. Brown memorial volume : proceedings of the Fourth Canadian Permafrost Conference, Calgary, Alberta, March 2-6, 1981 / Edited by H.M. French. NRCC - National Research Council of Canada, no. 20124, (1982), p. 173-181
lib. code	ASTIS 12164
Libraries	ACU
Summary	… Water extracted from the samples by squeezing was analyzed for ^{18}O, ^{2}H, and ^{3}H isotopic contents in addition to conductivity. The soils were examined for grain size and moisture content, while organic-rich horizons were dated using the radiocarbon method. Radiocarbon dating of the lake-bed sediments indicate that the lake initially formed some 6700 to 8700 years ago. ... The results of this and other ongoing studies into the distribution of stable and radioactive isotopes occurring naturally in waters related to permafrost indicate that such investigations provide valuable insight into the history and origin of these waters.

Author(s) Michelutti, N. Hay, M.B. Marsh, P. Lesack, L. Smol, J.P. H83

Title **Diatom changes in lake sediments from the Mackenzie Delta, N.W.T., Canada : paleohydrological applications**

Affiliations

Publication *Arctic, Antarctic, and alpine research*, v. 33, no. 1, (Feb. 2001), p. 1-12

lib. code ASTIS 50404

Libraries ACU

Summary Information on hydrological fluctuations and lake dynamics in the **Mackenzie Delta** in Arctic Canada is provided in a paleolimnological study of eight delta lakes. Because macrophyte production within **Mackenzie Delta lakes** is largely governed by the degree of river influence, estimates of past production within a lake may be used to infer past **Mackenzie River influence**. A diatom-based predictive model, using sub-ice winter methane concentrations as an indirect estimate of macrophyte production, was applied to fossil diatom assemblages identified in **Mackenzie Delta lake** sediment cores. Temporal shifts in the relative abundance of fossil diatom assemblages were recorded at all sites. Benthic and epiphytic fossil diatom taxa were common in lakes with minor river influence, whereas planktonic species dominated lakes with appreciable river connection. The fossil diatom record indicated that taxa are responding to changes in the degree of river influence and lake genesis. Lakes having the least amount of river connection supported the most favorable environment for macrophyte production, resulting in the highest sediment organic matter content, and consequently, the highest estimates of methane concentrations. In general, the diatom-inferred winter methane concentrations appeared to be reliable, and they indirectly track the main direction of variation in the fossil diatom assemblages. The lack of consistent trends between sites in diatom assemblage changes/inferred methane values indicates that the hydrology near **Inuvik**, although highly variable, has not undergone a steady-state shift over the past ~200 yr. However, our results do indicate that diatom taxa in delta lakes are sensitive to hydrological fluctuations in the **Mackenzie River** and that our present approach would be ideally suited for detecting long-term (e.g., decadal) hydrological variations.

Author(s) J.D. Mollard and Associates Limited H84

Title **Interim report : Inferred history of glacier retreat, associated glacial-lake stages and surface geological materials along the Mackenzie Valley between Liard River and the Mackenzie Delta**

Affiliations Templeton Engineering Company [Sponsor] Environment Protection Board [Sponsor]

Publication (1972?)

lib. code ASTIS 31585

Libraries ACU

Summary Principal objectives of the study are listed below: (a) Preparation of a synoptic view of dominant surficial geological materials in the **Mackenzie Valley** between the Liard River and the **Mackenzie Delta.** (b) Correlation and synthesis of different systems of terrain classification and mapping for the **Mackenzie Valley area**. (c) Development of a simplified legend of terrain materials and conditions, emphasizing those map-units that are most widespread and important from a terrain-sensitivity standpoint. (d) Preparation of a set of maps illustrating the sequence of sediment deposition and type of surficial deposits in the **Mackenzie Valley**, especially in relation to glacier-margin retreat and the formation and drainage of proglacial lakes, which provides a geological frame work for mapping the depth and distribution of different kinds of soils in the Valley. (e) Development of simple classification of terrain that can be related directly to the modified unified soil classification system and to probable ranges of ice/water content, dry density, consistency limits, and proportion of fines (silt plus clay). (f) Superposition of the boundaries of mapped geological materials on to the best available topographic maps so that the soil materials can be studied in relation to slope gradient and slope aspect, and to surface drainage conditions, including the entire **Mackenzie River Valley**.

Author(s) Mouchot, M.-C. Alfoldi, T. De Lisle, D. McCullough, G. H85
Title **Monitoring the water bodies of the Mackenzie Delta by remote sensing methods**

Affiliations
Publication *Arctic*, v. 44, suppl. 1, (1991), p. 21-28 (Remote sensing of arctic environments.)
lib. code ASTIS 31323
Libraries ACU
Summary … Together, these techniques permit the assessment of the hydrologic flow (or its hindrance) of sediment and nutrients for the sustenance of aquatic flora and fauna. They further supply a method for the mapping of access routes by water craft to all parts of the Delta.

Author(s) Murton, J. H86
Title **The origin of deformed massive ice, Pleistocene Mackenzie Delta, Western Canadian Arctic**
Affiliations University of Sussex. School of Chemistry, Physics and Environmental Science [Affiliation]
Publication (1999)
lib. code ASTIS 48466
Libraries
Summary In the **Mackenzie Delta Region**, there are many large bodies of underground ice. The ice is commonly 10 or more meters thick, folded and underlies areas equivalent to several baseball fields. Two main suggestions for the origin of this so-called 'massive ice' are: (1) that it represents buried remnants of Ice Age glaciers; or (2) that it formed during the growth of permafrost. Deciding which of these two possibilities is the right one is essential to reconstruct ice-age history and examine environmental change in the **Mackenzie Delta Region**. Field observations suggest much of the massive ice in the northeast **Richards Island** area is of glacial origin. This ice commonly contains and underlies glacial sediment. Furthermore, the ice-sediment mixtures, the orientation of elongate stones in the ice, and the folds within the ice are very similar to those at the base of the modern Greenland ice sheet. However, in addition to this buried glacier ice and often occurring very close to it, there is a significant amount of ice which contains little sediment and has not been folded. This second type of ice developed after the former Canadian ice-sheet ceased moving, and probably formed during permafrost growth.

H87

Author(s) Murton, J. Hart, J. Maddy, D. Waller, R. Whiteman, C.

Title **The origin of deformed massive ice, Pleistocene Mackenzie Delta, western Canadian Arctic**

Affiliations University of Sussex. School of Chemistry, Physics, and Environmental Science [Affiliation]

Publication (1998)

lib. code ASTIS 46769

Libraries

Summary Geological fieldwork was carried out in two areas between June 29-August 18, 1998: Liverpool Bay between Cliff Point and the mainland "cutoff" with Nicholson Point. Massive underground ice was seen under stony clay containing fold and lens structures. The ice and sediment have been deformed beneath a glacier that previously covered this region. Deformation took place while the sediment was frozen because it contains blocks of ice ripped up from the underlying massive ice. Windblown sand underlies the ice. The ice, in terms of field characteristics, shows similarities with both ice that has grown in pre-existing sediment and, locally, with glacier ice. Central Eskimo Lakes Massive underground ice beside the central Eskimo Lakes has lies a variety of sediments, some of which are glacially deformed. In places, a stony clay above the ice merges laterally and/or vertically into a sandy, stony layer directly above the ice. This stony layer may represent a deposit formed by meltwater erosion of the stony clay. Beneath the massive ice bodies, ice lenses in glacially deformed pebbly sand were observed. The massive ice has field characteristics similar to ice formed in pre-existing sediment. Laboratory analysis of the ice and sediments are in progress.

H88

Author(s) Nixon, J.F. Hanna, A.J.

Title **The undrained strength of some thawed permafrost soils**

Affiliations

Publication *Canadian geotechnical journal*, v. 15, no. 2, (May 1979), p. 420-427

lib. code ASTIS 8794

Libraries ACU

Summary A large number of undrained shear strengths have been measured for thawed, undrained permafrost samples obtained from the **Niglintgak Peninsula** area of the **Mackenzie Delta**, N.W.T. The samples are mostly deltaic silts, with a few clay tills, and cover a wide range of depths, water contents, and frozen density. The undrained shear strengths of the thawed samples have been correlated with water content, frozen density, and sample depth. For these soil types, the strength is shown to decrease to zero at frozen densities of less than about 1670 kg/cubic metres and at water contents greater than about 35-42%. In the Niglintgak area, the undrained shear strength of the thawed samples below a depth of 10 m becomes relatively constant in the range of 23-43 kPa. This corresponds to a frozen density range of 1780-1870 kg/cubic metres, and previous experience with soils of this nature indicates that the corresponding thaw settlement at these depths would be less than 10%.

H89

Author(s) Northern Affairs Program (Canada). Water Resources Division

Title **Mackenzie River Hydrologic Information Map Series (HIMS)**

Affiliations

Publication (1999)

lib. code ASTIS 51038

Libraries ACU

Summary The Hydrologic Information Map Series (HIMS) is a set of nineteen (19) 1:250,000 scale topographic map sheets covering the **Mackenzie River** and adjacent land from Great Slave Lake downstream to the **Mackenzie Delta** and **Beaufort Sea coast**. The maps contain information on hydrology, fluvial geomorphology and water quality information obtained from Environment Canada, other government agencies, private sector environmental consultants, and university research documents.

Author(s)	Northern Engineering Services Company H90
Title	**Summary report on channel sounding data and river ice breakup on the Mackenzie River, 1977**
Affiliations	Canadian Arctic Gas Study Limited [Sponsor]
Publication	Northern Engineering Services Co., (1977)
lib. code	ASTIS 31608 (same report for 1976 is ASTIS 31606)
Libraries	ACU
Summary	The specific objectives of the study were: 1. To obtain a bathymetric map of the upstream end of the deep channel (17-18 m deep vs. a general 3-7 m throughout), approximately 2 km off the west shore of Shallow Bay. 2. To obtain a photographic record of the ice breakup. 3. To identify possible locations of ice jams near the crossings. 4. To observe the extent of flooding at the crossings in the delta, and the increase in water level at the **Mackenzie** crossings east of **Fort Simpson**.

Author(s)	Northwest Hydraulic Consultants Ltd. H91
Title	**Mackenzie/Dempster Highway : hydrology study : Inuvik to N.W.T.-Yukon border**
Affiliations	Canada. Dept. of Public Works. Western Region [Sponsor]
Publication	(1972)
lib. code	ASTIS 30378
Libraries	ACU
Summary	… The Mackenzie Highway is being constructed along the **Mackenzie Valley**, passing through **Inuvik** and terminating at **Tuktoyaktuk**. ... Many drainage structures are required along the routes, but the hydraulic design of these structures is difficult as little is known about the hydrology of the regions through which these roads are being built. In order to have a firmer basis for design, the Department of Public Works, Western Region, retained Northwest Hydraulic Consultants Ltd. to study the streamflow hydrology of the region with the objective of determining design peak runoff values.

Author(s)	Pietroniro, A. Prowse, T.D. Marsh, P. Pomeroy, J.W. H92
Title	**Classification of hydrologically significant land cover in permafrost basins**
Affiliations	National Hydrology Research Institute (Canada) Global Energy and Water Experiment [Sponsor] Canada. Indian and Northern Affairs Canada [Sponsor] Science Institute of the Northwest Territories [Sponsor] Polar Continental Shelf Project (Canada) [Sponsor]
Publication	In: Project reports 1994-95 (including attachments): Arctic Environmental Strategy NWT Water Component / Northern Affairs Program (Canada). Water Resources Division. - Yellowknife, N.W.T. : Water Resources Division, Indian and Northern Affairs, (1995), 3p. Proceedings, Canadian Symposium on Remote Sensing (year?)
lib. code	ASTIS 41666
Libraries	ACU
Summary	Scientists at the National Hydrology Research Institute (NHRI) have conducted research on the unique hydrologic characteristics of the **Mackenzie Basin** for several decades, with study sites in major hydrologically representative regions, including near **Fort Simpson** and **Inuvik**. … Remote sensing has been used to derive appropriate data for hydrologic simulation…. The terrain classifications were then input to Grouped Response Unit (GRU) based hydrologic models, the reliability of which are highly dependent on the quality of hydrologic-terrain typing. Comparison of the results for the classification schemes and their suitability as a basis of applying the GRU modelling approach are discussed.

Author(s)	Prowse, T.D.	H93
Title	**Ice jam characteristics, Liard-Mackenzie River confluence**	
Affiliations		
Publication	*Canadian Journal of Civil Engineering*, Vol 13, 653-665 (1986)	
lib. code		
Libraries		
Summary		

Author(s)	Reeder, S.W.	H94
Title	**Annual water quality report of the Mackenzie River drainage basin**	
Affiliations	Canada. Inland Waters Directorate. Western and Northern Region. Water Quality Branch Environmental-Social Program, Northern Pipelines (Canada) [Sponsor]	
Publication	Ottawa : Information Canada, (1973) 71 p. (Environmental-Social Committee Northern Pipelines, Task Force on Northern Oil Development report, no. 73- 12)	
lib. code	ASTIS 27510	
Libraries	ACU OORD	
Summary	Not available	

Author(s)	Reeder, S.W.	H95
Title	**Report on 1973 water quality studies in the Mackenzie drainage basin**	
Affiliations	Canada. Inland Waters Directorate. Western and Northern Region. Water Quality Branch Environmental-Social Program, Northern Pipelines (Canada) [Sponsor]	
Publication	Ottawa : Information Canada, (1974). 108 p. (Environmental-Social Committee Northern Pipelines, Task Force on Northern Oil Development report, no. 74- 19)	
lib. code	ASTIS 27511	
Libraries	ACU OORD	
Summary	Not available	

Author(s)	Reid, B.	H96
Title	**Flow gauging of selected small streams in the Mackenzie River Valley**	
Affiliations	HBT AGRA Limited Northern Oil and Gas Action Program (Canada) [Sponsor] Arctic Environmental Strategy [Sponsor]	
Publication	Yellowknife, N.W.T. : Water Resources Division, DIAND, (1997).	
lib. code	ASTIS 41584	
Libraries	ACU	
Summary	The project involved establishing stream flow gauging stations on four small streams in the **Mackenzie Valley** between **Norman Wells** and **Inuvik** ... to provide hydrological data along the potential oil/gas pipeline route. Site selection was based on a previous review and assessment of data needs done by HBT Agra Limited (1992). Representative monitoring sites were chosen based on geographical distribution and appropriate gauging locations. The sites selected for gauges ... were: 1. Hannah River ..., 2. Payne Creek ..., 3. Charrue River ..., 4. Travaillant River	

H97

Author(s) Reid, B. Goodison, B.E. Metcalfe, J.R.
Title **A corrected precipitation archive for the Northwest Territories**
Affiliations
Publication Arctic Environmental Strategy : summary of recent aquatic ecosystem studies / Edited by J. Chouinard and D. Milburn. Northern water resources studies, (1995), p. 171-181
lib. code ASTIS 36995
Libraries ACU
Summary Project objective: To provide a record of precipitation values for the NWT and **Mackenzie River Basin** that has been corrected for biases in measurement method and wind-induced error. ... The major source of water in NWT basins is precipitation. To estimate flows and to regulate the construction of holding ponds, accurate input values of all environmental parameters to the water balance equation must be available to users in both industry and government. The correction of six hourly archived precipitation measurements for known systematic errors will provide significantly improved estimates of actual precipitation than are currently available. It is anticipated that anomalies currently existing between various hydrologic data sets will be minimized after correction of the precipitation archive.

H98

Author(s) Reid, K.W.
Title **Mackenzie Basin water quality investigations: water quality investigations in the Mackenzie Basin with special reference to the potential for impairment of water quality by pipelines or road construction.**
Affiliations
Publication Environmental- Social Committee Northern Pipelines, Task Force on Northern Oil: s.l. (1975)
lib. code TD 227 .N62 R45 1975
Libraries ARI
Summary Water quality, water quality management, petroleum pipelines, roads- design and constraction. NT

H99

Author(s) Rouse, W.
Title **Modelling the energy and water balance and characteristics of lakes in the Mackenzie River basin**
Affiliations McMaster University [Affiliation]
Publication (2001)
lib. code ASTIS 51485
Libraries
Summary The goals of the research were to: 1) fully understand and model the role of lakes in the energy and water-balance in the **Mackenzie River basin** (MRB); (2) forecast the role that lakes will play in the water-balance, energy-balance, and hydrology of the MRB during climatic change; (3) document the aerial coverage of lakes in select regions of the MRB; (4) develop models relating lake size to lake depth; and (5) scale energy and water balance modelling from individual lakes to local, regional, and macro-scales. Measurements of energy and water exchanges on small, medium, and very large lakes were continued during the ice-free season. Assessment of lake sizes and lake depths and volumes was continued in the region between Great Slave and Great Bear Lakes (North Slave Region). A start was made in modelling the energy and water budgets of various-sized lakes and in integrating this lakes research into the Canadian Regional Climate Model.

Author(s)	Sawetsky, L.	H100
Title	**Summer hydrology surveys within the Inuvialuit Settlement Region : biophysical baseline studies in support of the Mackenzie Delta gas feasibility study**	
Affiliations	Golder Associates [Affiliation]	
Publication	(2001)	
lib. code	ASTIS 51430	
Libraries		
Summary	Based on the results of a reconnaissance survey, 17 watercourses were identified where more detailed hydrology studies were required. Three sites were surveyed in the Inuvialuit Settlement Region (three delta channels near Big Lake) before weather conditions precluded further studies. Each detailed survey included a general assessment of stream type, stage, channel morphology, bed material and watershed characteristics. Where conditions allowed, detailed survey measurements were taken of the channel cross-section and longitudinal profile. At some locations this was not possible due to the depth of flow or due to snow and/or ice conditions. Photographs were taken at each site to help document characteristics of each crossing location.	

Author(s)	Sharma, T.C.	H101
Title	**Canadian Water Quality Index Determination for 4 Sites in the Mackenzie River basin**	
Affiliations	Ecological Monitoring and Assessment Network (EMAN), Environment Canada, Burlington, Ontario (Dr. Ashok P. Lumb) and Atmospheric & Hydrologic Sciences Division, Environment Canada, Yellowknife, NT (Douglas R. Halliwell)	
Publication	(September 2002)	
lib. code		
Libraries		
Summary	Not Available	

Author(s)	Shearer, J.M. Blasco, S.M.	H102
Title	**Further observations of the scouring phenomena in the Beaufort Sea**	
Affiliations		
Publication	Current research - Geological Survey of Canada, paper 75- 1A, p. 483-493	
lib. code	ASTIS 14863	
Libraries	ACU	
Summary	... The summer of 1974 ... The edge of the polar pack was not much more than 15 miles offshore, except in **Mackenzie Bay** where the indentation southwards off the **Mackenzie River delta** gave, on occasion, up to 40 miles of open water. ... It is proposed that all scouring by ice on the bottom is done when the ice is frozen into the polar pack and its effective momentum is orders of magnitude greater than when drifting alone. Many of the scours observed are in fact a network of parallel scours caused by the movement of one or more pressure ridge and ice island keels frozen into the polar pack and thus all moving as part of a rigid system .... Echo sounding profiles with a 200 khz sounder have shown that the properties of the bottom scours in profile seem to vary considerably from shallow to deep water and from area to area. ... it appears that the age of scour in general cannot be related to width or peakedness alone, but that relative ages can be assigned to scours whatever the size, depending upon the amount of infilling.	

Author(s) Sherstone, D.A. H103
Title **Ice thickness in the Mackenzie Delta, winter 1986-87**
Affiliations
Publication Report - Canada. Directorate of Scientific Services, no. 88- 1, (1988).
lib. code ASTIS 28191
Libraries ACU
Summary The ice monitoring program followed the pattern of previous winters. …Where practicable gauges were read at 10 day intervals by staff members of the Inuvik Scientific Resource Centre. Eighteen ice gauges were removed and the ablation gauges read on May 27. The ice at the time of removal was intact at all gauge sites, with significant snow cover remaining at 13 gauges. Approximately 60% of the central Delta was flooded, with water levels being reported as 1.9 metres above winter ice levels. An attempt to read the remaining two ice gauges and the ice ablation gauges on June 01 failed as break-up had occurred in these sections.

Author(s) Sherstone, D.A. H104
Title **Northern river ice regimes**
Affiliations Canada. Glaciology Division [Affiliation]
Publication (1990)
lib. code ASTIS 38149
Libraries
Summary Ice thickness gauges are installed on river channel ice. Twenty gauges are installed in the **Mackenzie Delta** and 12 in Hay River. Every 10 days the gauges are read to obtain the total ice, which [sic] ice and snow quantities at each site.

Author(s) F.F. Slaney & Company H105
Title **1972-1974 environmental program, Mackenzie Delta, N.W.T. : volume 2 : hydrology**
Affiliations Imperial Oil Limited [Sponsor] Gulf Oil Canada [Sponsor] Shell Canada Limited [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]
Publication F.F. Slaney & Co., (1974) Part of a seven volume set.
lib. code ASTIS 30274; TD 195 .G3 F47 1974
Libraries ACU; ARI
Summary The basic objective of the 1972-73 hydrology program was to determine primary characteristics of waterflows at stations on **Harry Channel, Middle Channel** and **East Channel** (Map 2-2). In addition, observations were to be made of extent of snow melt and early spring flooding near **Taglu** G-33. The purpose of the program was to obtain enough background information on channel flows and hydrologic conditions to facilitate impact projections.

Author(s) F.F. Slaney & Company H106
Title **1975 hydrology survey : Niglintgak, Mackenzie Delta, Northwest Territories**
Affiliations Shell Canada Limited [Sponsor]
Publication (1976)
lib. code ASTIS 31620
Libraries ACU
Summary ... The specific objective of the program was to supplement the existing hydrologic data base by collecting additional 1975 water level, discharge, flooding, bathymetric, water chemistry and ice characteristics data and thus provide a comprehensive technical data base essential for the engineering design of the proposed facilities. ...

Author(s)	Spedding, L.G.	H107
Title	**Landfast and shear zone ice conditions in the southern Beaufort Sea - winter 1977/78**	
Affiliations	Esso Resources Canada	
Publication	(1979) 5 microfiches	
Lib. code	ASTIS 10826	
Libraries	ACU NFSMO	
Summary	The objective of the program was to evaluate the potential of various radar systems for characterizing the surface roughness of ice, especially radar altimeters for measuring ridge heights. ... An aircraft equipped with laser profilometers, cameras, radiometer, scatterometer and radar altimeter flew a mission north of **Richards Island**. Industry's contribution to the program was to mark representative ridges with targets so they could be overflown, and provide ground truth observations on blocksizes, snow depths, salinities and ridge heights. ... This report summarizes the results from all these programs. Shear and landfast ice zone conditions are documented.	

Author(s)	Spence, C.	H108
Title	**Streamflow variability (1965 to 1998) in Five Northwest Territories and Nunavut Rivers**	
Affiliations		
Publication	Canadian Water Resources Journal Vol. 27, 135 – 154 (2002)	
lib. code		
Libraries		
Summary	Not Available	

Author(s)	Stein, J.	H109
Title	**One-dimensional coupled heat and mass transfer in a snow-soil environment**	
Affiliations		
Publication	Proceedings of the Hydro-Ecology Workshop on the Arctic Environmental Strategy Action on Water, May 1996, Banff, Alberta / Edited by D. Milburn. NHRI symposium, no. 16, (1997), p. 343	
lib. code	ASTIS 41443	
Libraries	ACU	
Summary	The **Mackenzie River basin**, which is the focus of the **GEWEX** investigations, is partially underlain by permafrost and its basin hydrology is strongly influenced by seasonally or perennially frozen ground. Although the effects of frost on individual hydrologic processes have been studied, better understanding of the combined thermal and moisture behaviour of subarctic slopes and basins will contribute to cold regions hydrology and will provide a good foundation for the regional modelling of the energy and water fluxes of the **Mackenzie River basin**. …. Measured field variables include net radiation, solar radiation (reflected and incident), air temperature, vapour pressure, snow surface temperature, wind speed, snow depth and snow water equivalent, snow and soil temperatures, soil heat fluxes and liquid and total moisture content at different depths.	

Author(s)	Strong, G.S. [Editor]	H110
Title	**Proceedings of the 5th Scientific Workshop for the Mackenzie GEWEX Study (MAGS)**	
Affiliations		
Publication	(2000)	
lib. code	QC 708 .N67 S75 2000	
Libraries	ARI	
Summary	Hydrology, **Mackenzie GEWEX** study, NT	

Author(s)	Strong, G.S. [Editor]	H111
Title	**The Mackenzie GEWEX Study (MAGS): phase 1 Final Reports and Proceedings, 6th Scientific Workshop**	
Affiliations		
Publication	PAWS Printing and Distribution: Devon, AB (March 2001)	
lib. code	QC 981.8 .C5 S38 2000	
Libraries	ARI	
Summary	Hydrology, **Mackenzie GEWEX** study, NT	

Author(s)	Strong, G.S. Hrynkiw, C. [Editors]	H112
Title	**Proceedings of the 2nd Scientific Workshop for the Mackenzie GEWEX Study (MAGS)**	
Affiliations		
Publication	Atmospheric Environment Service: Saskatoon, Sask.: (1998)	
lib. code	QC 981.8 .C6 S38 1999	
Libraries	ARI; http://www.tor.ec.gc.ca/GEWEX/MAGS	
Summary	Hydrology, hydrology research, **Mackenzie River**, NT	

Author(s)	Strong, G.S. [technical editor] Wilkinson, Y.ML. [assistant editor]	H113
Title	**Proceedings of the 4th Scientific Workshop for the Mackenzie GEWEX Study (MAGS)**	
Affiliations		
Publication	Atmospheric Environment Service: Saskatoon, Sask.: (1999)	
lib. code	QC 708 .N67 S75 1999	
Libraries	ARI	
Summary	Hydrology, hydrology research, **Mackenzie GEWEX** study. **Mackenzie River**, NT	

H114

Author(s) Szeto, K.K.
Title **Moisture recycling over the Mackenzie basin**
Affiliations
Publication *Atmosphere-ocean*, v. 40, no. 2, (June 2002), p. 181-197
lib. code ASTIS 51876
Libraries ACU
Summary Moisture recycling over the **Mackenzie basin** is investigated by estimating the precipitation recycling ratio (the ratio of precipitation derived from local evaporation to the total precipitation within the basin) for the region with the National Centers for Environmental Prediction (NCEP) reanalysis dataset and the Meteorological Service of Canada (MSC) precipitation climatology. The results suggest that recycling is very active over the region during the warm season (April - August) and extremely inactive during the cold season. The annual recycling ratio estimated for the basin is about 0.25, which is close to that estimated by others for the Mississippi and Amazon basins despite the lower annual evapotranspiration over the **Mackenzie basin**. The high recycling ratios and the recycling patterns estimated for the basin during the warm season are found to be consequences of the unique topographical and climatic settings characterizing the region. Analysis of conditions during the years having anomalous spring and summer precipitation suggests that the large-scale atmospheric setting could act in concert with the basin's unique topographic and surface characteristics to increase or to decrease precipitation and its recycling over the basin, depending on whether the basin is under the influence of a persistent large-scale low or a high pressure system. In the former case, much of the recycled precipitation would fall over the north-western parts of the basin where the runoff ratios are relatively high, and thus enhance the summer discharge from the basin. When the basin is under the influence of a persistent high pressure system, much of the recycled precipitation would fall over the southern part of the basin where the runoff ratios are relatively low, and thus reduce the discharge from the basin. It is suggested that this latter effect might have contributed to the record low summer discharge from the basin during 1995.

H115

Author(s) Thomas, J.F.J.
Title **Mackenzie river and Yukon river drainage basins in Canada, 1952-53**
Affiliations
Publication Mines branch, industrial Minerals division: Ottawa, ON (1957)
lib. code TD 226 >I53 1957 RARE
Libraries ARI
Summary Water supply, **Mackenzie river** and Yukon river watersheds.

Author(s) Van Everdingen, R. O. Shakur, A. M. Michel, F. A. H116

Title **Oxygen- and sulfur-isotope geochemistry of acidic groundwater discharge in British Columbia, Yukon, and District of Mackenzie, Canada**

Affiliations Natl. Hydrol. Res. Inst., Calgary, AB, Canada

Publication *Canadian journal of earth sciences*, v. 22, no. 11, (Nov. 1985), p.1689-1695

lib. code ASTIS 19710

Libraries ACU

Summary The Paint Pots in Kootenay National Park (British Columbia) appear to derive the Fe, Zn, Pb, and SO_4^{--} contents of their water from sulfide mineralization in Lower and Middle Cambrian carbonates. The Fe, Zn, Ni, and SO_4 contents of groundwater discharging into a tributary of Engineer Creek (Yukon) are likely derived from sulfide mineralization in Devonian or Ordovician black shales exposed in the area. The high Fe and SO_4^{--} contents of a natrojarosite deposit northeast of Fort Norman (Northwest Territories) are probably derived from pyritiferous Cretaceous shales in that area. Isotope analyses of water and of dissolved and precipitated sulfur species from these three sites were acidic, heavy-metal-bearing groundwater is being discharged revealed that between 38 and 74% of the oxygen used in the subsurface oxidation of metal sulfides is supplied by H_2O molecules rather that by molecular (dissolved) oxygen. The available data also suggest that lower percentages of water oxygen in the secondary sulfates reflect increasing activity of Thiobacillus ferrooxidans or similar bacteria in the oxidation process.

Author(s) Vitt, D.H. Halsey, L.A. H117

Title **Disequilibrium response of permafrost in peatlands of the southern Mackenzie Basin**

Affiliations

Publication In: Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont. : Environment Canada, (1994), p. 275-277

Lib. code ASTIS 36874

Libraries ACU

Summary Warming since the Little Ice Age has had little effect on the percentage of permafrost occurrence in areas where mean annual temperatures are above 0.0 to 0.5 C or less than -3.0 to -3.5 C as these areas were either never cold enough to develop permafrost, or conversely have never been warm enough for permafrost to degrade on a regional basis. Although permafrost has thawed extensively since the Little Ice Age, as documented by internal lawns ... in any given temperature zone permafrost coverage has increased. This increase in permafrost coverage can be attributed to the persistence of relict permafrost. Since the Little Ice Age, mean annual temperature isotherms have shifted northwards, as has permafrost. However, temperature isotherms have shifted a greater distance north than has permafrost resulting in a lag of the permafrost system relative to mean annual temperature. The lag in degradation results from the insulating capacity of Sphagnum, allowing permafrost to persist under warmer conditions than it can develop. The assessment of changes to the permafrost environment from global warming needs to address the disequilibrium response of permafrost dominated peatlands.

Author(s)	Western Ecological Services Ltd.	H118
Title	**Hydrology information series**	
Affiliations	Canada. Inland Waters Directorate [Sponsor] Canada. Energy, Mines and Resources Canada [Sponsor]	
Publication	NOGAP project no. C.10 : Hydrologic mapping data base (1985)	
lib. code	ASTIS 21042	
Libraries	OORD	
Summary	Compilation of existing hydrologic data for the **Mackenzie River Valley** from approximately the Great Bear River northwards to **Richards Island**. Twelve map sheets ... make up the hydrology Information Series, which summarizes existing information on hydrology, fluvial geomorphology and water quality. ... The maps must, however, be regarded as a first approximation because current research and survey programs are generating new information.	

Author(s)	Western Ecological Services Ltd. Salix Enterprises Ltd.	H119
Title	**Alluvial ecosystems**	
Affiliations	Mackenzie River Basin Committee (Canada) [Sponsor]	
Publication	Mackenzie River Basin study report supplement, 2 (1981)	
Lib. code	ASTIS 8838	
Libraries	ACU	
Summary	The broad purpose of this report is to document break-up and the snowmelt flood as they relate to vegetation of alluvial sites and to wildlife species that rely upon alluvial habitats along the major rivers of the **Mackenzie River Basin**. The report deals with hydrologic processes during floods, climatic conditions in relation to flood periods, the life and death of alluvial landforms, plant succession and primary productivity of alluvial sites, wildlife habitat on alluvial sites, and ecological processes in alluvial ecosystems. Some aspects of resource use are discussed. The final chapter is a synthesis of the complex ecological relationships within alluvial ecosystems of the **Mackenzie River Basin**.	

Natural Value Theme: River Morphology

Author(s)	Boyes, D.M. M1
Title	**Geomorphologic analysis of the Mackenzie Delta, NWT, using spatial image processing [Une analyse géomorphologique du delta du Mackenzie, T.N.-O. en utilisant le traitement en images spatiales]**
Affiliations	
Publication	In: Fourth National Student Conference on Northern Studies : Conference programme and abstracts, Government Conference Centre, Ottawa, November 26-27, (1994) (abstract only) [English and French]
lib. code	ASTIS 36620
Libraries	ACU
Summary	The **Mackenzie Delta**, N.W.T. is composed of a complex array of channels and lakes within a matrix of terrestrial vegetation growing upon sedimentary deposits. Study of the delta's hydrology and morphology has been hindered by its enormous size, northern location, and complexity. Using satellite remote sensing and spatial image processing the delta can be described and morphological variables can be mapped, interpreted, and modeled. Landsat Thematic Mapper data are being used to map physiographic features of the **Mackenzie Delta including lakes, channels, and plant communities** on subaerial sediment deposits. A faster geographic information system (GIS) is being used for spatial image processing of the satellite data to perform morphometric analysis of surface features. The results of this analysis are being used to interpret the importance of, and the relationships between, various morphological processes on the delta surface.

Author(s)	E.W. Brooker & Associates Ltd. M2
Title	**Geotechnical report, terrain investigation, proposed Arctic Gas Pipeline routes, Richard's Island lateral and lower Mackenzie alternates, volume I**
Affiliations	Gas Arctic-Northwest Project Study Group [Sponsor]
Publication	(1972)
lib. code	ASTIS 39774
Libraries	ACSP
Summary	This volume (Volume I) presents an overview of the scope and method of operation used for the field investigation. …. f. To obtain ground surface and river bed profiles of river valleys along the routes.

Author(s)	E.W. Brooker & Associates Ltd. M3
Title	**A cooperative study of changes in ground thermal regime associated with channel shift in Mackenzie Delta**
Affiliations	Gas Arctic Systems Study Group [Sponsor]
Publication	E.W. Brooker Assoc. Ltd., (1971)
lib. code	ASTIS 31690
Libraries	ACU
Summary	... The purpose of this work was a. to study the change in ground thermal regime associated with lateral shifting of a major channel in the **Mackenzie Delta**. The rate of lateral shift of the river has been measured at about one foot per year. b. ... [to verify] the computer code for permafrost regression analysis, with respect to measured field data….

Author(s) E.W. Brooker & Associates Ltd. M4
Title **A study of thermal disturbance due to channel shifting : Mackenzie Delta, N.W.T.**
Affiliations Gas Arctic Systems Study Group [Sponsor]
Publication Geotechnical report, no. 21 (1972)
lib. code ASTIS 31714
Libraries ACU
Summary This report presents a summary of the preliminary results from a study on thermal disturbance due to river channel shifting in the **Mackenzie Delta**, N.W.T. ... The study seeks to achieve the following:... 2.2 To study the geomorphological pattern of permafrost distribution under a shifting river channel.

Author(s) Brooks, G. M5
Title **Contemporary lateral channel behaviour along the lower reaches of tributaries to the Mackenzie River - Fort Simpson to Norman Wells**
Affiliations Geological Survey of Canada. Terrain Sciences Division [Affiliation]
Publication (1992)
lib. code ASTIS 35836
Libraries
Summary The researcher and his team will use a special instrument to transfer the channel position at a given location from an aerial photograph to a base map. Repeating this exercise for different aged aerial photographs of the same site reveals the progressive change in the channel position. These maps will show exactly where the channel change is occurring and will allow the rates of movement to be measured.

Author(s) Brooks, G. M6
Title **Reconnaissance of the East Channel of the Mackenzie Delta**
Affiliations Geological Survey of Canada. Terrain Sciences Division [Affiliation]
Publication (1993)
lib. code ASTIS 35838
Libraries
Summary Data will be collected on the features of these sites, including a survey of river bank forms and old river channels.

Author(s) Carson, M.A. M7
Title **Channel stability in the Mackenzie Delta, NWT : 1992/93 update**
Affiliations M.A. Carson & Associates Canada. Inland Waters Directorate [Sponsor]
Publication NOGAP project no. C.11 : Sediment-related aspects of northern hydrocarbon development (1993?)
lib. code ASTIS 35028
Libraries ACU OORD
Summary The present report supplies the following information: an overview of proprietary literature from industry in the 1970s dealing with channel stability in the outer delta; and a review of the work of the Geological Survey of Canada in 1990-1991 dealing with channel stability at proposed pipeline crossing in the **Niglintgak, Taglu** and **Swimming Point** areas; a search of Russian literature dealing with hydrothermal erosion as it might assist channel stability studies in the delta. An overview of the proprietary literature is provided in the first chapter. The next three chapters deal separately, in some detail, with channel stability issues in the three separate areas of **Niglintgak Island** (**Kumak Channel**), **Taglu Island** (**Harry and Kuluarpak channels**) and **Swimming Point** (**East Channel**). A short concluding chapter considers possible further involvement of Inland Water Directorate in this work.

Author(s) Carson, M.A. Conly, F.M. Jasper, J.N. M8

Title **Riverine sediment balance of the Mackenzie Delta, Northwest Territories, Canada**

Affiliations

Publication Canadian Geophysical Union Hydrology Section Special Issue / Edited by P. Marsh. Hydrological processes, v. 13, no. 16, special issue, (Nov. 1998), p.2499-2518

lib. code ASTIS 50852

Libraries

Summary Data acquisition by Environment Canada and others over the last 20 years now allows the first comprehensive synthesis of the riverine sediment balance of the **Mackenzie Delta**. The data presented here are: sediment inputs from the **Mackenzie** and Peel **rivers** at the **delta head** and river sediment transfers from the **Upper Delta** to the **Outer Delta** (1974-1994); in-channel and overbank sedimentation, including lakes (post-1963); and in-channel erosion along **Delta channels** (1950-1981). These data indicate that the mean annual sediment input to the Delta is about 128 Mt, and the corresponding loss to offshore is about 85 Mt. The net sedimentation of 43 Mt is divided almost equally between the Upper Delta (mostly on levees and lake beds) and the Outer Delta (mostly on lake shores). Gross sedimentation within the Delta, about 50% of which is on point bars, is much higher, estimated at about 103 Mt annually: the difference is the large amount of sediment reentrainment within the Delta, through bank erosion, primarily along **Middle Channel**. How much of this pointbar deposition is from settling of sediment delivered by the Mackenzie and Peel rivers (as distinct from local sediment derived from bank scour within the Delta) is not known. Such within-Delta sediment exchange (which could be as high as 50 Mt) might be important in determining the quality of sediment (nutrients, contaminants, etc) that it is being delivered offshore: it would be naïve to assume that all of this sediment is from the present-day input of the Mackenzie and Peel rivers.

Author(s) Fassnacht, S. M9

Title **1992 channel cross-sections for Mackenzie Delta hydraulic model**

Affiliations Canada. Inland Waters Directorate. N.W.T. Programs [Sponsor]

Publication Yellowknife, N.W.T. : Inland Waters Directorate, (1993).
(NOGAP project no. C.10 : Hydrologic mapping data base)

lib. code ASTIS 35032

Libraries ACU OORD

Summary This report presents the channel cross-sections taken in the summer 1992 and a brief discussion of the potential implications of certain cross-sections. Recommendations for the location of future cross-sections for use in the ONE-D Model and recommendations for further analysis are also included. Although the cross-sections were profiled in the ONE-D model, a number of the cross-sections may be used to determine trends in the flow through the **Mackenzie Delta**.

Author(s) Fassnacht, S. M10
Title **Mackenzie River East Channel scour hole investigations**
Affiliations Canada. Inland Waters Directorate. N.W.T. Programs [Sponsor]
Publication NOGAP project no. C.11 : Sediment-related aspects of northern hydrocarbon development (1993)
lib. code ASTIS 35027; TC 427 .N8 F37 1993
Libraries ACU OORD; ARI
Summary A scour hole on the East Channel of the **Mackenzie River** was documented in 1985 by Lapointe of the National Hydrology Research Institute. The hole was resurveyed in 1992 to examine changes in channel bathymetry, and evaluate mechanisms that create and evolve scour holes. The data show an average sedimentation within the East Channel scour hole of approximately 0.2 metres in seven years, with maximum erosion exceeding three metres and maximum fill nine metres. Bed material in the scour hole varies from almost 100 percent sand to areas of 80 percent silt and to 40 percent clay. All bed material was finer than 2 millimetres. Areas of high cohesion as well as low cohesion were defined in the scour hole. Channel bed scour holes are produced by dynamic mechanisms involving a series of processes. The most important processes causing deep scouring of channel beds are: flow structure; bed material inhomogeneities such as, particle size distribution, degree of consolidation, and cohesion; channel geometry; thermokarst in the channel beds; and ice cover related effects, typically related to ice jamming. Scour holes can be identified by locating scour embayments from topographic maps and by locating channel surface eddies. Efforts to understand the phenomenon of deep scouring of channels require field studies and data analysis….

Author(s) Fassnacht, S.R. Conly, F.M. M11
Title **Persistence of a scour hole on the East Channel of the Mackenzie Delta, N.W.T.**
Affiliations
Publication *Canadian journal of civil engineering*, v. 27, no. 4, (Aug. 2000), p. 798-804
lib. code ASTIS 48807
Libraries ACU
Summary Anomalies in the bathymetry of river channels are of great practical concern for designing sub-bed pipeline crossings. Of particular interest is the long-term stability of deep holes. Bathymetric evidence indicates that one unusually deep hole in the East Channel of the **Mackenzie River**, referred to as a scour hole, has existed as early as 1956. Detailed hydraulic and morphologic data were first collected in 1985, and again in 1992 to assess the spatial and temporal stability of the feature. Even with a record flood on the **Mackenzie River** in 1988, the hole, with a maximum depth approaching 30 m, was vertically stable over the 7-year period. However, lateral erosion and sedimentation have resulted in a shift in the horizontal position of the scour hole, with a maximum horizontal erosion of approximately 2 m/a. The average rate of lateral outward movement was observed to be 0.8 m/a.

Author(s) Ferguson, M.E. M12
Title **Sediment movement in lakes in the central area of the Mackenzie Delta, N.W.T.**
Affiliations
Publication Thesis (M. SC.) University of Saskatchewan, (1990)
lib. code QE 571 .F47 1990
Libraries U. Saskatchewan, ARI
Summary Sedimantation and deposition

Author(s) Forbes, C.D. M13
Title **Mackenzie River investigation : proposed major dredging program : interim report**
Affiliations
Publication Public Works Canada, Western Region, (1973)
lib. code ASTIS 49790
Libraries ACU
Summary The purpose of the **Mackenzie River** investigation is to arrive at a definitive cost estimate timing schedule and environmental impact of the overall dredging program proposed on the **Mackenzie River** .... the Department of Public Works engaged in a modified potamology study covering horizontal control, soundings, minor levelling, establishing bench marks for staff gauges, assisting in funding and in setting up automatic water stage recorders, surface current measurements, minor current metering for discharge data, bottom sampling, drilling, boring and sampling, identification of shoreline erosion and accretion, and the determination of low water datums. ...

Author(s) Forbes, D.L. M14
Title **Late Quaternary sea levels in the southern Beaufort Sea**
Affiliations
Publication Current research - Geological Survey of Canada, paper 80- 1B, p. 75-87 (year?)
lib. code ASTIS 7444
Libraries ACU
Summary … A hypothetical history for the **Mackenzie Delta** is proposed which includes limited isostatic depression due to late Wisconsin ice, minor uplift, and renewed subsidence due to forebulge collapse or sediment loading. A mid-Wisconsin transgression of the order of 10 m higher than present sea level is suggested by evidence in the **Mackenzie Delta** area and in north Alaska, but no evidence for sea levels higher than present since the late Wisconsin has been found west of Cape Bathurst. Coastal morphology, radiocarbon and archeological dates, and plausible mechanisms suggest a recent and perhaps continuing regional submergence. The tidal record at Tuktoyaktuk is insufficient to resolve the contemporary trend of sea level.

Author(s) Forbes, D.L. Solomon, S.M. Hamilton, T.S. M15
Title **Morphology and sedimentary processes of microtidal embayments, Beaufort Sea coast, western arctic Canada**
Affiliations Atlantic Geoscience Centre Pacific Geoscience Centre
Publication Contribution - Geological Survey of Canada, 12294 (1994)
NOGAP project no. D.01 : Coastal zone geotechnics, Beaufort Sea
lib. code ASTIS
Libraries
Summary The **Canadian Beaufort Sea coast** is a marine-transgressive, seasonally ice-covered, fetch-limited, microtidal environment. Coastal embayments have formed by valley flooding, barrier growth, and transgressive breaching of thermokarst lake basins formed by thawing of massive ground ice. This paper presents data from two contrasting embayments: (1) an estuarine barrier lagoon receiving runoff and sediment from a 5000 sq. km catchment but relatively little sediment from the marine side; and (2) a system of breached thermokarst lake basins with negligible direct runoff but strongly affected by the turbid freshwater plume of the **Mackenzie River**….

Author(s)	Harper, J.R. Penland, S.	M16
Title	**Beaufort Sea sediment dynamics : final report**	
Affiliations	Woodward-Clyde Consultants [Affiliation] Atlantic Geoscience Centre [Sponsor]	
Publication	(1982)	
lib. code	ASTIS 44138	
Libraries	ACU	
Summary	… This report provides a state-of-the-art interpretation of information related to sediment dynamics and outlines a revised sediment dispersal model for the **Beaufort Sea**. Analysis of the sediment budget indicates that the **Mackenzie River** is the major contributor of sediment to the **southern Beaufort Sea system**, contributing over 95 percent of the total. Analysis of mud volumes and sedimentation rates on the shelf indicates that the major portion of the sediment contributed by the **Mackenzie** River is deposited in shallow water near the **delta**….	

Author(s)	Hill, P.R.	M17
Title	**Coastal evolution in the Mackenzie Delta and Tuktoyaktuk Peninsula region**	
Affiliations	Centre océanographique de Rimouski [Affiliation]	
Publication	(1993)	
lib. code	ASTIS 36056	
Libraries		
Summary	The field activities consist of three small projects: (1) the measurement of beaches and a survey of **Tibjak Beach** (located 15 km north of **Tuktoyaktuk**); (2) a study of the sandbars located at the mouth of the **East Channel in Kittigazuit Bay**; and (3) a preliminary study of the lakes of the **Mackenzie Delta** in order to determine which lakes will be selected for future research. These activities will contribute to the understanding of shoreline erosion and buildup.	

Author(s)	Hollingshead, G.W. Skjolingstad, L. Rundquist, L.A.	M18
Title	**Permafrost beneath channels in the Mackenzie Delta, N.W.T., Canada**	
Affiliations		
Publication	In: Proceedings - International Conference on Permafrost, 3rd, Edmonton, Alberta, July 10-13, 1978. Ottawa : National Research Council of Canada, (1978-79), v. 1, p. 406-412	
lib. code	ASTIS 1574	
Libraries	ACU	
Summary	... permafrost was located beneath Shallow Bay and other channels. The conditions under which permafrost can persist, or aggrade and its impact on the channel morphology are discussed	

Author(s)	Interprovincial Pipe Line (NW) Ltd.	M19
Title	**Norman Wells Pipeline Project : 1992 report on monitoring of construction and operation**	
Affiliations		
Publication	(1992) 10th annual report	
ASTIS #	ASTIS 33776	
Libraries	ACU	
Summary	… In 1992, two continuing programs were implemented for aquatic monitoring. In one program, river bed profiles of the **Mackenzie** and Great Bear **River** were surveyed. Both profiles indicate sufficient cover over the pipeline. In the second program, a low level helicopter reconnaissance was completed of all water crossings. No areas of concerns were noted with respect to aquatic resources.	

Author(s) Jenner, K.-A. M20
Title **Modern deltaic sedimentation in an Arctic setting : Olivier Islands, Mackenzie Delta, Northwest Territories**
Affiliations
Publication Thesis (M.Sc.) - Dalhousie University, Dept. of Geology, Halifax, N.S., (1989).
lib. code ASTIS 51063
Libraries ACU
Summary Depositional processes and cored sediments were studied at the site of the Olivier Islands, a series of modern subaerial delta lobes presently developing at the mouth of a major distributary channel within the arctic **Mackenzie Delta**, Northwest Territories. Sediment transport and deposition are predominantly confined to a four month, ice-free, summer open-water season. During this period, heavy rainfall caused by storms in upstream distributaries, and coastal storm surges form the primary controls on water levels, discharge, sediment discharge and river mouth processes. Upstream flooding results in the introduction of anomalously high concentrations of suspended sediment to the distributary mouth during moderated water levels. Coastal surges result in bottom sediment resuspension, local coastal erosion, the introduction of brackish water into the distributary channel and upstream sediment transport during flow reversals. Seven distinct sedimentary facies have been identified. (description follows) The processes at the Olivier Islands are compared to sub-arctic delta sedimatation processes. The results of this study indicate that the shallow, transgressive framework (1.5 m) of the Olivier Islands, the effects of ice-related processes on sediment transport patterns, and storms are the three main factors contributing to these discrepancies.

Author(s) Kaustinen, O.M. Duggan, L.A. Lanziner, H.H. M21
Title **Hydrographic probe developed to obtain marine survey data from the ice**
Affiliations
Publication In: Proceedings of the First Offshore Mechanics/Arctic Engineering/Deepsea Systems Symposium / Edited by J.S. Chung. - New York : American Society of Mechanical Engineers, (1982), v. 2, p. 229-236
ASTIS # ASTIS 13068
Libraries NFSMO
Summary The Polar Gas Project plans to construct a large diameter pipeline system to deliver natural gas from the Canadian High Arctic Islands and from the **Mackenzie Delta** to southern markets. In order to collect bathymetric information for ice-covered channels, Polar Gas commissioned Offshore Survey and Positioning Services Ltd. to develop a hydrographic survey probe capable of operating in the Arctic environment to collect very high quality data suitable for use by marine pipeline designers. The probe, which incorporates a rotary side scan sonar, a high resolution bottom profiler, and water temperature and depth sensing instrument, has been used in a survey of the most northerly marine crossing on the Polar Gas route and has potential for use in other marine survey applications.

Author(s) McRoberts, E.C. M22
Title **A study of landslides in the vicinity of the Mackenzie River mile 205 to 660**
Affiliations Environmental-Social Committee
Publication (1973)
lib. code QE 599 .C3 M47 1973
Libraries ARI
Summary Landslides – Northwest Territories – **Mackenzie River Valley**

Author(s)	Nixon, M.	M23
Title	**Active layer monitoring network in the Mackenzie Valley**	
Affiliations	Geological Survey of Canada [Affiliation]	
Publication	(1996)	
Lib. code	ASTIS 43504	
Libraries		
Summary	See ASTIS 51451 M26	

Author(s)	Nixon, M.	M24
Title	**Active layer monitoring network in the Mackenzie Valley**	
Affiliations	Geological Survey of Canada [Affiliation]	
Publication	(1999)	
Lib. code	ASTIS record 48445	
Libraries		
Summary	See ASTIS 51451 M26	

Author(s)	Nixon, M.	M25
Title	**Active layer monitoring network in the Mackenzie Valley**	
Affiliations	Geological Survey of Canada [Affiliation]	
Publication	(2000)	
Lib. code	ASTIS 50034	
Libraries		
Summary	Active layer monitoring system in the **Mackenzie Valley**. See ASTIS 51451 M26	

Author(s)	Nixon, M.	M26
Title	**Active layer monitoring network in the Mackenzie Valley**	
Affiliations	Geological Survey of Canada [Affiliation]	
Publication	(2001)	
Lib. code	ASTIS 51451	
Libraries		
Summary	This was the 11th year of the annual survey of the active layer monitoring system in the **Mackenzie Valley** from **Fort Simpson to the Arctic coast** (**Inuvialuit Settlement Region, Gwich'in Settlement Area, Sahtu Settlement Area, Deh Cho Region**). There are now 56 sites, with about half in the **Mackenzie Delta**. Along this 1400 km transect, active layer thickness varies more as a result of local factors, related to situation, than to regional climate, associated with latitude. Thaw penetration is increasing at many sites over much of the system with 1998 and 1996 having the greatest recordings. In the long term, measurements from this transect will be used to help model climate change impact on near-surface permafrost in this fragile environment.	

Author(s)	Nixon, M. Wright, F.	M27
Title	**Active layer monitoring network in the Mackenzie Valley**	
Affiliations	Geological Survey of Canada [Affiliation]	
Publication	(1997)	
Lib. code	ASTIS record 43568	
Libraries		
Summary	See ASTIS 51451 M26	

Author(s)	Nixon, M. Wright, F.	M28
Title	**Active layer monitoring network in the Mackenzie Valley**	
Affiliations	Geological Survey of Canada [Affiliation]	
Publication	(1997)	
Lib. code	ASTIS record 43568	
Libraries		
Summary	See ASTIS 51451 M26	

Author(s)	Northern Engineering Services Company	M29
Title	**Channel geometry and flow distribution : Mackenzie River - Lower Delta : Summer 1975**	
Affiliations	Canadian Arctic Gas Study Limited [Sponsor]	
Publication	Northern Engineering Service Co., (1976)	
lib. code	ASTIS 31615	
Libraries	ACU	
Summary	... The present study was undertaken to better define conditions of channel geometry and flow distribution. The specific objectives of this study were: (1) To provide detailed surveys of the bottom topography of three major Lower Delta channels in the vicinity of proposed CAGSL pipeline crossings, namely the East Channel, Langley Island Channel, and North Reindeer Channel, in order that any major changes since the 1974 report could be determined. (2) To define the channel geometry with more precise horizontal control than that used in the 1974 study, in order that possible future channel shifting or movement of scour holes could be monitored. (3) To measure the discharge in each of the three channels under conditions of relatively high summer flow. (4) To measure the discharge in the Reindeer Channel and Middle Channel upstream of Neklek Channel in order to better define the summer flow distribution. (5) To observe and measure variations in water level during the study period due to the effects of tides and storm surges. No attempt has been made in this study to quantify the effect of tides and storm surges on the summer flow distribution and stream velocities. The variation in water levels during the survey period was documented to the extent possible in order to permit the calculation of these effects at some later date if required.	

Author(s)	Outhet, D.	M30
Title	**Bank erosion in the southern Mackenzie River Delta, Northwest Territories, Canada**	
Affiliations		
Publication	Thesis: University of Alberta, Dept. of Geology: Edmonton, AB (1974)	
lib. code	QE 571 .O93 1974 THE	
Libraries	ARI (thesis cabinet)	
Summary	Soil mechanics, soil stability. **Mackenzie Delta**	

Author(s) Palletier, B.R. M31
Title **Sediment dispersal in the southern Beaufort Sea : interim report of Beaufort Sea Project Study F4, December 1974**
Affiliations Atlantic Geoscience Centre [affiliation] Beaufort Sea Project (Canada) [Sponsor]
Publication (1975?)
Lib. code ASTIS record 44221
Libraries ACU
Summary In this report the 98 grab samples obtained from CSS HUDSON in 1970 are described, and inferences on their texture, distribution and origin are given. Both bathymetry and geography have been considered, but lacking is a fuller appreciation of ocean dynamics. What is known, however, provides a reasonable framework for the sedimentary model in the **Beaufort Sea**. Studies on clay mineralogy, carbonate, total carbon and organic carbon have recently been initiated. From various surveys, 244 representative samples have been selected and it is expected that the results of such studies will provide baseline data for projects affecting the environment of sedimentary deposition.

Author(s) Pearce, C.M. M32
Title **Overbank sediment patterns on the Mackenzie Delta**
Affiliations University of Western Ontario. Social Science Centre [Affiliation]
Publication (1993)
lib. code ASTIS 36370; TC 427 .N8 F37 1993
Libraries ARI
Summary The researcher will continue a long-term study on the physical features of the **Mackenzie Delta**. Hydrocarbon development, water volume and course changes, as well as climate change could have major effects on the water and sedimentation patterns of the **Delta**. This study will increase knowledge of sedimentation patterns, shoreline erosion and their relationships with vegetation.

Author(s) Pearce, C.M. M33
Title **Overbank sedimentation patterns on the Mackenzie Delta, N.W.T.**
Affiliations Canada. Inland Waters Directorate [Sponsor]
Publication NOGAP project no. C.11 : Sediment-related aspects of northern hydrocarbon development (1993) Although unnumbered, this is volume 1 of a 2-phase study. (See ASTIS record 51035 for volume 2 of this report.)
lib. code ASTIS 35025
Libraries ACU OORD
Summary ... This report will: 1. summarize the results of previous sedimentation studies on the delta and new measurements collected in 1992 in the middle and outer delta; 2. explain the relationships between overbank deposition, delta landform, and vegetation; 3. evaluate methodologies for collecting data on overbank deposition; 4. estimate mean areal sedimentation rates for a middle delta study area; 5. present "overbank sedimentation maps" for all of the areas used in previous sedimentation studies; 6. recommend methods and new sampling sites on the delta to measure historical sedimentation rates and future overbank sedimentation patterns; and 7. propose a budget for additional sedimentation sampling in the middle and outer delta and analysis of the data. ... This report contains the results of the first year of the study carried out between June 1992 and March 1993.

Author(s) Pearce, C.M. M34
Title **Overbank sedimentation patterns on the Mackenzie Delta, N.W.T. : volume 2 (1993-1994)**
Affiliations Canada. Inland Waters Directorate. N.W.T. Programs [Sponsor]
Publication NOGAP project no. C.11 : Sediment-related aspects of northern hydrocarbon development (1994)
lib. code ASTIS 51035
Libraries ACU
Summary This report, Volume 2, will summarize the relationships between overbank deposition, delta landforms, and vegetation on the **Mackenzie Delta** that were described in detail in Volume 1, analyze new measurements collected in 1993, and compare these measurements to those collected during previous studies.

Author(s) Priesnitz, K. Schunke, E. M35
Title **Pedimentation and fluvial dissection in permafrost regions with special reference to NW-Canada**
Affiliations
Publication In: Permafrost : Fourth International Conference, proceedings, July 17-22, 1983. - Washington, D.C. : National Academy Press, (1983), p.1015-1019
lib. code ASTIS 15149
Libraries ACU
Summary The paper deals with the question, whether under periglacial conditions the destruction of pediments by fluvial dissection or the formation of pediments are prevailing processes. Studies on this problem were carried out mainly in the **Mackenzie** and in the central Richardson Mountains, in areas, which since the beginning of the Quaternary period are subject to periglacial but not to glacial conditions. Pediplains are common in the whole area. Most of them are thought to be periglacial pediplanation surfaces (cryopediments). The aim of the paper is to report observations about the main processes causing the formation of these pediments of backwearing (intense slope retreat of the adjacent steep slopes by mass wasting and rill-wash, solifluction and sheet wash activity, favoured by the surplus water from the steep relief and nivation on the upper parts of the pediplains, transport of the debris across the pediments into the main rivers). Fluvial action is different in areas not yet affected by the dissection caused by isostatic uplift and in the marginal areas, where this dissection is very intense. Outside the recently dissected parts there is no competition between cryoplanation and fluvial activity.

Author(s)	Tittley, B. Solomon, S.M. Bjerkelund, C. M36
Title	**The integration of Landsat TM, SPOT PLA, ERS-1 C-band SAR for coastal studies in the Mackenzie River Delta, NWT, Canada : a preliminary assessment**
Affiliations	Canada Centre for Remote Sensing Atlantic Geoscience Centre Canada Centre for Remote Sensing
Publication	NOGAP project no. D.01 : Coastal zone geotechnics, Beaufort Sea (1994) Paper presented at the 2nd Thematic Conference on Remote Sensing for Marine and Coastal Environments, New Orleans, LA, Proceedings, ERIM, Ann Arbor.
lib. code	ASTIS 35210
Libraries	OORD
Summary	… The coastlines are composed primarily of unlithified, frozen sands and silts which are degrading rapidly as a result of rising sea levels and (possibly) global warming. Delicate vegetation communities provide eco-sensitive habitats for migratory birds and mammalian life forms. Development in this region requires a careful consideration of the impacts of multiple uses within the context of a high degree of spatial and temporal variability. As part of ongoing research, the Geological Survey of Canada (GSC) and Canada Centre for Remote Sensing (CCRS) are investigating potential applications of remotely sensed imagery to coastal mapping in the Canadian Arctic. The aspect currently being addressed, through the integration of Landsat TM, SPOT PLA, ERS-1 C-band SAR, and air photography, is coastal feature detection and classification. Future work will investigate the role of remote sensing data for coastal sensitivity mapping in remote arctic environments.

Author(s)	Traynor, S. Dallimore, S.R. M37
Title	**Geological investigations of proposed pipeline channel crossings in the vicinity of Taglu and Niglintgak Islands, Mackenzie Delta, NWT**
Affiliations	Geological Survey of Canada. Terrain Sciences Division Environmental Studies Research Funds (Canada) [Sponsor]
Publication	Environmental Studies Research Funds report, no. 116 (1992)
lib. code	ASTIS 50711
Libraries	ACU
Summary	This report reviews investigations of geological and geotechnical conditions at two proposed development sites in the vicinity of **Taglu** and **Niglintgak Islands** in the **Mackenzie Delta**. Pipeline channel crossing sites have been assessed by characterizing channel morphology and stability over a twenty to thirty five year time span. Other studies included investigations of bank geology, surficial features such as landslides and characterization of near-surface ground thermal regime….

Natural Value Theme: Natural Resources

Author(s)	Beaufort [periodical journal] N1
Title	**Beaufort**
Affiliations	Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc.
Publication	*Beaufort* (periodical journal), (1981-)
lib. code	ASTIS 7891 v.1, no.1(Aug. 1981)
Libraries	ACU NFSMO
Summary	Beaufort is published to provide the general public, and interested parties, background information on the long range development and production of hydrocarbon fuels from the **Beaufort Sea** and **Mackenzie Delta**.

Author(s)	Beaufort [periodical journal] N2
Title	**Pipelines and the Mackenzie Valley**
Affiliations	
Publication	*Beaufort*, v. 2, no. 2, (Dec. 1982), p. 15-20
lib. code	ASTIS 11536
Libraries	ACU NFSMO
Summary	This article addresses key considerations in the construction of an overland pipeline from the **Beaufort Sea** - **Mackenzie Delta** hydrocarbon reserves to Edmonton, Alberta. The factors discussed are: the effect of climate and geography on pipeline construction, the environmental aspects of pipeline construction, the effects the pipeline will have on wildlife, safety considerations, and the socio-economic impacts of pipeline construction on the people of this area.

Author(s)	Beaufort [periodical journal] N3
Title	**Oil and gas production : the Beaufort Sea - Mackenzie Delta region**
Affiliations	
Publication	*Beaufort*, v. 2, no. 2, (Dec. 1982), p. 4-14
lib. code	ASTIS 11535
Libraries	ACU NFSMO
Summary	This article examines the basic requirements for production, climate and geography, wildlife in the region, oil spills and countermeasures, environmental effects of normal activities, and development and the people.

Author(s) Beaufort Sea Environmental Assessment Panel N4
Title **A statement of deficiencies on the environmental impact statement for hydrocarbon development in the Beaufort Sea - Mackenzie Delta region**
Affiliations
Publication [Ottawa] : Beaufort Sea Environmental Assessment Panel, (1983) 31 p.
lib. code ASTIS 11563
Libraries ACU NFSMO
Summary The **Beaufort Sea** Environmental Assessment Panel has reviewed the Environmental Impact Statement (EIS) for Hydrocarbon Development in the **Beaufort Sea** - **Mackenzie Delta** Region prepared by Dome Petroleum Limited, Esso Resources Canada Limited and Gulf Canada Resources Inc. and transmitted to the Panel by the Department of Indian Affairs and Northern Development in November 1982. The Panel has identified major deficiencies in the EIS in each of the following categories: assessment of socio-economic effects, assessment of environmental effects, oil spills and zone summaries. In addition, the Panel has identified a number of concerns about which it wishes the Proponents to provide further information by means of discussion papers to be submitted at the same time as the response to the Deficiency Statement.

Author(s) Bregha, F. N5
Title **An overview of oil and gas activity in the Mackenzie Valley and Beaufort sea between 1980 and 2000**
Affiliations Canadian Arctic Resources Committee
Publication (1980)
lib. code TN 371 P4 B746 1980
Libraries ARI
Summary Petroleum – exploration. **Mackenzie Valley**, **Beaufort sea**.

Author(s) Canada. Dept. of Indian Affairs and Northern Development N6
Title **Under the Beaufort : Canada drills in the Arctic**
Affiliations
Publication (1980)
lib. code ASTIS 4246
Libraries ACU
Summary A brief overview of the search for oil in the **Beaufort Sea** and **Mackenzie Delta**. The history, technology and environmental issues involved are some of the topics dealt with briefly.

Author(s) Carbon Systems, Inc. N7
Title **Geochemical investigation of soil boring 0179-128, Mackenzie Delta, 2nd year : interpretative report**
Affiliations McClelland Engineers Inc. [Sponsor]
Publication (1979)
lib. code ASTIS 41146
Libraries ACU
Summary ... Analyses of dissolved pressure-independent pore-water data provide two important quantitative parameters: 1) in situ theoretical methane values, and 2) maximum gas pressures. In addition, a qualitative parameter, methane potential, is determined from the normalized difference between calculated and measured methane concentrations. Zones of high methane potential predict strata which are most likely to produce methane in the future….

Author(s) Creaney, S. N8
Title **The organic petrology of the upper Cretaceous Boundary Creek Formation, Beaufort-Mackenzie basin**
Affiliations
Publication *Bulletin of Canadian petroleum geology*, v. 28, no. 1, (Mar. 1980), p. 112-129
Lib. code ASTIS 5288
Libraries ACU
Summary A detailed petrographic study of the organic material in the Upper Cretaceous Boundary Creek Formation of the **Beaufort-Mackenzie Basin** has been used to establish a general picture of a) its depositional environment, b) variation in the type of organic material present, and c) its petroleum source potential. ... It contains the types and quantities of organic material that would make it an excellent source rock. However, it has not yet been sampled in an area where it is thermally mature enough to realize its full oil-generating potential.

Author(s) Dallimore, S.R. N9
Title **Gas hydrate research studies related to drilling of a gas hydrate exploration well at Mallik 2L-38, Mackenzie Delta, N.W.T.**
Affiliations Geological Survey of Canada [Affiliation]
Publication (1998)
lib. code ASTIS 46752
Libraries
Summary In March of 1998, a 1150 m deep gas hydrate research well, JNOC/JAPEX/GSC Mallik 2L-38, was completed at the northeastern edge of the **Mackenzie Delta**, NWT, Canada. This project brought together researchers from North America and Japan to undertake the first investigation of a natural gas hydrate occurrence beneath permafrost. Natural gas hydrates are known to represent a significant hydrocarbon reservoir in many Arctic basins, however prior to Mallik 2L-38, almost no field research had been undertaken to evaluate their properties in their normal environment. While gas hydrates may represent a significant energy source for the future, they also pose a potential hazard to conventional oil and gas drilling in Arctic areas. More recently, concern has been expressed that gas hydrates may be a significant source of additional greenhouse gas, which if released to the atmosphere may worsen future global climate warming. A primary objective of the well was to undertake a comprehensive scientific research program to study an Arctic gas hydrate accumulation. Field research conducted as part of the Mallik 2L-38 program included collection of permafrost and gas-hydrate-bearing core samples, downhole geophysical logging and a vertical seismic profile survey. Laboratory and modeling studies undertaken during the field program, and subsequently as part of a post-field research program, document the sedimentology, physical /petrophysical properties, geochemistry, geophysics and reservoir characteristics of the Mallik gas hydrate accumulation.

Author(s) Dallimore, S.R. N10
Title **Scientific Results from JAPEX/JNOC/GSC Mallik 2L-38 Gas hydrate research well at, Mackenzie Delta, Nothwest Territories, Canada.**
Affiliations
Publication (1999)
lib. code QE 185 .G340 B936 no.544 1999
Libraries ARI
Summary Sedimentology, micropaleontology. **Mackenzie Delta**, NT

Author(s)	Dixon, J.	N11
Title	Petroleum resources of the **Mackenzie** Delta and Beaufort Sea	
Affiliations		
Publication	Geological Survey of Canada: Ottawa, ON (1994)	
lib. code	QE 185 .G340 D58 1994	
Libraries	ARI	
Summary	Petroleum resources, Oil – **Beaufort Sea**, **Mackenzie Delta**, NT	

Author(s)	Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc.	N12
Title	**Hydrocarbon development in the Beaufort Sea-Mackenzie Delta region**	
Affiliations		
Publication	(1981)	
lib. code	ASTIS 46102	
Libraries	ACU	
Summary	Drilling results to date, and particularly the recent oil discoveries at Kopanoar, Tarsiut and Issungnak, has led the Industry to commence the design of systems to extract the hydrocarbons and deliver them to market. Industry is seeking an environmental and socio-economic approval in principle, as an outcome of this review. This report presents background information on the three proponents, offers scenarios for oil and gas development, and examines proposed development along with transportation and socio-infrastructure.	

Author(s)	Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc.	N13
Title	**Beaufort Sea / Mackenzie Delta development plan, November 1980**	
Affiliations		
Publication	(1980)	
lib. code	ASTIS 46209	
Libraries	ACU	
Summary	Section 1 will give an outline the exploration history in the area, and a brief description of the drilling systems currently being used. An outline of the extent and character of environmental research will be provided and some of the research projects will be highlighted. Section 2 will follow with a review of the most recent estimates of the Canadian supply and demand for hydrocarbons and a description of the hydrocarbon potential of the **Beaufort Sea** - **Mackenzie Delta** area. Two primary transportation systems to move oil to market will be examined in Section 3. This will be followed by a brief discussion of the likely development infrastructure and regional impacts.	

Author(s) Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc. N14

Title **Hydrocarbon development in the Beaufort Sea - Mackenzie Delta region**

Affiliations

Publication (1981)

lib. code ASTIS 7277

Libraries ACU

Summary In July 1980, the Federal Environmental Assessment and Review Office (FEARO) requested that the Environmental Impact Statement must project the possible effects of responsible development to the year 2000. This evolving process begins with scenarios based on the industries' best estimate of technical requirements. Aspects of initial scenarios are modified to enhance benefits and mitigate environmental and social problems during the preparation of the EIS and ongoing development planning. At the present time, this evolving process is underway. It will be completed in the fall of 1981. Hence, the scenarios presented in this document are to be viewed as those which may be technically achievable but not necessarily those which, in the final EIS analyses, are considered acceptable.

Author(s) Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc. N15

Title **Environmental impact statement for hydrocarbon development in the Beaufort Sea, Mackenzie Delta region - volume 1 : summary**

Affiliations

Publication (1982)

lib. code ASTIS 9354

Libraries ACU

Summary This volume provides an overview of the main body of the Environmental Impact Statement contained in Volumes 2, 3A, 3B, 3C, 4, 5, 6 and 7. … CHAPTER 2 examines the **Beaufort Sea-Mackenzie Delta** region, the principal area where the ongoing exploration and production related activities would take place. This chapter provides a brief description of its regional features, followed by a summary of possible environmental and socio-economic impacts in the region…. CHAPTER 4 focuses on the **Mackenzie Valley** region, the area which would be most affected by an overland pipeline, another transportation option to deliver oil.

Author(s) Dome Petroleum Limited Esso Resources Canada Gulf Canada Resources Inc. N16

Title **Environmental impact statement for hydrocarbon development in the Beaufort Sea, Mackenzie Delta region - volume 2 : development systems**

Affiliations

Publication (1982)

lib. code ASTIS 9634

Libraries ACU NFSMO

Summary Volume 2 ... identifies and quantifies the separate components, activities and potential environmental disturbances associated with development in this region.

Author(s) Gell, A. N17
Title **Mackenzie Environmental Monitoring Project - phase II, 1987 activities**
Affiliations LGL Limited, Environmental Research Associates Environmental and Social Systems Analysts Ltd. Lutra Associates Ltd. ESL Environmental Sciences Limited Seakem Oceanography Ltd. P.J. Usher Consulting Services Renewable Resources Consulting Services M. Miles and Associates Limited Canada. Dept. of Indian Affairs and Northern Development [Sponsor]
Publication NOGAP project no. A.21 : Onshore environmental monitoring and research program (1988)
ASTIS # ASTIS 35035
Libraries ACU OORD
Summary During 1983, Indian and Northern Affairs Canada and Environment Canada initiated the **Beaufort Environmental Monitoring Project** (BEMP). The program is to provide the technical basis for the design, operation and evaluation of a comprehensive and defensible environmental research and monitoring program to accompany hydrocarbon development in the **Beaufort Sea** relative to the regulatory responsibilities of the sponsoring departments. In 1985, a comparable program was initiated to determine research and monitoring priorities related to possible effects of hydrocarbon development and transportation in the **Mackenzie Delta and Valley** regions. This program is referred to as the Mackenzie Environmental Monitoring Project (MEMP). This report describes 1987 MEMP activities.

Author(s) Horn, D.R. Mroszczak, W.E. N18
Title **Oil and gas potential of the Beaufort Sea**
Affiliations
Publication (1980)
lib. code ASTIS 44197
Libraries ACU
Summary This document is a description of the visual materials accompanying a presentation on oil and gas potential of the **Beaufort Sea**. Information on the geological structure, paleogeography, drainage basins and submarine features, seismic facies of sand reservoirs, location of diapirs, geochemistry, etc. is included.] The **Beaufort-Mackenzie Basin** lies at the northern limit of the North American continent between the Canadian Arctic Islands and Alaska .... It is 450 km long by 250 km wide and developed as a depocentre in the Jurassic and Lower Cretaceous (Lerand, 1973; Fig. 2). Cumulative sediment thickness is 10,000 m.

Author(s) Steve E. Hurdey & Associates Ltd. N19
Title **An assessment of freshwater impacts from petroleum hydrocarbons on the Mackenzie River at Norman Wells, N.W.T. : part IV**
Affiliations Canada. Environmental Protection Service [Sponsor]
Publication (1988)
lib. code ASTIS 29215
Libraries NWYEEP OORD ACU
Summary The Environmental Protection Service undertook here to develop criteria for protecting **Mackenzie River aquatic resources** from development impacts and to provide recommendations on contaminant monitoring. This report summarizes the findings of this research effort and recommends development of monitoring programs as well as further research.

Author(s) Jasper, J. N20
Title **Hydrologic, hydraulic and sediment-related aspects of northern hydrocarbon development**
Affiliations Canada. Inland Waters Directorate. N.W.T. Programs [Affiliation]
Publication (1993)
lib. code ASTIS 36070
Libraries
Summary The researchers will work in collaboration with other scientists to study water and sediment characteristics at certain Inland Water Directorate sites in the **Mackenzie Delta**. This study will be useful for evaluating impacts of hydrocarbon development, as well as delta flooding on water flow, wildlife and vegetation in the delta. In addition, contaminants in water and sediments will be measured.

Author(s) Judge, A. Smith, S.L. Majorowicz, J. N21
Title **The current distribution and thermal stability of natural gas hydrates in the Canadian polar regions**
Affiliations
Publication In: Proceedings of the Fourth (1994) International Offshore and Polar Engineering Conference, Osaka, Japan, April 10-15, 1994. - [S.l.] : International Society of Offshore and Polar Engineers, (1994), v. I, p. 307-414
lib. code ASTIS 38404
Libraries ACU
Summary Natural gas hydrates may contribute to both future energy supplies and to the increase of atmospheric greenhouse gases. Evaluation of the importance of gas hydrates requires an improved knowledge of the present hydrate distribution. Analysis of thermal and geophysical logs from 369 wells in the Canadian Arctic Islands and the **Beaufort Sea-Mackenzie Delta** regions indicates that a maximum of 1900 to 3900 Gt of methane may be stored as hydrate in this region. Consideration of the recent geological and climatic history of the area demonstrates that the volume of hydrate is variable with time. Decomposition of hydrates is possibly occurring beneath approximately 73,000 sq km of the **Canadian Beaufort Shelf**. Approximately 10**5 cu m hydrate/sq km may become unstable over a 100 year period due to marine transgression. In contrast, cooling of sediments and hydrate formation is occurring in the Arctic Islands as new land emerges from the ocean in response to isostatic rebound.

Author(s) Mroszczak, W.E. N22
Title **Shale core tectonism in the Beaufort Sea of arctic Canada**
Affiliations
Publication Dome Petroleum Ltd., (1976?)
lib. code ASTIS 45487
Libraries ACU
Summary ... it can be stated that although the **Mackenzie Delta** and **Beaufort Sea** region is at a very early stage of exploration, the subsurface data available to date would indicate that the area has all the attributes associated with other major hydrocarbon producing areas of the world. In addition it is suggested that when exploration is undertaken in the distal portions of Tertiary deltaic basins, a detailed growth history of load related structures utilizing seismic sections, in the manner described in this paper, will be an aid to the geologist in predicting deep water reservoir distribution.

Author(s) Nagy, E. Ongley, E.D. Carey, J.H. N23
Title **Final report on hydrocarbon pathways in the Mackenzie River, N.W.T.**
Affiliations National Water Research Institute (Canada) Canada Centre for Inland Waters [Sponsor]
Publication Burlington, Ont. : Environment Canada, National Water Research Institute, 1988.
lib. code ASTIS 29213
Libraries NWYEEP OORD
Summary A baseline assessment of **Mackenzie River** water quality is provided by characterizing hydrocarbon chemistry of water and suspended sediments; evaluating the use of water and suspended sediments for hydrocarbon monitoring; and, determining downstream trends in hydrocarbon chemistry. Results indicate presence of n-alkanes and PAH's in sediments and water column throughout the study area. Organic loadings are shown to vary significantly with the seasonal variation of the flow of the river. Methods, techniques and difficulties in water quality assessment are discussed.

Author(s) Nassichuk, W.W. N24
Title **Forty years of northern non-renewable natural resource development**
Affiliations
Publication *Arctic*, v. 40, no. 4, (Dec. 1987), p. 274-284 (Fortieth anniversary special issue)
Lib. code ASTIS 21286
Libraries ACU
Summary During the past 40 years gold, silver, copper, lead, zinc, nickel, asbestos, tungsten, uranium, coal and other minor commodities have been produced from more than 30 mines in the northern mainland, but at the present time only 6 mines are producing gold, silver, lead and zinc in that area: Con, Giant Yellowknife, Echo Bay, Mount Skukum, United Keno Hill and Faro mines. Lead and zinc are being produced at the world's most northerly mine. Polaris, on Little Cornwallis Island, and lead, zinc and silver are mined at Nanisivik on Baffin Island. At least 375 oil and gas wells have been drilled north of the Arctic Circle in the northern mainland since 1947, and 42 oil and gas fields have been discovered in the **Beaufort Sea-Mackenzie Delta** area alone. Total discovered and undiscovered resources in the latter area approximate 2131 billion cu m gas and 1.35 billion cu m oil. From 1961, 176 wells were drilled in the Arctic Islands and 17 oil and gas fields were discovered. Discovered and undiscovered resources approximate 2257 billion cu m gas and 686 million cu m oil.

Author(s) Northern Oil and Gas Directorate (Canada) N25
Title **Northern oil and gas annual report, 1993**
Affiliations
Publication Ottawa : Indian Affairs and Northern Development, (1994). Also available in French under title: Pétrole et gaz du Nord - Rapport annuel (1993).
lib. code ASTIS 37612
Libraries ACU
Summary Contains summary of the potential conventional oil and gas resources in the N.W.T. An exploration, development and production summary includes the mapping of oil and gas discoveries as well as lists of well numbers, locations, and operators. Environmental research and protection initiatives are reviewed, as well as the acts and regulations governing oil and gas development in Canada. Statistical summaries are provided for activity status, discovered resource inventory, and oil and gas production, for the mainland territories, the **Mackenzie Delta and Beaufort Sea**, and the Arctic Islands and eastern arctic offshore.

Author(s) Oilweek [periodical journal] N26
Title **Panel gives green light to Beaufort production**
Affiliations
Publication *Oilweek*, v. 35, no. 27, (Aug. 6, 1984), p. 8-9
Lib. code ASTIS 14675
Libraries
Summary A phased in approach to oil and gas production from the **Mackenzie Delta and Beaufort Sea**, with the initial project no larger than about 15,000 cubic metres per day (100,000 b/d) and subject to stringent terms and conditions, has been recommended by the Beaufort Sea Environmental Assessment Panel. ... Basically the recommendations were grouped under the headings of oil spills and risks, the natural environment, the human environment and government management. In approving an oil production facility of about 15,000 cubic m/d, the panel gave preference to a small diameter buried pipeline down the **Mackenzie Valley** as the first step in a phased approach to transportation. It was rather dubious about tanker use because not enough is known to assess fully the potential effects of year round traffic "nor does it appear there is sufficient government preparation to support such traffic."

Author(s) Pipke, K.J. N27
Title **Under-ice methane accumulation in Mackenzie Delta lakes and potential flux to the atmosphere at ice-out**
Affiliations Simon Fraser University, Burnaby, B.C.
Publication Thesis (M.Sc.) - Simon Fraser University, Burnaby, B.C., (1996)
Lib. code ASTIS 45470.
Libraries
Summary Under-ice methane accumulations from 76 lakes representing differing frequencies and durations of flooding were determined from among three clusters of lakes distributed over an east-west transect across the **central Mackenzie Delta**. This delta is a lake-rich environment (contains 25,000 lakes) and these 76 lakes represent a stratified sample from 3200 lakes along the east-west transect. Methane accumulation in these lakes is related to the frequency and duration of the spring flooding event. Accumulation in high-closure lakes (not flooded every spring) and low-closure lakes (flooded annually but disconnected from main channels as the summer progresses) was significantly greater (means 451 and 315 micro M respectively) than in no-closure lakes (remain connected to main channels throughout open water season) (mean 173 micro M). This indicates that the magnitude of methane buildup is strongly related to the flooding and light regimes of the lakes. High-closure lakes are significantly smaller in area than no and low-closure lakes and they also tend to be deeper. A trend for higher under-ice accumulation in the eastern delta compared to the western delta may be related to lower inorganic sedimentation in the eastern delta. A multiple regression model incorporating chemical indices which are related to primary productivity is able to predict methane accumulation in these lakes with a high degree of precision (r_=0.88). Four models which estimate under-ice water volume were used to predict methane fluxes which yielded an area-weighted average ranging from 183 to 2600 mg/m_ for the set of lakes. Extrapolation of these values to the entire water surface area of the **Mackenzie Delta**, yields a spring methane pulse of between 0.5 to 12 Gg to the atmosphere. Further extrapolation yields a potential spring pulse of 3 to 109 Gg for Arctic delta lakes on a circumpolar scale. Best estimates of methane fluxes from the Arctic deltas are probably toward the higher end of the range. An average flux of 2000 mg/m_ with an average lake surface area of 35% on all northern deltas would result in a spring pulse of 58 Gg. This estimate represents approximately 0.3% of the annual emissions of methane from northern wetlands.

Author(s) Shell Canada Limited N28
Title **Niglintgak gas development, Mackenzie River Delta, N.W.T. : supporting documentation for land tenure agreement application**
Affiliations
Publication Calgary, Alta. : Shell Canada Ltd., (1976).
lib. code ASTIS 49387
Libraries ACU
Summary …Development of non-associated natural gas reserves in the **Niglintgak field** in the **Mackenzie River Delta**, Northwest Territories. …The remainder of section 3 and all of section 4 address environmental interactions and impacts of the proposed project.

Author(s) Spence, G.D. Hyndman, R.D. N29
Title **The challenge of deep ocean drilling for natural gas hydrate**
Affiliations
Publication *Geoscience Canada*, v. 28, no. 2, (Dec. 2001), p. 179-186
lib. code ASTIS 50491
Libraries ACU
Summary Gas hydrate is an ice-like solid consisting of gas molecules, commonly methane, trapped in a cage of water molecules. Global estimates of the methane content of natural gas hydrate are very large, potentially enormous. Such large quantities of gas hydrate could be important as a clean energy source, as a control in global climate, and as a factor in seafloor slumps and slides. Gas hydrate occurs only in water depths greater than about 600 m at temperate latitudes, but occurs on land and in shallow water in the Arctic…. In Canada, gas hydrates are found on most of its continental margins, notably on the continental slope off Vancouver Island and in the **Mackenzie Delta-Beaufort Sea** region…. The Arctic land and shallow sea hydrate are important because such hydrate is especially susceptible to global climate change.

Author(s) Teal, A.R. N30
Title **Mackenzie River response : innovative techniques**
Affiliations
Publication In: Proceedings of the Seventh Annual Arctic Marine Oilspill Program Technical Seminar, (June 12-14, 1984), Edmonton, Alberta. - [Ottawa : EPS, (1984)], p. 91-95
lib. code ASTIS 16466
Libraries
Summary The **Mackenzie River**, located in the Northwest Territories of Canada, drains an extensive area (including Great Slave and Great Bear Lakes) and flows northward to the **Beaufort Sea**. The **Mackenzie** - the second-largest river in North America - is wide, deep and fast-flowing. In 1919, Esso discovered a large pool of oil beneath the Mackenzie at **Norman Wells** ... and have been producing that oil since 1921. At Norman Wells ... the river is about 6 km wide, with an average mid-channel current speed between 1.5 m/sec (5'/sec) and 2.5 m/sec (8'/sec) and a discharge rate of 14,200 cubic m/sec (501,465 cubic ft/sec). Spill response on a river like the **Mackenzie** presents obvious challenges, particularly since there is no downstream road access. In response to these challenges, Esso has improved its spill response in two ways: (1) secure and safe anchoring techniques in fast currents; and (2) introducing techniques to respond to spills in mid-channel. The [paper consists of] a summary of these two techniques.

Author(s)	Yunker, M.B.	N31
Title	**NOGAP B.6 ; Volume 9 : hydrocarbon determinations ; Mackenzie River and Beaufort Sea**	
Affiliations	Institute of Ocean Sciences, Sidney, B.C.	
Publication	(1992)	
lib. code	GC 59 .15 .C34 no. 60 v.9	
Libraries	ARI	
Summary	Not available	

Author(s)	Yunker, M.B. Macdonald, R.W. Fowler, B.R. Cretney, W.J. Dallimore, S.R. McLaughlin, F.A.	N32
Title	**Geochemistry and fluxes of hydrocarbons to the Beaufort Sea shelf : a multivariate comparison of fluvial inputs and coastal erosion of peat using principal components analysis**	
Affiliations	Institute of Ocean Sciences, Patricia Bay	
Publication	*Geochimica et Cosmochimica Acta*, v. 55, no. 1, (Jan. 1991), p. 255-273	
lib. code	ASTIS 30954	
Libraries	ACU OORD	
Summary	The allochthonous inputs of hydrocarbon to the **Canadian Beaufort Shelf** were studied by applying principal components analysis (PCA) to well-validated and rigorously blank-corrected samples…. Particulate (particle size >0.7 micro meters) hydrocarbon flux from the **Mackenzie River** is by far the most important terrestrially derived source of hydrocarbons to the Beaufort Sea. The **Mackenzie River** particulates have a distinct n-alkane signature which can be used to identify the riverine influence on the hydrocarbon geochemistry of the Beaufort Sea shelf. Based on one year's data, the flux of total alkanes is 440 ±94 tonne/a, and PAH is 49 ±8 tonne/a (uncertainties are one standard deviation of the sampling and analytical variation)….	

Natural Value Theme: Physiography

Author(s)		P1
Title	**Mackenzie Delta area monograph**	
Affiliations		
Publication	Brock University, St. Cathrines, ON (1972) [book]	
lib. code	GB 132 .M2 M33 1972	
Libraries	ARI	
Summary	**Mackenzie Delta**, NT geography - research	

Author(s)	Abrahamsson, K.V.	P2
Title	**Arctic environmental changes : final report**	
Affiliations	United States. Army Research Office [Sponsor]	
Publication	Montreal : Arctic Institute of North America [publisher] ; Washington, D.C. : U.S. Dept. of Commerce, Office of Technical Services [distributor], (1966). (Research paper - Arctic Institute of North America, no. 39)	
lib. code	ASTIS 34895	
Libraries	ACU	
Summary	A detailed investigation and interpretation was made of environmental changes occurring during the transition period between winter and summer conditions in an area situated around the mouth of the **Mackenzie River** and along the shores of the **Beaufort Sea** in the Northwest Territories and Yukon Territory, Canada. The study includes a general description of the physiography, climate, spring moisture regime, albedo, snow-cover, permafrost, and the ice break-up characteristics of water bodies of the area. Some recommendations for further research also are proposed.	

Author(s)	Aitken, J.D.	P3
Title	**Reconnaissance studies of proterozoic and Cambrian stratigraphy, lower Mackenzie River area (operation Norman), District of Mackenzie**	
Affiliations		
Publication	Geological Survey of Canada: Ottawa, ON (1973)	
lib. code	QE 185 .G340 P214 A48 1973	
Libraries	ARI	
Summary	Geology, Stratigraphic – Cambrian. Geology – Proterozoic.	

Author(s) Braman, D.R. P4

Title **Upper Devonian-Lower Carboniferous miospore biostratigraphy of the Imperial Formation, District of Mackenzie and Yukon**

Affiliations

Publication Thesis (Ph.D.) - University of Calgary, Dept. of Geology and Geophysics, Calgary, Alta., (1981) Supervisor: Hills, Leonard V.

lib. code ASTIS 7370

Libraries ACU

Summary The Imperial Formation, an alternating sandstone and shale sequence of Late Devonian-Early Carboniferous age, occurs over large areas of the District of Mackenzie and Yukon. Correlation has been a continuing problem up until now. The miospores which are common and generally well preserved, are shown to be useful in correlating the Imperial Formation from one location to another. Five sections and one sample locality, which include the Imperial River, Powell Creek, Mountain River, Arctic Red River, and Trail River sections and the Lower Trail River sample locality, are studied. Seven miospore biozones are recognized and these are compared to conodont ages determined from scarce limestones within the sections. Two unconformities are recognized by abrupt changes in miospore assemblages. One occurs within the Upper Frasnian and the other between the Middle and Uppermost Famennian. The genus Cyrtospora is emended and nineteen new species are described including Archaeoperisaccus artus, A. signus, Phyllothecotriletes gemmas, Punctatisporites orbis, Acanthotriletes cistus, A. cuppedium, A. sentis, Raistrickia panda, Verruciretusispora infansa, Dictyotriletes imperialensis, Archaeozonotriletes diademus, Cyrtospora musa, C. triplexa, ?Knoxisporites anfractus, Grandispora riva, G. spuma, Hymenospora necta, Samarisporites solus, and Vallatisporites preanthoideus.

Author(s) Braman, D.R. P5

Title **The sedimentology and stratigraphy of the Husky Formation in the subsurface, District of Mackenzie, N.W.T.**

Affiliations

Publication Geological Survey of Canada, 83- 14 (1985)

lib. code ASTIS 16085

Libraries ACU

Summary The **Husky Formation** is a shale unit with minor sandstone interbeds, and subcrops in the **Mackenzie Delta** and **Tuktoyaktuk Peninsula** areas. The fine grained sediments generally occur in coarsening-upward cycles. Within these cycles, three lithofacies are identified: a weakly bioturbated shale facies, a strongly bioturbated mixed shale-sandstone facies, and a weakly bioturbated sandstone facies. The three lithofacies probably represent a mud interbar or shoal facies, a bar or shoal margin facies, and a bar or shoal facies respectively. The environment of deposition was a shallow, siliciclastic, marine shelf, which had a northeast-southwest trend and which deepened to the north or northwest. The fine grained sandstone facies has a complex diagenetic history that includes cementing by silica overgrowths, etching of grains, partial filling of pore space with carbonate cement, and precipitation of a number of clay types as grain coatings and pore fillings between grain boundaries. Porosity is very poor and the reservoir potential of the sandstones is considered to be low.

Author(s)	Braman, D.R. Hills, L.V.	P6
Title	**The spore genus Archaeoperisaccus and its occurrence within the Upper Devonian Imperial Formation, District of Mackenzie, Canada**	
Affiliations		
Publication	*Canadian journal of earth sciences*, v. 22, no. 8, (Aug. 1985), p.1118-1132	
lib. code	ASTIS 19705	
Libraries	ACU	
Summary	The misospore genus Archaeoperisaccus is restricted to the late Givetian - possibly early Famennian, is most common in the Frasnian, and is known from northern Canada, Spitsbergen, western and eastern USSR, and China. Twenty-three species are briefly discussed and three, A. artus, A. regalis, and A. signus, are described as new. Eight species occur in the Frasnian portion of the Imperial Formation, District of Mackenzie.	

Author(s)	Brown, R.J.E.	P7
Title	**Permafrost investigations on the Mackenzie highway in Alberta and MacKenzie District**	
Affiliations		
Publication	National Research Council of Canada: (1964)	
lib. code	GB 648 .15 .B76 1964 RARE	
Libraries	ARI	
Summary	Frozen ground – **Mackenzie Delta** region	

Author(s)	Chamney, T.P.	P8
Title	**Tertiary and cretaceous biostratigraphic divisions in the reindeer D-27 borehole, Mackenzie River Delta**	
Affiliations		
Publication	Dept. of Energy, Mines and Resources: Ottawa: ON (1971)	
lib. code	QE 185 .G340 P214 C53 1971	
Libraries	ARI	
Summary	Geology, Stratigraphic, Cretaceous. NT	

Author(s) Chi, B.I. P9
Title **Devonian megaspores and their stratigraphic significance in the Canadian Arctic**
Affiliations
Publication Thesis (Ph.D.) - University of Calgary, Dept. of Geology, Calgary, Alta., (1974)
Supervisor: Hills, Leonard V.
lib. code ASTIS 34337
Libraries ACU
Summary Late Middle and Upper Devonian megaspores and miospores have been obtained from approximately 50,000 ft of strata from 7 sections in the Canadian Arctic, including the Imperial Formation of the District of Mackenzie. The palynomorphs recovered are assignable to 19 genera and 48 species. Of these, 39 are megaspores and 9 are miospores. Two genera, 21 megaspore species, 3 miospore species and 14 varieties assignable to 4 species of megaspores are described as new. Seven assemblage zones, Givetian to Famennian in age, are established on the basis of the relative abundance and the first or last occurrence of characteristic species. From oldest to youngest these are: 1) the Macromanifestus zone; 2) the Delicatus zone; 3) the Grandis zone; 4) the Medius zone; 5) the Maclarenii zone; 6) the Devonica zone; and 7) the Magnifica zone. The contact between the Grandis-Medius zones approximates the Givetian-Frasnian boundary whereas that of the Devonica-Magnifica zones approximates the Frasnian-Famennian boundary. Utilizing megaspore counts and some sedimentological data, the depositional environments have been classified into continental, stable nearshore marine, unstable nearshore marine and offshore marine.

Author(s) Chi, B.I. Hills, L.V. P10
Title **Biostratigraphy and taxonomy of Devonian megaspores, Arctic Canada**
Affiliations
Publication *Bulletin of Canadian petroleum geology*, v. 24, no. 4, (Dec. 1976), p. 640-818
lib. code ASTIS 42665
Libraries ACU
Summary Late Middle and Upper Devonian megaspores and miospores have been obtained from approximately 15,240 m (50,000 ft.) of strata from 7 sections in the Canadian Arctic, including the Imperial Formation of the District of Mackenzie. The palynomorphs recovered are assignable to 19 genera and 47 species. Of these, 38 are megaspores and 9 are miospores. Two genera, 21 megaspore species, 3 miospore species and 14 varieties assignable to 4 species of megaspores are described as new. Seven assemblage zones, Givetian to Famennian in age, are established on the basis of the relative abundance and the first or last occurrence of characteristic species. From oldest to youngest these are: 1) the Macromanifestus zone; 2) the Delicatus zone; 3) the Grandis zone; 4) the Medius zone; 5) the Maclarenii zone; 6) the Devonica zone and 7) the Magnifica zone. The contact between the Grandis-Medius zones approximates the Givetian-Frasnian boundary whereas that of the Devonica-Magnifica zones approximates the Frasnian-Famennian boundary. By utilizing megaspore counts and some sedimentological data, the depositional environments have been classified into continental, stable nearshore marine, unstable nearshore marine, and offshore marine.

Author(s) Cookenboo, H.O. Orchard, M.J. Daoud, D.K. P11
Title **Remnants of Paleozoic cover on the Archean Canadian Shield : limestone xenoliths from kimberlite in the central Slave craton**
Affiliations
Publication *Geology*, v. 26, no. 5, (May 1998), p. 391-394
lib. code ASTIS 47491
Libraries ACU
Summary Paleozoic limestone xenoliths have been recovered from kimberlite pipes that intrude the Archean Canadian Shield. Xenoliths from the Jericho pipe in the central Slave craton are commonly fossiliferous and contain a diverse macrofauna and microfauna, including conodonts. Most of the 21 conodont collections that have been recovered are Middle Devonian in age (late Eifelian to early Givetian, and early to middle Givetian). In general, the fauna is indicative of deposition in shallow- and open-marine environments; a few collections are indicative of slightly restricted shoal-shelf seas. A few low-diversity conodont suites could be pre-Middle Devonian. The nearest similar Paleozoic rocks are more than 400 km to the southwest of the Jericho pipe in the foothills of the Mackenzie Mountains. The Jericho limestone xenoliths provide the only solid evidence that shallow Middle Devonian seas inundated the now-exposed Slave craton of the Canadian Shield.

Author(s) Copeland, M.J P12
Title **Early Paleozoic ostracoda from southwestern District of Mackenzie and Yukon Territory**
Affiliations
Publication Bulletin - Geological Survey of Canada, 275 (1977)
lib. code ASTIS 4793
Libraries ACU
Summary Early Paleozoic strata of the Cordilleran clastic and carbonate belts are widely distributed throughout northwestern North America. They contain varied, silicified late Ordovician, Late Silurian and Early Devonian ostracode faunas that may serve as a basis for correlation in southwestern District of Mackenzie, central Yukon Territory and eastern Alaska. Three Middle Ordovician, Whiterockian to Trentonian ostracode assemblages have been previously reported from southwestern District of Mackenzie in strata of the carbonate belt. ... A fourth assemblage, of Late Ordovician Maysvillian age ... is described here from the Road River clastic belt. It contains six taxa of which one is new. These assemblages may be correlated with others from Oklahoma, Virginia and midcontinental North America and demonstrate a late Ordovician North American transgressive faunal sequence. Ostracode assemblages of Late Silurian and Early Devonian age are present in both clastic and carbonate belts throughout the region. ... More than 90 ostracode genera are known from these Siluro-Devonian strata; of these, 116 taxa are recorded here, including 2 new genera and 37 new species.

Author(s) Copeland, M.J. P13
Title **Bathymetry of early Middle Ordovician (Chazy) ostracodes, lower Esbataottine Formation, District of Mackenzie**
Affiliations
Publication Bulletin - Geological Survey of Canada, 347 (1982)
lib. code ASTIS 11248
Libraries ACU
Summary Silicified specimens of 26 genera of early Middle Ordovician (Chazyan) ostracodes occur in two sections of the lower Esbataottine Formation in southwestern District of Mackenzie. ... By means of a bathymetric succession of trilobite biofacies already proposed for platform carbonate strata of the lower Esbataottine Formation, a shallow-water widespread ostracode assemblage ... and a deeper water ostracode assemblage II ... may be distinguished. These ostracode assemblages occur with some modification elsewhere in North America and may be used for the first time to indicate the relative bathymetry of comparable faunas from widely separated segments of the early Middle Ordovician North American continental platform. Five new genera ... and twelve new species are erected. In addition, taxonomic revisions and observations are presented for some previously incompletely known North American Chazy ostracode species and for those taxa observed during the study that may have affinities with Middle Ordovician ostracode faunas from Europe.

Author(s) Dallimore, S.R. Matthews, J.V. P14
Title **The Mackenzie Delta Borehole Project : a multimedia presentation of the scientific data and results from three deep boreholes drilled in the Mackenzie Delta in 1992**
Affiliations
Publication Environmental Studies Research Funds report, no. 135 (1997) [CD-ROM]
lib. code ASTIS 40787 (ASTIS 35885 is the preliminary report)
Libraries ACU
Summary This multimedia CD-ROM presents data and reports on three deep boreholes drilled in the **Mackenzie Delta** in 1992 by the Geological Survey of Canada and Industry partners. The drilling and associated scientific studies provide comprehensive data on the geotechnical properties, the history of permafrost occurrence in the area, the geology and biostratigraphy of sediments. New information on the occurrence of natural gas hydrates is also presented. The user can view technical information on each borehole via the interactive borehole menus. Other areas of the CD-ROM allow access to overview reports, background documents and general information on the **Mackenzie Delta region**.

Author(s) Day, J.H. Rice, H.M. P15
Title **The characteristics of some permafrost soils in the Mackenzie valley, N.W.T.**
Affiliations
Publication Arctic, v. 17, no. 4, (Dec. 1964), p. 223-236
lib. code ASTIS 9942
Libraries ACU
Summary Describes in detail soil profiles examined in dug pits at three ecologically distinct localities in the vicinity of **Reindeer Depot**, **Inuvik** and **Norman Wells**: tundra, tundra-boreal forest transition, and boreal forest. Samples were air dried, ground, sieved and analyzed. The climate, vegetation, surficial geology and permafrost conditions at each site are indicated. Descriptions are given of eight soil profiles, and the chemical, mechanical and mineralogical characteristics are separately tabulated. Each profile is referred to both the Canadian and the USDA 1960 7th approximation systems of classification.

Author(s) Dixon, J. P16

Title **Sedimentology of the Eocene Taglu Delta, Beaufort-Mackenzie Basin : example of a river-dominant delta**

Affiliations

Publication Geological Survey of Canada, (1981) 80- 11

lib. code ASTIS 7546

Libraries ACU

Summary The **Taglu Delta** represents the final clastic delta wedge of the lower Tertiary **Reindeer Formation** before burial under a thick marine mudstone succession. Specific depositional subenvironments can be identified from core material and include delta front, distributary mouth bar, distributary channel, crevasse splay and interdistributary bay. Integration of core interpretations with geophysical log shapes and their extrapolation to uncored wells allows a three dimensional depositional framework to be established. Lobate distribution of sands and the prominence of channel sands points to a river-dominant delta. The character of the channel deposits suggests that some channels may have been braided. A relatively thick sequence of lower delta plain deposits also points to a moderate to strongly subsiding receiving basin and/or rapid delta compaction. Sands from the various subenvironments are predominantly quartz and chert. Other, less common, components include plagioclase, muscovite and clasts of limestone, volcanic rock, schist, coal and shale. Two main source areas seem likely for the **Taglu delta**, one to the south and the other as far west as Alaska.

Author(s) Dixon, J. P17

Title **Sedimentology of the Neocomian Parsons Group in the subsurface of the Mackenzie Delta, N.W.T., arctic Canada**

Affiliations

Publication *Bulletin of Canadian petroleum geology*, v. 30, no. 1, (Mar. 1982), p. 9-28

lib. code ASTIS 12331

Libraries ACU

Summary The Parsons Group in the subsurface of the **Mackenzie Delta** area consists of three formations: in ascending order, the Martin Creek, McGuire and Kamik. A late Berriasian to Middle Hauterivian age is indicated for the group. Sandstone is the dominant lithology in the Martin Creek and Kamik Formations, whereas mudstone is dominant in the McGuire Formation. Martin Creek strata are interpreted as barrier-island deposits, with offshore, shoreface and lagoonal sediments identified from core material. The McGuire Formation consists mostly of bioturbated mudstone with thin interbeds of sandstone, and is interpreted to have formed in a nearshore setting. Fluvial-channel, floodplain, lagoon and marsh deposits are present in the lower third of the Kamik Formation. In the upper two-thirds, inner-shelf and littoral deposits are arranged in a series of stacked barrier-island successions. Tidal-delta deposits are interpreted to be present within these barrier-island successions. Rocks of the Parsons Group were deposited during two depositional episodes. ... the older, Berriasian to earliest Valanginian, episode. ... [and] the younger, Early Valanginian to Middle Hauterivian, episode. ... The final phase of sedimentation was an episodic transgression when several stacked barrier-island deposits were formed.

Author(s)	Dixon, J.	P18
Title	**Stratigraphic nomenclature of lower cretaceous rocks in the Northern Yukon and adjacent district of Mackenzie, Northwest Territories**	
Affiliations		
Publication	Energy, mines and Resources Canada: Ottawa, ON (1991)	
lib. code	QE 196 .N7 D59 1991	
Libraries	ARI	
Summary	Geology, stratigraphic – cretaceous, Yukon, and **Mackenzie Delta**, NT	

Author(s)	Dixon, J.	P19
Title	**Upper cretaceous to pleistocene sequence stratigraphy of the Beaufort – Mackenzie and Banks Island areas, Northwest Canada**	
Affiliations		
Publication	Geological Survey of Canada: Ottawa, ON 1992	
lib. code	QE 688 .D59 1992	
Libraries	ARI	
Summary	Cretaceous – tertiary boundary – geology, Stratigraphic - NT	

Author(s)	Duk-Rodkin, A. Hughes, O.L.	P20
Title	**Quaternary geology of the northeastern part of the central Mackenzie Valley corridor, District of Mackenzie, Northwest Territories**	
Affiliations		
Publication	Bulletin - Geological Survey of Canada, 458 (1995)	
lib. code	ASTIS 37848	
Libraries	ACSP	
Summary	During its maximum extent, the Late Wisconsinan Laurentide Ice Sheet buried the study area under approximately 600 m of ice. The Hyndman and Travaillant uplands were free of ice about 23 ka during Katherine Creek Phase. Series of glacial lakes were formed as the ice retreated southeastward. Glacial Lake Tenlen was the first glacial lake to form after deglaciation of uplands and was followed by glacial Lake Travaillant when ice retreated from the Tutsieta Lake Moraine about 13 ka (Tutsieta Lake Phase). The lake had a series of outlets that migrated from east to west. The last outlet of glacial Lake Travaillant was **Mackenzie River**. Further ice retreat resulted in the formation of glacial Lake Ontaratue which drained into a late stage of glacial Lake Travaillant and established a permanent channel for **Mackenzie River** (Ontaratue glacial Lake stage). **Glacial Lake Mackenzie**, with an outlet at Ramparts, was formed before final deglaciation of the region about 11.5 ka. The surficial materials in the region are mainly deposits of the Late Wisconsinan Laurentide Ice Sheet. Most of the region is covered by morainic deposits of which a belt of hummocky moraines (Tutsieta Lake Moraine) is the most prominent feature. Moraine plains surfaces have flutings and drumlins indicating that the general direction of ice movement was southeast-northwest. Extensive glaciolacustrine sediments, deltaic deposits, and peat mark the location of former glacial lakes…	

Author(s) French, H.M. P21
Title **Pleistocene sand wedges and thermal contraction cracks on Richards Island**
Affiliations University of Ottawa. Dept. of Geology [Affiliation]
Publication (1993)
lib. code ASTIS 35927
Libraries
Summary This study will examine cracks in permafrost that have been filled in with wind-blown sand. In cliffs, these filled-in cracks appear as `veins' of sand. Distribution and characteristics of these veins of sand will be recorded. This information will determine the history behind how the cracks formed and the environmental conditions of the **Mackenzie Delta** up to 40,000 years ago.

Author(s) Frith, R.A. P22
Title **Rb-Sr studies of the Wilson Island Group, Great Slave Lake, District of Mackenzie : geological setting and interpretation**
Affiliations Current research - Geological Survey of Canada, paper 80- 1C, p. 229-233
Publication
lib. code ASTIS 5870
Libraries ACU
Summary The results of isotopic analyses on twelve whole rock samples and two mineral separates from the Wilson Island Group volcanics are given in Table 2. ... Localities are listed in Table 3. ... The initial Sr^{87}/Sr^{86} ratio for the isochron of 0.7048 ± 0.0008 is somewhat higher than would be expected for rocks derived directly from the mantle at that time, indicating a secondary isotopic equilibration. The isotopic results for six samples of Wilson Island Group sandstone, presented in Table 1, do not form an isochron and are plotted in Figure 3 for comparison with the isochron obtained on the volcanics.

Author(s) Grantz, A. Phillips, R.L. Mullen, M.W. Starratt, S.W. Jones, G.A. Naidu, A.S. Finney, B.P. P23
Title **Character, paleoenvironment, rate of accumulation, and evidence for seismic triggering of Holocene turbidites, Canada Abyssal Plain, Arctic Ocean**
Affiliations
Publication *Marine geology*, v.133, no. 1-2, (July 1996), p. 51-73
lib. code ASTIS 45266
Libraries ACU
Summary Four box cores and one piston core show that Holocene sedimentation on the southern Canada Abyssal Plain for the last 8010±120 yr has consisted of a continuing rain of pelagic organic and ice-rafted clastic sediment with a net accumulation rate during the late Holocene of <= 10 mm/1000 yr, and episodically emplaced turbidites 1-5 m thick deposited at intervals of 830 to 3450 yr (average 2000 yr). The average net accumulation rate of the mixed sequence of turbidites and thin pelagite interbeds in the cores is about 1.2 m/1000 yr. Physiography suggests that the turbidites originated on the **Mackenzie Delta** or its clinoform, and delta 13C values of -27 to -25% in the turbidites are compatible with a provenance on a delta….

Author(s)		P24
Title	**Guidebook to permafrost and related features of the northern Yukon Territory and Mackenzie Delta, Canada.**	
Affiliations		
Publication	University of Alaska, Fairbanks: Fairbanks, AK (1983) [book]	
lib. code	GB 648 .15 .F74 1983	
Libraries	ARI	
Summary	Frozen ground, geology – **Mackenzie Delta**. Guidebooks	

Author(s)	R.M. Hardy and Associates	P25
Title	**Geotechnical data report : proposed Arctic Gas pipeline : major river crossings : drilling program**	
Affiliations	Northern Engineering Services Company [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]	
Publication	R.M. Hardy and Assoc., (1974)	
lib. code	ASTIS 31525	
Libraries	ACU	
Summary	The primary objectives of this drilling program were: (i) To provide information on the composition and properties of the river beds. (ii) To investigate the soil conditions along minor location changes in the proposed alignment. (iii) To provide additional detail in selected areas. (iv) To determine the characteristics of the subsurface materials to depths greater than previously examined at these locations. Proceeding from south to north the following proposed crossings were drilled: (i) The Liard River Crossing (ii) The Burnt Island Crossing of the **Mackenzie River** (iii) The Great Bear River Crossing (iv) The Point Separation Crossing of the **Mackenzie River** (v) The Peel River Crossing (vi) The Swimming Point Crossing of the **East Channel** of the **Mackenzie River**.	

Author(s)	R.M. Hardy and Associates	P26
Title	**Geotechnical data report : proposed Arctic Gas Pipeline : Cross Delta Alternative Route : ground truth drilling program, Mackenzie Delta region**	
Affiliations	Northern Engineering Services Company [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]	
Publication	R.M. Hardy & Assoc., (1974)	
lib. code	ASTIS 31518	
Libraries	ACU	
Summary	... The objectives of the investigation were to provide verification of terrain classification performed by NESCL, to provide data on site conditions along the alternative Delta Route, and to sound and collect information on soil and permafrost conditions at major water crossings along the route. The objectives were achieved by a three-part field program which consisted of land drilling, channel drilling and channel sounding. Proceeding in a westerly direction, the following proposed channel crossings were investigated: **East Mackenzie Channel**, **West Tununuk Channel**, **East Twin Channel, West Twin Channel, Middle Channel and Shallow Bay**. All of these channel crossings were sounded but drilling was limited to the **East Mackenzie Channel**, West Tununuk Channel, East Twin Channel and Shallow Bay…. The geology section of the report is included in Appendix E of this volume. The results of a related study on the vegetation of the **Mackenzie Delta**, which was carried out by NESCL botanists, are included in Appendix F.	

Author(s) Hardy Associates (1978) Limited P27
Title **Report on evaluation of granular resource potential, lower Mackenzie Valley**
Affiliations Canada. Indian and Northern Affairs Canada [Sponsor]
Publication NOGAP project no. A.04 : Granular resources inventory and management program (1986)
lib. code ASTIS 20682
Libraries ACU NWYIN OORD NWYPW
Summary This study involved an extensive review of existing published and unpublished geological and geotechnical literature pertinent to the distribution of surficial materials along the potential **Mackenzie Valley pipeline route**….

Author(s) Heginbottom, J.A. P28
Title **Some effects of surface disturbance on the permafrost active layer at inuvik, N.W.T.**
Affiliations Environmental-Social Committee, Northern Pipelines, Task Force on Northern Oil
Publication (1973)
lib. code GB 648.15 .H44 1973
Libraries ARI
Summary Frozen ground, permafrost, surface disturbance land use. **Mackenzie Delta**, NT

Author(s) Hill, P.R. Héquette, A. P29
Title **Marine geology of the Canadian Beaufort inner shelf and coastal zone**
Affiliations Atlantic Geoscience Centre
Publication NOGAP project no. D.01 : Coastal zone geotechnics, Beaufort Sea (1988)
lib. code ASTIS 30869
Libraries OOG OORD
Summary … Sediment supply is dominated by the **Mackenzie River** which supplies largely silt and clay and which has constructed a large multi-distributary delta. The silt and clay is transported eastward and forms thick inner shelf deposits seaward of the **Mackenzie Delta** and **Richards Island**, and in **Kugmallit Bay**….

Author(s) Hill, P. P30
Title **Rapport de mission: mer de Beaufort, Tuktuyaktuk - 1994**
Affiliations
Publication Université du Quebec á Rimouski,: Rimouski, Que.: (1995)
lib. code QE 581 .R26 1995 [French]
Libraries ARI
Summary Sedimentation and deposition. **Mackenzie River**, NT

Author(s) Howard, L. P31
Title **Beaufort Sea – Mackenzie Delta environmental impact statement bibliography**
Affiliations
Publication Arctic Institute of North America, University of Calgary: Calgary, AB (1983)
lib. code TD 194.5 .Z9 H68 1983
Libraries ARI
Summary Arctic waters. Pollution, environmental. Offshore oil and gas development. Terrain distubance

Author(s)	Hughes, O.L. van Everdingen, R.O.	P32
Title	**Terrain evaluation with respect to pipeline construction, Mackenzie transportation corridor, central part, lat. 64° to 68° N**	
Affiliations	Geological Survey of Canada. Terrain Sciences Division Canada. Hydrology Research Division Environmental-Social Program, Northern Pipelines (Canada) [Sponsor]	
Publication	Ottawa : Information Canada, (1973) vi, 74 p.	
lib. code	ASTIS 27415	
Libraries	ACU OORD	
Summary	... Within the glaciated area, terrain conditions are determined mainly by the character and distribution of glacial and post-glacial deposits, together with permafrost and ground ice conditions. Till plains constitute more than half of the glaciated area. Rolling to hummocky moraine forms a discontinuous belt in Peel Plateau adjacent to Mackenzie and Richardson Mountains, and from Fort McPherson generally eastward beyond the limit of mapping. Glaciolacustrine plains form a belt of highly variable width along **Mackenzie River** from the southern boundary of the report area almost to Arctic Red River. Numerous additional small areas of glaciolacustrine sediments, many too small to differentiate at original mapping scale of 1:125,000, occur within or adjacent to areas of rolling to hummocky moraine. ... Both texture and ice content of alluvial deposits vary over a wide range, from gravel of the active channels of high energy streams, typically unfrozen, to ice-rich silt of thermokarst alluvial floodplains, so that no generalization is possible. Sand and gravel of glaciofluvial deposits are the most stable surficial materials of the area. Polygonal ice-wedge networks may occur in glaciofluvial plains in the northern fringe of the area, but should present no significant environmental problems. However, glaciofluvial plains situated adjacent to glaciolacustrine plains are commonly underlain in part by ice-rich silt and clay. Valley walls of streams incised through the glaicofluvial sand and gravel into the underlying silt and clay are potentially highly unstable.	

Author(s)	Hughes, O.L.	P33
Title	**Surficial geology of northern Yukon Territory and northwestern District of Mackenzie, Northwest Territories**	
Affiliations		
Publication	Geological Survey of Canada: Ottawa, ON (1972)	
lib. code	QE 185 .G340 R214 H84 1972	
Libraries	ARI	
Summary	Glacial epoch, geology, arctic regions	

Author(s)	Hume, G.S.	P34
Title	**The lower Mackenzie River area, Northwest Territories and Yukon**	
Affiliations		
Publication	Geological Survey of Canada: Ottawa, ON (1954)	
lib. code	QE 185 .G340 H533 1954 RARE	
Libraries	ARI (RARE BOOKS)	
Summary	Geology. NT, YT	

Author(s)	Jeletzky, J.A. Stelck, C.R.	P35
Title	**Pachygrycia; a new sonneratia-like ammonite from the lower cretaceous (earliest albian?) of Northern Canada**	
Affiliations		
Publication	Ottawa : Geological Survey of Canada (Paper - Geological Survey of Canada, 80-20) (also: Book - out of print)	
lib. code	ASTIS 7548	
Libraries	ACU	
Summary	The desmoceratid genus Pachygrycia n.gen., an external homeomorph of Sonneratia Bayle 1978, represents the earliest Albian? ammonite fauna yet recognized in the **Mackenzie River drainage** of Northwest Territories, northern Yukon Territory and from Banks Island, District of Franklin. This widespread, regionally zonal fauna is correlated tentatively with the basal part of the European Leymeriella Tardefurcata Zone. ... The new genus is interpreted as a derivative of a still unknown boreal beudanticeratinid stock….	

Author(s)	Kiss, F.	P36
Title	**Fort Good Hope, NWT aero-magnetic survey : phase II of Mackenzie Corridor survey**	
Affiliations	Geological Survey of Canada [Affiliation]	
Publication	(1999)	
lib. code	ASTIS 48460	
Libraries	Maps and digital data will be available from the Geophysical Data Centre, 615 Booth Street, Room 241, Ottawa, Ontario, K1A 0E9. [18 colour contour aeromagnetic maps at a scale of 1:100,000]	
Summary	The 1999 survey was carried out on the boundary of 1998, Norman Wells survey and was entirely airborne (with no land access). … The survey recorded the changes in the earth's magnetic field caused by magnetic minerals contained in the rocks of the earth's crust. Patterns obtained are indicative of the subsurface geological structure, which is an important element of geological mapping and resource exploration. Approximately 70,838 line kilometres of data were acquired.	

Author(s)	Kiss, F.	P37
Title	**Mackenzie Corridor phase III aeromagnetic survey**	
Affiliations	Geological Survey of Canada [Affiliation]	
Publication	(2000)	
lib. code	ASTIS 50049	
Libraries	Geological Survey of Canada (GSC). Maps and digital data will be available from the Geophysical Data Centre, 615 Booth Street, Room 241 Ottawa, Ontario. [10 colour Aeromagnetic Total Field Magnetic maps at a scale of 1:100,000]	
Summary	The survey was carried out from May 9 to July 31 over the **Mackenzie Delta** area and was entirely airborne, with no land access. … The survey recorded the variation in the earth's magnetic field caused by magnetic minerals contained in the rocks of the earth's crust. The patterns obtained are indicative of the subsurface geological structure and will be used as an important element of geological mapping and resource exploration. Approximately 74,940 line kilometres of data were acquired.	

Author(s) Lane, L. P38
Title **Structural and stratigraphic analysis of the northern Yukon and Beaufort-Mackenzie region**
Affiliations Geological Survey of Canada [Affiliation]
Publication (1993)
lib. code ASTIS 36009
Libraries
Summary The field work will consist of an examination of bedrock exposures during ground surveys (on foot) at selected sites. A geological map will be produced, showing rock types, ages and positions and the degree to which the layers of rock have been folded or faulted during mountain formation.

Author(s) Leblanc, G. P39
Title **Mackenzie Valley earthquake hazard**
Affiliations
Publication Environmental – Social Committee, Northern Pipelines Task Force on Northern Oil: Ottawa, ON (1974)
lib. code QE 535.2 .C3 L43 1974
Libraries ARI
Summary Seismology, earthquakes, **Mackenzie River Valley**

Author(s) A.A. Lee Exploration Ltd. P40
Title **Seismic interpretation in the Great Bear Lake area, N.W.T.**
Affiliations Golden Eagle Oil & Gas Limited [Sponsor]
Publication (1973)
lib. code ASTIS 48204
Libraries ACU
Summary 130 lines of seismic control were acquired in three areas stretching from Great Bear Lake to the **Mackenzie Valley**. These data provide regional lines that may be used in conjunction with the sub-surface geological information to indicate the type of stratigraphy and structure that may be anticipated under Golden Eagle's Permits in the area…. Secondly, reflection identifications (at least to the top Cambrian) are considered generally reliable in the **Mackenzie Valley** and Interior Plains areas…. Subject to these qualifications on reflection quality and identification, the following conclusions are made:… 3. The seismic control in the **Mackenzie Valley** shows that the large Laramide anticlines involve beds down to the Upper Cambrian, and are underlain by thick Cambrian salt cores. A regional pinchout to the northeast of sediments beneath the salt is indicated by the existing coverage.

Author(s) MacAulay, H.A. P41
Title **A study of sub-seabottom permafrost in the Beaufort Sea Mackenzie Delta by hydraulic drilling methods, spring 1978**
Affiliations
Publication Earth Physics Branch: Ottawa, ON (1977)
lib. code GB 648 .15 .M34 1977
Libraries ARI
Summary Distribution of frozen ground within District of Mackenzie, NT.

Author(s)	Mackay, R.J.	P42
Title	**The Mackenzie Delta area, NWT (Geographical Branch memoir no. 8)**	
Affiliations		
Publication	Mines and Technical Surveys: Ottawa, ON (1963)	
lib. code	GB 132 .M3 M33 1963 RARE	
Libraries	ARI	
Summary	**Mackenzie Delta**, NT geography: permafrost	

Author(s)	Mackay, D.K. Mackay, R.J.	P43
Title	**Break-up and ice jamming on the Mackenzie River, NWT.**	
Affiliations	Hydrologic Aspects of Northern Pipeline Development, Environmental-Social Committee, Northern Pipelines, Task Force on Northern Oil Development	
Publication	(1973) Report 73 – 3, 223-232	
lib. code		
Libraries		
Summary	Not Available	

Author(s)	Mackay, R.J.	P44
Title	**The Mackenzie Delta area, NWT**	
Affiliations		
Publication	Geological Survey of Canada, Dept. of Energy, Mines and Resources: Ottawa, (1974)	
lib. code	QE 185 .A67 1974	
Libraries	ARI	
Summary	Physical geography – description and travel. **Mackenzie**, NT	

Author(s)	Mackay, R.J.	P45
Title	**Geological features of the Mackenzie Delta Region, N.W.T.**	
Affiliations		
Publication	Science institute of the Northwest Territories: Yellowknife, NT (1990)	
lib. code	QE 196 .N7 M33 1990	
Libraries	ARI	
Summary	Geology- **Mackenzie Delta**, NT. Pingos- Tuktoyaktuk NT.	

Author(s)	Mackenzie Valley Pipe Line Research Limited	P46
Title	**Pipeline route project atlas and data summary : 1971-1972 feasibility and cost study**	
Affiliations		
Publication	Calgary, Alta. : Mackenzie Valley Pipe Line Research Limited, (1972)	
lib. code	ASTIS 31378	
Libraries	ACU	
Summary	This collection of maps and air photos summarizes soil, permafrost, temperature, and physiographic features along the proposed **Mackenzie Valley Pipeline route**. The report also summarizes certain design and construction responses to these environmental conditions.	

Author(s)	Martin, L.J.	P47
Title	**Geology of the Mackenzie delta area**	
Affiliations		
Publication	Pectal Limited: Calgary, AB (1959) Thesis	
lib. code	QE 195 .M27 1959	
Libraries	ARI	
Summary	Geology of the **Mackenzie delta**, NT	

Author(s)	McGregor Geoscience Limited	P48
Title	**Surficial geology of the MacKenzie Trough, Canadian Beaufort Sea**	
Affiliations	Geological Survey of Canada [Sponsor]	
Publication	McGregor Geoscience Limited, (1987)	
lib. code	ASTIS 48304	
Libraries	ACU	
Summary	… During the 1985 field season, five geotechnical boreholes and two petroleum exploration wells were drilled in the trough area, which provided ground truthing of the Quaternary seismostratigraphy for the first time. The objectives of this report are to compile the seismic data available in the **MacKenzie Trough** to date and using the new geological and geotechnical data, establish a stratigraphic framework which describes units within the **Mackenzie Trough**, and to provide discussion on the possible origins of the **Mackenzie Trough** and the events which led to its subsequent infilling.	

Author(s)	McIntosh, G.	P49
Title	**Distribution of Late (Frasnian) Devonian crinoids in the Hay River and Mackenzie River regions of the Northwest Territories, Canada**	
Affiliations	Rochester Museum and Science Center [Affiliation]	
Publication	(2000)	
lib. code	ASTIS 50033	
Libraries		
Summary	In September, a total of 12 places in the Northwest Territories were visited in an area that extended from the Hay River immediately north of Enterprise to areas along the Poplar River approximately 40 km west of Checkpoint. The researcher was interested in studying the fossil crinoids found in the Late Devonian (Frasnian Stage) rocks that are sporadically exposed between these areas…. The Canadian crinoid faunas are similar to faunas studied earlier in 2001 from New Mexico and to fossils studied in both Belgium and Germany. The Frasnian crinoid fauna is turning out to be very cosmopolitan, with basically the same genera and possibly the same species occurring throughout the world. Frasnian crinoid communities are quite different in diversity and composition than either earlier or later Devonian/ Mississippian faunas. This is probably due to the fact that the Frasnian represents a period of time between two major marine extinction events. The nature of the Frasnian crinoid fauna offers some clues to the cause of the series of world-wide Late Devonian extinctions.	

Author(s) McNeil, D.H. P50

Title **Tertiary marine events of the Beaufort-Mackenzie Basin and correlation of Oligocene to Pliocene marine outcrops in arctic North America**

Affiliations

Publication Late Tertiary arctic environments and biostratigraphy.
Arctic, v. 43, no. 4, (Dec. 1990), p. 301-313

lib. code ASTIS 30710

Libraries ACU

Summary The benthic foraminiferal succession from the **Beaufort-Mackenzie Basin** of arctic Canada reflects many of the major oceanographic and climatic events of the Tertiary. …

Author(s) McNeil, D.H. Duk-Rodkin, A. Dixon, J. Dietrich, D.J.R. White, J.M. Miller, K.G. Issler, D.R. P51

Title **Sequence stratigraphy, biotic change, $^{87}Sr/^{86}Sr$ record, paleoclimatic history, and sedimentation rate change across a regional late Cenozoic unconformity in Arctic Canada**

Affiliations

Publication *Canadian publication info. of earth sciences*, v. 38, no. 2, (Feb. 2001), p. 309-331

Lib. code ASTIS 50511

Libraries ACU

Summary Eustasy, tectonics, and climate contributed to a remarkable Miocene-Pliocene regional unconformity in the **Beaufort-Mackenzie area** of Arctic Canada. The unconformity extends from beneath deep basin turbidites on the continental rise, upslope across an erosional paleocontinental shelf, onto the cratonic margin as a regional paleosurface (peneplain) in the **Mackenzie Delta** area, and into pediment surfaces cut into the orogenic highlands of the Richardson Mountains. The unconformity was initiated by shelf exposure during latest Messinian or earliest Pliocene eustatic lowstand and was accentuated by tectonic uplift from the culmination of a major Late Miocene compressional pulse on the basin margin. Palynomorph, benthic foraminiferal, strontium isotopic, paleomagnetic, and radiometric data document the climatic and chronological events surrounding the unconformity. A widespread hardground (K-59 limestone) occurs at the unconformity and caps the Late Miocene Akpak Sequence. The hardground yields the benthic foraminifera Cibicides grossus, a regional marker in the Arctic Pliocene, and the bryozoan Adeonella sp. aff. A. polystomella, previously known from temperate North Atlantic environments. The $^{87}Sr/^{86}Sr$ data and new biostratigraphic data indicate that the C. grossus Zone in the **Beaufort-Mackenzie area** may be younger than previously estimated, ranging into the earliest Pleistocene. Late Miocene regional uplift across the cratonic margin, coupled with eustatic lowstand followed by Early Pliocene tectonic quiescence and dry cool climatic conditions, combined to produce widespread erosion (pediments and peneplanation). Rapid erosion contributed to the >4 km-thick, Pliocene-Pleistocene Iperk Sequence and a 23-fold increase in sedimentation rates relative to the Early and Middle Miocene.

Author(s) Michel, F.A. P52

Title **Hydrogeologic studies of springs in the central Mackenzie Valley, North-West Territories, Canada**

Affiliations University of Waterloo, Dept. of Earth Sciences

Publication (1977)

lib. code GB 1198.4 .C39 M53 1977 THE

Libraries ARI (thesis cabinet)

Summary Springs, groundwater, hydrological surveys. **Mackenzie River Valley**, NT

Author(s)	Michel, F.A.	P53
Title	**Laboratory and field studies to investigate isotope effects occurring during the formation of permafrost**	
Affiliations		
Publication	Energy, Mines and Resources Canada: Ottawa, ON (1981)	
lib. code	GB 641 .M53 1981	
Libraries	ARI	
Summary	Composition of frozen ground, district of Mackenzie, NT	

Author(s)	Minning, G.	P54
Title	**Karst features near the proposed Mackenzie Valley Gas Pipeline : draft**	
Affiliations	Northern Engineering Services Company Canadian Arctic Gas Study Limited [Sponsor]	
Publication	(1974)	
lib. code	ASTIS 30434	
Libraries	ACU	
Summary	This report in a general way, describes the geologic settings of Karst topography, ...	

Author(s)	Minning, G.	P55
Title	**Terrain behavior studies in the Mackenzie Valley and adjacent areas : draft**	
Affiliations	Northern Engineering Services Company Canadian Arctic Gas Study Limited [Sponsor]	
Publication	Calgary, Alta. : Northern Engineering Services Co.,(1975)	
lib. code	ASTIS 31590 (ASTIS 30433 is the draft for this publication)	
Libraries	ACU	
Summary	…These studies attempt to predict how different types of terrain will react to natural processes and man made disturbances. Each terrain behavior study assesses elements of terrain and vegetation which influence terrain behavior. A rating system that can be applied to different types of terrain which are mappable on airphotos is the end product of each study….	

Author(s)	Minning, G.V. Rennie, J.A. Domansky, J.L. Sartorelli, A.N.	P56
Title	**Granular resource inventory - southern Mackenzie Valley, Fort Simpson (95H) (1:125,000)**	
Affiliations	Geological Survey of Canada. Terrain Sciences Division	
Publication	Geological Survey of Canada, (1972)	
lib. code	ASTIS 33528	
Libraries		
Summary	Natural granular material is abundant in the **Fort Simpson map-area**. Medium to fine sand mixed with silt is readily available in the northern two-thirds of the map-sheet. Unconsolidated deposits with coarse sand and gravel are widely scattered, but are most common along the escarpment which trends northwest. …Coarse natural granular material comes primarily from glaciofluvial outwash plain, ridge, and esker deposits which are well-drained and have little organic cover. Alluvial, glaciolacustrine, eolian, and morainal deposits sometimes consist of sand and gravel or contain gravel along with finer material. They generally have poorer drainage and more organic cover than the glaciofluvial deposits. …	

Author(s) Mollard and Associates Limited P57
Title **Interim report on high-altitude aerial photography terrain interpretation : Northwest Pipe Line Project : Prudhoe Bay to lat 60 00' and long 122 00'**
Affiliations Williams Brothers Canada Limited [Sponsor]
Publication (1969)
lib. code ASTIS 31576
Libraries ACU
Summary Main purpose of our study was to map anticipated soils, terrain, and permafrost conditions .... The terrain was classified according to anticipated surficial geology, soils, topography, surface-drainage, permafrost features and effects, and expected permafrost problems.

Author(s) J.D. Mollard and Associates Limited P58
Title **Prefaces to physiographic divisions I to X**
Affiliations Williams Brothers Canada Limited [Sponsor] Mackenzie Valley Pipe Line Research Limited [Sponsor]
Publication (1971)
lib. code ASTIS 31582
Libraries ACU
Summary This report discusses the physiography of regions I to X and describes them in terms of: large-scale topography, major landforms, geomorphology, plant geography, climatic conditions, surficial sediments and bedrock geology, and permafrost. Gravel borrow sources, the availability of timber resources, and special conditions and problems are also described…. Physiographic division X begins on the Peel River, crosses the Peel Plain to the west side of the **Mackenzie** and Mountain **Rivers** around Sans Sault Rapids.

Author(s) J.D. Mollard and Associates Limited P59
Title **Prefaces to physiographic divisions XI to XIV**
Affiliations Williams Brothers Canada Limited [Sponsor] Mackenzie Valley Pipe Line Research Limited [Sponsor]
Publication J.D. Mollard Assoc., (1971)
lib. code ASTIS 31583
Libraries ACU
Summary This report discusses the physiography, including the geology, topography, permafrost and climate conditions, flood plains, and terrain types for physiographic divisions XI-XIV. Physiographic division XI runs from the Mountain River pipeline crossing on the west side of the **Mackenzie River** to Camsell Bend, and from Camsell Bend south of the **Mackenzie River** and Martin Hills to the Liard River in vicinity of latitude 61 degrees 27 minutes. On the east side of the **Mackenzie River Valley**, Division XI runs along the upland from the **Mackenzie River** in vicinity of Sans Sault Rapids to the mouth of Willowlake River and crosses the **Mackenzie River** east of its confluence with the Liard River….

Author(s)	J.D. Mollard and Associates Limited	P60
Title	**Terrain legend from Prudhoe Bay to Athabasca River Valley west of Fort McMurray**	
Affiliations	Williams Brothers Canada Limited [Sponsor]	
Publication	(1971)	
lib. code	ASTIS 31579	
Libraries	ACU	
Summary	This report describes the physiographic characteristics of selected test holes along the proposed **Mackenzie Valley Pipeline**. Characteristics described include: landform, depositional/erosional sequence, stratigraphy, permafrost, topography, drainage, vegetation, diagnostic airphoto-identifying features, and engineering significance.	

Author(s)	J.D. Mollard and Associates Limited	P61
Title	**Airphoto terrain mapping for pipeline route study : Volume III**	
Affiliations	Northwest Project Study Group [Sponsor] Mackenzie Valley Pipe Line Research Limited [Sponsor]	
Publication	(1972)	
lib. code	ASTIS 31377	
Libraries	ACU	
Summary	This report includes airphoto terrain maps, for the **Mackenzie Valley Pipeline**, on which terrain types, topographic phases and features, permafrost-affected hydrographic phases and features, depth phases of ice-rich silty topstratum and buried substratum phases.	

Author(s)	Murton, J.	P62
Title	**Arctic sand sheet development**	
Affiliations	University of Sussex. School of Chemistry, Physics, and Environmental Science [Affiliation]	
Publication	(2001)	
lib. code	ASTIS 51480	
Libraries		
Summary	Sheets of windblown sand are common in the Tuktoyaktuk Peninsula and Summer Island area (Inuvialuit Settlement Region). The sheets vary in thickness from a few centimetres to at least 15 metres and extend horizontally over distances of 10s of metres to several kilometres or more. The sand sheets resemble those reported from Sub-Arctic sand sheets in Alaska and Greenland, and from the Ice Age mid-latitude sand sheets in the USA and Europe. The distinguishing feature of the **Mackenzie Delta** area is the occurrence of the large sand-filled cracks that grew upwards with depositions of the sand. Cracking resulted from intense cooling of the sand sheets. Individual structures can exceed 9 metres in height. The time of the sand deposition is being determined. Knowing the age of the sand sheets will help geologists to understand the climatic and environmental conditions under which sand erosion and deposition take place in sensitive Arctic environments.	

Author(s)	Norris, A.W.	P63
Title	**Reconnaissance Devonian stratigraphy of northern Yukon Territory and norwestern District of Mackenzie**	
Affiliations		
Publication	Geological Survey of Canada: Ottawa, ON (1968)	
lib. code	QE 185 .G340 P244 N67 1968	
Libraries	ARI	
Summary	Geology.	

Author(s)	Norris, D.K. P64
Title	**The geology, mineral and hydrocarbon potential of northern Yukon Territory and northwestern District of Mackenzie**
Affiliations	
Publication	Geological Survey of Canada: Ottawa, ON (1997)
lib. code	QE 185 .B9 no. 422
Libraries	ARI
Summary	Geology. Mines and minerals resources. District of Mackenzie, NT, Yukon Territory

Author(s)	Northern Engineering Services Company P65
Title	**Interior alternative pipeline route, Prudhoe Bay to Travaillant Lake Junction via the Marsh Fork of the Canning River : alignment sheets**
Affiliations	Alaskan Arctic Gas Pipeline Company [Sponsor] Canadian Arctic Gas Pipeline Limited [Sponsor]
Publication	Calgary, Alta. : Northern Engineering Services Co., (1974?).
lib. code	ASTIS 30346
Libraries	ACU
Summary	This volume contains alignment sheets which show the proposed location of the **Mackenzie Valley Pipeline,** including the location of pipeline facilities: compressor stations, meter stations, airstrips, access roads, etc., information about terrain and soils, location of borrow areas, profiles, erosion control categories, areas of potential buoyancy, revegetation categories, drawings showing river crossings, depth of cover, and the mapping co-ordinate system. Environmental data sheets outline areas of concern and protective measures relating to environmentally sensitive locations.

Author(s)	Northern Engineering Services Company P66
Title	**Interior alternative pipeline route, Prudhoe Bay to Travaillant Lake Junction via the main branch of the Canning River : alignment sheets**
Affiliations	Alaskan Arctic Gas Pipeline Company [Sponsor] Canadian Arctic Gas Pipeline Limited [Sponsor]
Publication	Calgary, Alta. : Northern Engineering Services Co., (1974)
lib. code	ASTIS 30345
Libraries	ACU
Summary	This volume contains alignment sheets which show the proposed location of the **Mackenzie Valley Pipeline**, including the location of pipeline facilities: compressor stations, meter stations, airstrips, access roads etc., information about terrain and soils, location of borrow areas, profiles, erosion control categories, areas of potential buoyancy, revegetation categories, drawings showing river crossings, depth of cover, and the mapping co-ordinate system. Environmental data sheets outline areas of concern and protective measures relating to environmentally sensitive locations.

Author(s) Northern Engineering Services P67
Title **Geotechnical report on the Cross Delta Route**
Affiliations Canadian Arctic Gas Study Limited [Sponsor]
Publication Northern Engineering Services Company, (1975)
lib. code ASTIS 31757
Libraries ACU
Summary Field programs have been conducted to verify the terrain typing, to determine the soil stratigraphy with depth, to determine the channel geometry and the flow distribution within distributary channels, to observe the ice break-up and extent of flooding, and to determine some of the engineering properties of the soil. The detailed data and observations resulting from these studies are included in a number of reports, listed in the references. The purpose of this report is to summarize the data and observations and present design recommendations relating to the geotechnical, hydrological and geological aspects of the pipeline and ancillary facilities.

Author(s) Northern Engineering Services Company P68
Title **Geotechnical data report permafrost distribution : Willowlake River, N.W.T. to Zama Lake, Alberta**
Affiliations Canadian Arctic Gas Study Limited [Sponsor]
Publication Northern Engineering Services Co., (1977)
lib. code ASTIS 31661
Libraries ACU
Summary Over the past two years, NESCL has conducted office and field programs for the purpose of characterizing the permafrost distribution in the discontinuous permafrost zone in the **Mackenzie Valley**. The office investigations have consisted in terrain typing on air photos, while field investigations included geological reconnaissance surveys, geophysical surveys and drilling. In this report, all of these efforts have been brought together to portray the major characteristics of the permafrost distribution from Willowlake River, N.W.T. to Zama Lake, Alberta.

Author(s) Pelletier, B.R. P69
Title **Marine science atlas of the Beaufort Sea, geology and geophysics = Atlas des sciences marines de la mer de Beaufort, géologie et géophysique**
Affiliations
Publication Geological Survey of Canada, 40 (1987)
lib. code ASTIS 37884
Libraries ACU
Summary ... As well as presenting the geophysics of the region, the aim of this section of the atlas is to record the geological history….

Author(s) PEMCAN Services P70
Title **Transportation corridor study, final report : photo mosaics route location**
Affiliations PEMCAN Services (Pipeline Engineering and Management Services of Canada)
Gas Arctic Systems Study Group [Sponsor]
Publication PEMCAN Services, (1971)
lib. code ASTIS
Libraries ACU
Summary This case contains 16 folded tables and photo mosaics illustrating pipeline route location and geographic and geological features such as bed rock, glacial deposits, sediments, geographic features and an inventory of materials. The mosaics cover an area along the **Mackenzie River** from the Liard River to Norman Wells.

Author(s) Pugh, D.C. P71
Title **Pre-Mesozoic geology in the subsurface of Peel River map area, Yukon Territory and District of Mackenzie**
Affiliations
Publication Geological Survey of Canada, 401 (1983)
lib. code ASTIS 10932
Libraries ACU
Summary The thick sequences of sedimentary rocks, occurring in two structural basins in the Peel River area, have long been a target of economic interest, owing to their hydrocarbon and mineral potential. As a result of exploratory drilling, surface mapping, and many local studies, the need has developed for a broad regional synthesis of the stratigraphy and geological history of the area. This report is intended to satisfy this need, thereby assisting in the evaluation of the economic potential. Subsurface data have been used to compile a series of maps and cross-sections, illustrating the stratigraphy and structure of the area; nomenclature has been reviewed and the geological history elucidated.

Author(s) Shakur, M.A. P72
Title **Delta ^{34}S and delta ^{18}O variations in terrestrial sulfates**
Affiliations
Publication Thesis (Ph.D.) - University of Calgary, Dept. of Physics, Calgary, Alta., (1982). Supervisor: Krouse, H.R.
lib. code ASTIS 34376
Libraries ACU
Summary In this thesis, oxygen and sulfur isotope analyses of over 300 samples from diverse environments are employed to comprehend multifarious processes in sulfate geochemistry…. Isotopic data from evaporite cores were used to locate the position of a thrust-fault in the Norman Range, N.W.T. where Lower Devonian strata are unconformably overlain by Upper Cambrian strata. Criteria were established for using isotopic data from marine barites in constructing the oceanic SO_4^{--} isotopic composition-age curve. Freshwater wells, springs, and associated deposits were also studied. Delta-values were used to distinguish oxidation of metal sulfides from dissolution of evaporites as provenances of SO_4^{--} in springs. Such studies can identify and locate non-outcropping ore-deposits. Delta-values of airborne and fallout species associated with some springs delineated complex microbiological and chemical water-air-rock interactions…. In addition to more common travertine and tufa deposits, rare deposits of jarosite and barite associated with springs were also examined, including a radioactive barite sinter deposit in the District of MacKenzie, N.W.T. In the majority of these studies, $\Delta\ ^{18}O$ values provided more information than obtained from $\Delta\ ^{34}S$ values alone….

Author(s) F.F. Slaney & Company P73
Title **Preliminary environmental impact assessment : granular materials, Mackenzie Bay, Northwest Territories**
Affiliations Imperial Oil Limited [Sponsor]
Publication F.F. Slaney & Company Ltd., (1974)
lib. code ASTIS 33410
Libraries
Summary ... The report provides a preliminary assessment of the qualities, quantities and locations of gravel deposits on the Barrier Islands, and an initial description of the geological process of building, sorting and erosion of the islands and spits. A preliminary environmental impact assessment was developed to address possible gravel borrow operations from Barrier Island spits. Specific areas assessed included Coastal Geology, Physical Oceanography and Wind Distribution, Water Chemistry, Benthic Invertebrates, Fisheries, Avifauna and Terrestrial and Marine Mammals.

Author(s)	Smith, M.W.	P74
Title	**Factors affecting the distribution of permafrost, Mackenzie delta, N.W.T.**	
Affiliations		
Publication	Thesis (Ph.D.) University of British Columbia (1973)	
lib. code	GB 642 .S65 1973 THE	
Libraries	UBC, ARI	
Summary	Frozen ground- **Mackenzie delta**, NT	

Author(s)	Snowdon, L.R.	P75
Title	**Organic geochemistry of the upper cretaceous – tertiary delta complexes of the Beaufort-Mackenzie sedimentary basins, Northwest Territories**	
Affiliations		
Publication	Geological Survey of Canada: s.l. (1981)	
lib. code	QE 516.5 .S65 1981	
Libraries	ARI	
Summary	Geochemistry, geology, stratigraphic, cretaceous. Sedimentary basins. Mackenzie district, **Mackenzie River Delta**, NT	

Author(s)	Stuart, R.A. Etkin, D.A. Judge, A.S.	P76
Title	**Recent observations of air temperature and snow depth in the Mackenzie Valley area and their implications on the stability of permafrost layers**	
Affiliations		
Publication	Atmospheric environment service,: Downsview, Ont. (1991)	
lib. code	QC 901 .C3 S88 1991 IRCL	
Libraries	ARI	
Summary	Atmospheric temperatures observations. Snow Observations. Effect of climatic changes on frozen ground. **Mackenzie Valley**, NT	

Author(s)	Tarnocai, C.	P77
Title	**Soils of the Mackenzie River area**	
Affiliations		
Publication	Environmental – Social Committee, Northern Pipelines Task Force on Northern Oil: s.l. (1973)	
lib. code	S 599.1 .N6 T37 1973	
Libraries	ARI	
Summary	Soil – **Mackenzie Valley.**	

Author(s)	Tarnocai, C.	P78
Title	International tour of permafrost soils	
Affiliations		
Publication	Agriculture Canada: Ottawa. ON (1993)	
lib. code	GB 648 .155 .T37 1993	
Libraries	ARI	
Summary	Frozen ground. **Mackenzie River Delta**, NT. Yukon.	

Author(s)	Tassonyi, E.J. P79
Title	**Subsurface geology, lower Mackenzie River and Anderson River Area, District of Mackenzie**
Affiliations	
Publication	Geological Survey of Canada: Ottawa, ON (1969)
lib. code	QE 185 .G340 P214 T37 1969
Libraries	ARI
Summary	Geology **Mackenzie Delta**

Author(s)	Templeton Engineering Company P80
Title	**Geotechnical and hydrological studies off-right-of-way effects**
Affiliations	Canadian Arctic Gas Study Limited [Sponsor] Environment Protection Board
Publication	Cover title: Towards an environmental impact assessment of the portion of the Mackenzie Gas Pipeline from Alaska to Alberta, interim report no. 3. Appendix IV : Geotechnical and hydrological studies off-right-of-way effects. (1973)
Lib. code	ASTIS 31750
Libraries	ACU
Summary	Several potential problems of a geotechnical and hydrological nature, identified by the Environment Protection Board in its Interim Report No. 2 to Canadian Arctic Gas Study Limited (CAGSL), were studied to: (1) Provide a more detailed understanding of the terrain through which a proposed **Mackenzie Gas Pipeline** would pass; (2) Quantify those physical processes which might result in terrain degradation; and (3) Provide input for the Board to assess impact on the terrain. The principal results of the study program are summarized here, and dealt with in detail in the report that follows. This report forms Appendix IV to the Board's Interim Report No. 3.

Author(s)	Templeton Engineering Company Environment Protection Board P81
Title	**Map supplement to geotechnical and hydrological studies, off-right-of-way effects**
Affiliations	Canadian Arctic Gas Study Limited [Sponsor]
Publication	Cover title: Towards an environmental impact assessment of the portion of the Mackenzie Gas Pipeline from Alaska to Alberta : Interum report no. 3. Appendix IV : Geotechnical and hydrological studies off-right-of-way effects : map supplement. (1973)
lib. code	ASTIS 30350
Libraries	ACU
Summary	This compilation of maps presents base maps of drainage, topography and surficial geology. Overlays show soil profiles, watersheds, locations of the proposed **Mackenzie Valley Pipeline** and of bore hole locations along the proposed route.

Author(s)	Tod, J.	P82
Title	**Mackenzie Valley aeromagnetic survey**	
Affiliations	Geological Survey of Canada [Affiliation and Sponsor] SIAL Géosciences inc. [Contractor]	
Publication	(1998) Maps and digital data are available from the Geophysical Data Center, 241-615 Booth Street, Ottawa, Ontario, K1A 0E9. For more information contact GSC at Telephone:(613) 995-5326; Fax:(613) 952-8987; E-mail: infogdc@agg.NRCan.gc.ca; Internet: http://gdcinfo.agg.NRCan.gc.ca/gdcinfo.	
lib. code	ASTIS	
Libraries		
Summary	The survey area covered parts of the National Topographic Survey 95 (60-64° N, 120-128° W) and 96 (64-68° N, 120-128° W). The purpose of the survey was to improve public knowledge and understanding of the geology of this area, since no publicly-available magnetic coverage existed. The survey recorded the variation in the earth's magnetic field caused by magnetic minerals contained in the rocks of the earth's crust. The patterns obtained are indicative of the subsurface geological structure, and will be used as an important element of geological mapping and resource exploration. Approximately 72,668 line kilometers of data were acquired.	

Author(s)	Uyeno, T.T.	P83
Title	**Some Late Middle Devonian (Polygnathus varcus Zone) conodonts from Central Mackenzie Valley, District of Mackenzie**	
Affiliations		
Publication	*Bulletin - Geological Survey of Canada*, v. 267, (1978), p. 13-23	
lib. code	ASTIS 1066	
Libraries	ACU	
Summary	Conodonts assignable to the Polygnathus varcus Zone (late Middle Devonian age) are described from **central Mackenzie Valley**. ... Three new species are introduced: Polygnathus? geniculatus, Pelekysgnathus bidentatus and P. mackenziensis.	

Author(s)	Wang, B.	P84
Title	**Some Aspects of Plateau permafrost, Qinghai – Xizang (Tibet) Plateau, China, and a comparison with the Mackenzie Delta regions, Canada.**	
Affiliations		
Publication	Thesis (Ph.D.) University of Ottawa (1993).	
lib. code	GB 642 .W36 1963 THE	
Libraries	U Ottawa, ARI	
Summary	Comparison between frozen ground in **Mackenzie Delta**, NT, and the Qinghai-Xizang Plateau (Tibet).	

Author(s) Wang, B. French, H.M. P85
Title **Comparison of permafrost conditions in the Mackenzie Delta, Canada, and the Qinghai - Xizang Plateau, China**
Affiliations
Publication Paper presented at the 13th INQUA Conference, Beijing, China, August, (1991).
lib. code ASTIS 32230
Libraries
Summary Differences in permafrost conditions between the two areas relate to climate, latitude, altitude, Quaternary history, and geology. The most fundamental differences relate to the Quaternary histories of the two areas. … Under the present climatic conditions, the altitude of the lower limit of the plateau permafrost in the north is at 4150 m a.s.l.. This suggests that if the plateau were 1000 m lower than its present elevation, there would be no permafrost on the plateau. Because the bedrock is near the surface, and the plateau is tectonically active, the distribution of permafrost bears a close relationship to bedrock geological structures which produce thermal anomalies (e.g. taliks and hot springs). A second difference relates to the climate. In the **Mackenzie Delta**, the combination of low air temperature in winter, the short summer thaw period, and relatively thick organic cover leads to the development of a thin active layer. … A third difference relates to the glacial history. During the Quaternary, the Tibetan Plateau remained unglaciated. This has meant that there has been little or no water for the formation of massive ground ice, such as occurs in the **Mackenzie Delta**. Thus, the ground ice conditions in the two areas are quite different.

Author(s) Webber, N.G. P86
Title **Beaufort-Mackenzie Basin geology and hydrocarbon occurrences**
Affiliations
Publication Technical Service Report no. 82-08, (July 1982). Hudson's Bay Oil and Gas Company.
lib. code ASTIS 44034
Libraries ACU
Summary This report describes the geology, the major structural and tectonic features, crustal provinces and evolution of the **Beaufort-Mackenzie Basin**, as well as the hydrocarbon potential.

Author(s) Young, F.G. P87
Title **Geological and geographical guide to the Mackenzie Delta area**
Affiliations
Publication Proceedings of CSPG (Canadian Society of Petroleum Geologists) conference held in Calgary, (June 1978).
lib. code ASTIS 1619
Libraries ACU
Summary ... The book is divided into three parts: Part A is concerned with establishing a regional geological background; Part B includes descriptions of the geology at each locality to be visited; Part C is a collection of articles of geographic and economic interest.

Author(s)	Young, F.G. McNeil, D.H.
Title	**Cenozoic stratigraphy of the Mackenzie Delta, Northwest Territories**
Affiliations	
Publication	*Bulletin - Geological Survey of Canada*, v. 336, (1984). 63 p.
lib. code	ASTIS 15863; QE 185 .G34 Y68 1984
Libraries	ACU; ARI

P88

Summary

Over 10 km of Cenozoic sediments accumulated beneath the modern **Mackenzie Delta** within the **Richards Island Basin**, which is flanked to the southeast by the northern Interior Platform and to the southwest by the Northern Cordillera. Northward, this basin forms part of the continental terrace wedge of the **Beaufort Sea**. Cenozoic deltaic sediments of the **Richards Island Basin** are divisible into two main facies: mud-dominant and sand-dominant, corresponding generally to prodeltaic and delta front to delta plain depositional environments respectively, These two facies, along with major unconformities, form the basis for defining formations within this sequence. In ascending order, the Cenozoic formations. ... are: **Reindeer Formation**, including the **Aklak** and sandstone-mudstone members (the latter being the major Cenozoic hydrocarbon reservoir), **Richards Formation, Kugmallit Formation** including the **Ivak** and **Arnak** members, **Mackenzie Bay Formation**, **Beaufort Formation**, and Nuktak Formation. ... The **Reindeer Formation** is rich in temperate terrestrial palynomorphs and yields sparse, brackish water foraminifers of the Saccammina-Trochammina spp. assemblage. ... A rich terrestrial palynoflora, dated latest Eocene to Oligocene, occurs in the Kugmallit. ... The Mackenzie Bay Formation carries cool-temperate to boreal terrestrial palynomorphs and the neritic Cibicides spp. foraminiferal assemblage, which is rich in calcareous benthonic species. ... The Nuktak ... contains the cool water, inner shelf, Elphidium spp. foraminiferal assemblage, and a variety of in situ fossils, as well as conspicuous reworked foraminifers and palynomorphs.

Natural Value Theme: Vegetation

V1

Author(s)
Title **Botanical studies of Natural and man modified habitats in the Mackenzie valley, eastern Mackenzie Delta region, and the arctic Islands (ALUR 1971-1972)**
Affiliations
Publication University of Alberta: Edmonton AB (1972)
lib. code QK 203 .N7 B67 1972 THE (bay A)
Libraries ARI
Summary Botanical research. Includes study on grass around **Inuvik** in the early 1970's

V2

Author(s) Anderson, D. Simon, P. Wishart, R.
Title **Sustainable forestry in the Gwich'in settlement area**
Affiliations University of Alberta. Dept. of Anthropology [Affiliation] This research project description is based on information collected by the Aurora Research Institute under the N.W.T. Scientists Act.
Publication (1998)
lib. code ASTIS 46725
Libraries
Summary The aim of this project is to assist with the development of long-term forest management plans for the **Mackenzie Delta** region and the **Gwich'in land** in particular. We want to understand the sustainability of forests under various use scenarios, based on both historic use and the history of natural disturbance/regeneration cycles, in an ecosystem at the limits of its distribution. The study involved both community and archival research. Anthropologists interviewed elders and collected Hudson Bay archival materials to provide an overview of the history of timber use and the local value attached to forest resources. We now have an understanding of the impact of the steamboats on the fuel-wood supply along the main rivers and how community members view the forest from a fuel-wood, construction-wood, and other forest resources point of view.

V3

Author(s) Andre, A. Fehr, A.
Title **Gwich'in ethnobotany : plants used by the Gwich'in for food, medicine, shelter and tools**
Affiliations Gwich'in Social and Cultural Institute ; Inuvik, N.W.T. : Aurora Research Institute
Publication (2000)
lib. code ASTIS 51221
Libraries ACU
Summary ... Over thousands of years, the **Gwich'in people** living in the subarctic region of North America became highly skilled at making use of the trees, shrubs and berries that the taiga and tundra provided. As skills were developed and improved, this knowledge was passed along from generation to generation. … During the summer of 1997, staff from the InRC and GSCI worked with Gwich'in Elders to document their knowledge about the traditional use of plants, including leaves, bark, roots and berries. Elders from **Aklavik**, Fort McPherson, **Inuvik** and **Tsiigehtchic** were interviewed, both in the communities and on the land. Youth from each commuity also participated in the project. The result of this research is this book and an associated kit, which are designed to be used by educators, naturalists and the public. ... The English, Latin and **Gwich'in** plant names are provided. We use both the Gwichya Gwich'in dialect, spoken in Tsiigehtchic, and the Teetl'it Gwich'in dialect used in the **Mackenzie Delta communities** of **Aklavik**, Fort McPherson and **Inuvik**.

Author(s) Bird, C.D. Thomson, J.W. Marsh, A.H. Scotter, G.W. Wong, P.Y. V4
Title **Lichens from the area drained by the Peel and Mackenzie rivers, Yukon and Northwest Territories, Canada. I. Macrolichens**
Affiliations
Publication *Canadian journal of botany*, v. 58, no. 18, (1980), p.1947-1985
lib. code ASTIS 5182
Libraries ACU
Summary The distribution and general ecology of 249 macrolichen taxa is described for 230 000 km^2 of coniferous forest, open fens, and alpine terrain along the **Mackenzie River** in the District of Mackenzie, Northwest Territories, and the Peel River, a major tributary which rises in the Yukon Territory. Permafrost plays a major role in determining the plant communities that are present. Fire and man-made disturbances initiate succession.

Author(s) Boyes, D.M. Mayer, N. Nugent, O. V5
Title **Geomorphologic and hydrologic analysis of surface features of the Mackenzie Delta, NT using spatial image analysis**
Affiliations University of Western Ontario. Dept. of Geography [Affiliation]
Publication (1994)
lib. code ASTIS 38738
Libraries
Summary The collection of the field data was required to collaborate satellite image classifications and interpretations concerning water body measurements, plant community types and sedimentation patterns. Field measurements included measuring ground distances and recording plant characteristics. Nothing in the field area would be destroyed or removed.

Author(s) Boyes, D.M. DeBastien, L. Nugent, O. V6
Title **Geomorphological analysis of the Mackenzie Delta, NWT using spatial image processing**
Affiliations University of Western Ontario. Dept. of Geography [Affiliation]
Publication (1995)
lib. code ASTIS 38627
Libraries
Summary The collection of the field data was required to calibrate satellite image classifications and interpretations concerning water body measurements, plant community types, and sedimentation patterns. Field measurements included measuring ground distances and recording plant characteristics. Nothing in the field area was destroyed or removed.

Author(s) Cody, W.J. V7
Title **Plants of the Mackenzie River Delta and Reindeer Grazing Preserve**
Affiliations
Publication Canada Dept. of Agriculture. Plant research Institute: Ottawa, ON (1965)
lib. code QK 203 .N6 C63 1965
Libraries ARI
Summary Botany – NT **Mackenzie river watershed** and **reindeer grazing preserve**

Author(s)	Cody, W.J. V8
Title	**Additions and range extensions to the vascular plant flora of the Northwest Territories, Canada**
Affiliations	
Publication	*Canadian field-naturalist*, v.110, no. 2, (Apr.-June 1996), p. 260-270
lib. code	ASTIS 43132
Libraries	ACU
Summary	Seventeen taxa are reported new to the flora of the Northwest Territories north of latitude 60 N, plus nine new to the District of Keewatin north of latitude 60 N (excluding the islands of southern Hudson Bay and James Bay), one to the District of Mackenzie, and 29 range extensions within the District of Keewatin, 12 range extensions within the District of Mackenzie, two deletions from the Northwest Territories and 12 comments on distribution since previous publications on the flora.

Author(s)	Cody, W.J. MacInnes, K.L. V9
Title	**Head smut, Ustilago bullata on slender wheat grass, Elymus trachycaulus, introduced along the Norman Wells Pipeline, District of Mackenzie, Northwest Territories**
Affiliations	
Publication	*Canadian field-naturalist*, v.114, no. 1, (Jan.-Mar. 2000), p. 138-141
lib. code	ASTIS 48358
Libraries	ACU
Summary	Vegetation and related studies to evaluate environmental mitigation along the Norman Wells to Zama Pipeline, included observations on the invasion of Head Smut, Ustilago bullata on Slender Wheat Grass, Elymus trachycaulus (sensu lato) (=Agropyron trachycaulum), a major component of the initial post-construction seed mix used along the pipeline for erosion control. …Potential host grasses were uncommon in the adjacent boreal forest area in the Territories; however disease introduction or re-introduction remained a risk even where certified seed mix components from outside the Territories were thought to be uninfected.

Author(s) Cody, W.J. MacInnes, K.L. Cayouette, J. Darbyshire, S. V10
Title **Alien and invasive native vascular plants along the Norman Wells Pipeline, District of Mackenzie, Northwest Territories**
Affiliations
Publication *Canadian field-naturalist*, v.114, no. 1, (Jan.-Mar. 2000), p. 126-137
lib. code ASTIS 48357
Libraries ACU
Summary Vegetation studies were carried out as part of a research and monitoring program to evaluate project effects and the performance of environmental mitigation along the Norman Wells to Zama Pipeline. This was the first fully buried oil pipeline and the largest and most extensive revegetation program to date in the boreal forest - discontinuous permafrost zone of the Northwest Territories. The pipeline owners (Interprovincial Pipe Line (NW) Ltd. (IPL), now Enbridge Pipelines Inc.) developed a special combination of seeds composed of predominantly native North American species from certified seed stocks to help reduce the risk of introduction of alien (non-North American) species. Monitoring, primarily focussed on the pipeline construction period, confirmed the initial presence of a limited number of alien species. The purpose of this paper is to update floristic data for the Continental Northwest Territories and document invasion of alien plants despite mitigative measures. Of the 34 alien taxa collected along the pipeline right-of-way, 15 are new to the flora of the mainland Northwest Territories including Agrostis stolonifera, Alopecurus arundinaceus, Alopecurus pratensis, Bromus commutatus, Bromus hordeaceus, Bromus squarrosus, Festuca trachyphylla, Festuca valesiaca ssp. sulcata, Lolium perenne ssp. perenne, Lolium perenne ssp. multiflorum, Poa annua, Secale cereale, Triticum aestivum, Vulpia bromoides, and Corisperumum orientale var. emarginatum. Nineteen alien taxa previously known from other areas of Continental Northwest Territories including the aggressive weedy grass known as Cheatgrass or Downy Brome are also reported. Thirteen native North American taxa of invasive habit, but uncommon in the Continental Northwest Territories were also detected along the pipeline.

Author(s) Corns, I.G.W. V11
Title **Arctic plant communities east of the Mackenzie Delta**
Affiliations
Publication *Canadian journal of botany*, v. 52, no. 7, (1974), p.1731
lib. code ASTIS 3015
Libraries ACU NFSMO
Summary Tundra vegetation was analyzed on the basis of 64 sampled and 12 described stands representing a wide variety of plant community types immediately east of the **Mackenzie Delta**, Northwest Territories. Five main types (Tall Shrub-Herb, Medium Shrub (alder), Low Shrub-Heath, Herb-Low Shrub-Heath, and Herb) and 11 subgroups were distinguished and classified on the basis of floristic similarity using a two-dimensional ordination and by physiognomy. A total of 70 species were sampled or observed in the stands.

Author(s) Dabbs, D.L. Friesen, W. Mitchell, S. V12
Title **Pipeline revegetation**
Affiliations Northern Engineering Services Company Canadian Arctic Gas Study Limited [Sponsor]
Publication Arctic Gas. Biological report series, v. 2 (1974)
lib. code ASTIS 11550
Libraries ACU
Summary ... This paper reports only on the research which has been conducted at the Sans Sault test facility on the **Mackenzie River** .... This site is located within Rowe's (1959) "**Lower Mackenzie Section of the Boreal Forest**". The site is situated on a high terrace above the river. The vegetation around the site is an open, stunted black spruce/lichen forest. ... The objective of this research project has been to determine the suitability of twenty-three different plant species, mostly grasses, for use in revegetating disturbed land surfaces in the northern boreal forest. ... Evaluation of these plots has also included a measurement of the rate and character of invasion by native plant species. As seeding of grasses alone may not be adequate in some areas, the feasibility of hand planting shrub cuttings to prevent soil erosion on side slopes and approaches to river and streams has been examined. ... The effects of habitat alteration and cropping of grasses by small mammals was studied in detail.

Author(s) Davies, E.H. V13
Title **Palynological analysis of the GSC Cruise 93-003 cores, Mackenzie Delta, Beaufort Sea**
Affiliations Branta Biostratigraphy Ltd.
Publication Calgary, Alta. : Branta Biostratigraphy Ltd., (1994)
lib. code ASTIS 35216
Libraries OORD
Summary The results of palynological analyses of series of shallow sediment cores taken during the GSC Cruise 93-003 along the delta front of the **Mackenzie River**, **Beaufort Sea** are summarized and documented within this report. A total of 57 samples were submitted by S. Solomon of the Environmental Marine Geology Subdivision, Atlantic Geoscience Centre for palynological analysis.

Author(s) Downie, S.R. Denford, K.E. V14
Title **The taxonomy of Arnica frigida and A. louiseana (Asteraceae)**
Affiliations
Publication *Canadian journal of botany*, v. 64, no. 7, (July 1986), p.1355-1372
lib. code ASTIS 19846
Libraries ACU
Summary The systematic relationships of the Arnica frigida-louiseana complex have been evaluated. This complex has been previously recognized as one species. A. louiseana, with three intraspecific taxa: subspecies frigida, griscomii, and louiseana. Morphological, phytogeographical, and cytological data support the recognition of A. frigida ssp. frigida and the newly proposed combination A. frigida spp. griscomii. Arnica louiseana is also recognized at the specific level. All three taxa have distinct geographic distributions: A. frigida spp. frigida is found from eastern USSR, Alaska, Yukon, east to the **Mackenzie River**, N.W.T., with isolated populations east of the **Mackenzie River** and in northern British Columbia; A frigida ssp. griscomii is extremely localized in Gaspe, Que., and in northwest Newfoundland; and A. louiseana is restricted to high elevations in the Rocky Mountains of Alberta. The basic chromosome number for this complex is x = 19, with A. frigida ssp. frigida 2n = 38, 76, and 95, A. frigida ssp. griscomii 2n = 76, and A. louiseana with chromosome complements of 2n = 76 and 95. This complex is predominantly apomictic with amphimictic phases in unglaciated Alaska. Disjunct distributions are probably the result of Pleistocene survival in refugia with apomictic phases being responsible for the recolonization of glaciated areas.

Author(s)	Eggertsson, O.	V15
Title	**Mackenzie River driftwood : a dendrochronological study**	
Affiliations		
Publication	*Arctic*, v. 47, no. 2, (June 1994), p. 128-136	
lib. code	ASTIS 34058	
Libraries	ACU	
Summary	As part of a general study of arctic driftwood, 206 samples of driftwood logs from the **Mackenzie Delta area** were analyzed by dendrochronological methods (tree-ring studies). The aim was to detect the origin of the wood.	

Author(s)	Forest Management Institute (Canada)	V16
Title	**Vegetation types of the lower Mackenzie and Yukon Corridor**	
Affiliations	Environmental-Social Program, Northern Pipelines (Canada) [Sponsor]	
Publication	Environmental-Social Committee Northern Pipelines, Task Force on Northern Oil Development report, no. 74- 40 (1975)	
lib. code	ASTIS 2740927409	
Libraries	ACU OORD	
Summary	Not available	

Author(s)	Forest Management Institute (Canada)	V17
Title	**Vegetation types of the Mackenzie Corridor**	
Affiliations	Environmental-Social Program, Northern Pipelines (Canada) [Sponsor]	
Publication	Environmental-Social Committee Northern Pipelines, Task Force on Northern Oil Development report, no. 73- 46 (1974)	
lib. code	ASTIS 27408	
Libraries	ACU OORD	
Summary	Not available	

Author(s)	Gill, D.	V18
Title	**Vegetation and environment in the Mackenzie River Delta, NT: a study in subarctic ecology**	
Affiliations		
Publication	Thesis (Ph.D.) University of British Columbia, (1965)	
lib. code	QK 938 .S8 G55 1971 THE	
Libraries	UBC, ARI	
Summary	Subarctic ecology- **Mackenzie River Delta**, NT	

Author(s)	Gill, D.	V19
Title	**Physical and biological parameters in the Mackenzie River Delta, NWT**	
Affiliations		
Publication	University of Alberta: Edmonton, AB (1967)	
lib. code	QE 196 .N7 G55 1967	
Libraries	ARI	
Summary	Geology, physical geography. **Mackenzie River Delta**, NT	

Author(s) Gill, D. V20
Title **Forestry operations in the Canadian Subarctic : an ecological argument against clear-cutting**
Affiliations
Publication *Environmental conservation*, v. 1, no. 2, (Summer 1974), p. 87-92
lib. code ASTIS 727
Libraries ACU
Summary Environmental and floristic evidence is presented to show that, after removal of the White Spruce (Picea glauca) and willow-alder (Salix spp.-Alnus crispa) canopies from exposed sites within the boreal woodland of the **Mackenzie River Delta**, Northwest Territories, Canada, environmental degradation is such that secondary succession of low-arctic tundra heath, mosses, and lichens, takes place. The extreme exposure of cleared sites enables a hardy group of tundra plants to compete with the local flora and invade the previously forested location.

Author(s) Grace, B. Gillespie, T.J. Puckett, K.J. V21
Title **Sulphur dioxide threshold concentration values for Cladina rangiferina in the Mackenzie Valley, N.W.T.**
Affiliations
Publication *Canadian journal of botany*, v. 63, no. 4, (Apr. 1985), p. 806-812
lib. code ASTIS 16463
Libraries ACU
Summary A simulation model for the prediction of threshold concentration values of gaseous sulphur dioxide for damage to Cladina rangiferina over a 24-h period is presented. The model requires inputs of near surface relative humidities and air temperatures as well as lichen surface temperatures, and nearby airport wind speeds. An initial value of percent lichen water content must also be specified. Studies of lichen water relationships provided expressions utilized in the model for the calculation of percent lichen water content. The model was applied to four microclimatically different days for an open lichen-spruce woodland near **Inuvik**, N.W.T. Boundary-layer resistance was found to be not as important as internal thallus resistance to sulphur dioxide uptake. For all days examined, threshold gaseous concentration values of sulphur dioxide for a 24-h period ranged from 20 to 30 mu g/cu m.

Author(s) Ivarson, K.C. V22
Title **The microbiology of some permafrost soils in the Mackenzie Valley, N.W.T.**
Affiliations
Publication *Arctic*, v. 18, no. 4, (Dec. 1965), p. 256-260
(Contribution - Canada. Soil Research Institute, no. 149)
lib. code ASTIS 9970
Libraries ACU
Summary Reports on the microbial flora of soil samples obtained in northern Mackenzie District in July 1960. Large numbers of microorganisms were found, more in the tundra-boreal forest transition types than in the tundra, also more in uncultivated than in cultivated soils. Decrease in incubation temperature reduced the numbers of actinomycetes and bacteria in the tundra-boreal forest transition soils but less effect on those from tundra soils and on fungi numbers. Predominance of the various fungi genera isolated however was influenced by temperature.

Author(s) Janz, A.J. V23
Title **Topographic and site influences on vegetation, soil and their nutrients east of the Mackenzie Delta**
Affiliations
Publication Thesis (M.Sc.) - University of Alberta, Edmonton, Alta., (1974)
lib. code ASTIS 30255
Libraries ACU
Summary Three topographic positions (hilltop, midslope and depression) at three locations on the treeless uplands east of the **Mackenzie Delta**, were compared for differences in vegetation and soil characteristics.

Author(s) Jette, H. V24
Title **Palynological studies in the Mackenzie observatory**
Affiliations Geological Survey of Canada [Affiliation]
Publication (1992)
lib. code ASTIS 36071
Libraries
Summary In this multi-year study, the researcher will examine the history of plant communities in the **Mackenzie River** and **Delta** regions over the past 15,000 years. Using a hand auger, core samples of sediments will be taken from lake bottoms and the sediments will be analyzed for the presence of pollen and diatoms. Radiocarbon dating, a technique used to estimate age, will be used to estimate when the species were present.

Author(s) Jette, H. V25
Title **Palynological studies in the Mackenzie observatory**
Affiliations Geological Survey of Canada [Affiliation]
Publication (1993)
lib. code ASTIS 40294
Libraries
Summary In this multi-year study, the researcher will examine the history of plant communities in the **Mackenzie River** and **Delta** regions over the past 15,000 years. Using a hand auger, core samples of sediments will be taken from lake bottoms and the sediments will be analyzed for the presence of pollen and diatoms. Radiocarbon dating, a technique used to estimate age, will be used to estimate when the species were present.

Author(s) Lambert, J.D.H. V26
Title **Botanical changes resulting from seismic and drilling operations, Mackenzie Delta area**
Affiliations
Publication Indian Affairs and Northern Development: s.l. (1972)
lib. code ARI
Libraries QK 203 .N6 L36 1972
Summary Botany, terrestrial ecosystems, flora – arctic regions. Permafrost.

Author(s) Larsen, J.A. V27
Title **Plant community composition : boreal forest and tundra. North America. Data : 1958 - 1974 : A reconnaissance base-line survey of vegetational communities, with bioclimatological implications**
Affiliations
Publication (1990)
lib. code ASTIS 29254
Libraries ACU
Summary This comprehensive study consists of two parts. Part one includes information on global environmental change, boreal plant communities and climatic responses, and boreal vegetational community sampling. Part two consists of community descriptions of plants and plant ecology within the districts of Mackenzie, Keewatin, Y.T., Nouveau-Quebec, Labrador, the Atlantic Provinces, and the Prairie Provinces including Alberta, Saskatchewan, and Manitoba, and Ontario.

Author(s) J.D. Mollard and Associates Limited V28
Title **Illustrated glossary of natural vegetation and peatland terms for permafrost-affected terrain crossed by the Northwest and Mackenzie Valley Pipe-line route corridor**
Affiliations
Publication (1971)
lib. code ASTIS 30246
Libraries ACU
Summary During the fall and winter of 1970-71, several hundreds of color and black-and-white photographs taken from the ground and from helicopters and several hundreds of field observations have been and will be made of natural and culturally-disturbed vegetation, including peatlands….

Author(s) Nagy, J.A. Pearson, A.M. Goski, B.C. Cody, W.J. V29
Title **Range extensions of vascular plants in northern Yukon Territory and northwestern District of Mackenzie**
Affiliations
Publication *Canadian field-naturalist*, v. 93, no. 3, (July-Sept. 1979), p. 259-265
lib. code ASTIS 2384
Libraries ACU
Summary Between 1970 and 1975 plant communities in the Yukon Territory and the District of Mackenzie north of 67 deg. N were investigated. We record three taxa new to the known flora of the Yukon Territory and one new to the flora of the District of Mackenzie. Among the other vascular plants listed here, nine are new to the range predicted by Hulten within the Yukon Territory, 23 are extensions within predicted ranges and thus corroborate these predictions, and 29 are extensions beyond predicted ranges.

Author(s) Nichols, H. V30
Title **Palynological and paleoclimatic study of the late quaternary displacement of the boreal forest turndra ecotone in Keewatin and Mackenzie, N.W.T., Canada**
Affiliations
Publication Institute of Arctic and alpine research, University of Colorado: Boulder, CO (1975)
lib. code QE 993 .N54 1975
Libraries ARI
Summary Palynology and Paleoclimatology

Author(s) Nicholson, B. V31
Title **Vegetation response to global warming in the Mackenzie River Basin : interactions between northern boreal forests, wetlands and regional hydrology**
Affiliations
Publication (1992)
lib. code ASTIS 36350
Libraries
Summary The researcher will map the present distribution of boreal and subarctic wetlands in the **Mackenzie River Basin**. Wetland vegetation and water chemistry will be described for areas immediately surrounding permanent weather stations. The ecological relationships between climate, wetland water chemistry and wetland species distribution will be analyzed. A predictive indicator model will be built to predict species distribution.

Author(s) Nicholson, B.J. V32
Title **Effects of climatic and ecological gradients on the distribution of peatland bryophyte communities along a north-south gradient**
Affiliations
Publication Presentation at the International Symposium on the Ecology and Management of Northern Forested Wetlands, Traverse City, Michigan, April 1994
lib. code ASTIS 36765
Libraries
Summary Climate is a major factor affecting the development and form of peatlands, as well as the distribution of individual bryophyte species. This paper examines the climatic and ecological gradients affecting the distribution of bryophyte communities along a north-south gradient in the **Mackenzie River basin.** … In the **Mackenzie River basin**, local surface water gradients such as pH and height above the water table play a more significant role in bryophyte species distribution. Climate is secondary. Amongst the climatic variables, precipitation, length of the growing season, and mean annual temperature are the most significant. The eight peatland groups are: Northern bogs and poor fens with wet lawns; Northern wooded bogs and poor fens; Northern peat plateaus with wet lawns; Southern forested mixed mires; Southern moderate-rich fens; Northern moderate-rich fens; Dry extreme-rich fens; and Wet extreme-rich fens.

Author(s) Nicholson, W.E. Younkin, W.E. V33
Title **Preliminary reclamation studies, Polar Gas Project - 1976**
Affiliations R.M. Hardy and Associates Polar Gas Limited [Sponsor]
Publication Polar Gas Environmental Program 1977
lib. code ASTIS 8737
Libraries ACU OON
Summary Research was initiated to determine the revegetation potential along the proposed Polar Gas route. The studies included brief reconnaisance surveys of the route, phytometer tests conducted at the Shephard Bay Dew Line site in conjunction with studies in the **Mackenzie Valley**, a species trial and a native seed study. The reconnaisance surveys determined that revegetation will likely not be feasible for most areas north of Spence Bay (69 degrees 30'N) but will be possible in most areas south of Spence Bay, with sands and organic soils expected to pose the greatest difficulties to revegetation. ... First year results of the species trial showed that the five grasses tested can establish a low ground cover in the first growing season, with Engmo timothy and Arctared fescue producing the largest ground covers. The native seed study determined that viable seed is produced by native grasses at Baker Lake (64 degrees 20'N), and that there is a potential for collecting native seeds and increasing native seed supplies for use in revegetating disturbances.

Author(s)	Norris, G. V34
Title	**Paleontologic, biostratigraphic and environmental interpretation of microfloras in Imperial Nutkak C-22 well, District of Mackenzie**
Affiliations	Canada. Supply and Services Canada [Sponsor] Canada. Energy, Mines and Resources Canada [Sponsor]
Publication	(1978)
lib. code	ASTIS 23174
Libraries	
Summary	Not available

Author(s)	Pearce, C.M. V35
Title	**Vegetation dynamics in shorelines of the Mackenzie River delta, N.W.T.**
Affiliations	
Publication	Thesis. University of Calgary, (1983)
lib. code	
Libraries	U. Calgary, ARI
Summary	Vegetation

Author(s)	Pearce, C.M. V36
Title	**The distribution and ecology of the shoreline vegetation on the Mackenzie Delta, N.W.T.**
Affiliations	
Publication	Thesis (Ph.D.) - University of Calgary, Dept. of Geography, Calgary, Alta., (1986). Supervisor: Cordes, Lawrence D.
lib. code	ASTIS 18764; QK 203 .N6 P43 1986 THE
Libraries	ACU, U. Calgary, ARI
Summary	This research analyzed the distribution of the shoreline vegetation on the **Mackenzie Delta** and the dynamics of plant colonization and early succession on mudflats. The shoreline vegetation was described within a system of ecological land classification which related the distribution of plant associations to macroclimate and the fluvial regime. The Low Arctic and High Subarctic Ecoregions distinguished vegetation patterns related to climate. Ecosites -- point bars, levees, sand plains, lakeshores, deltas, and shoals -- identified landforms resulting from fluvial processes on the delta and the degree of the relationship between delta hydrology and the landform. Eight major shoreline associations were studied: sparsely vegetated mudflats with a mix of plant species colonizing new land adjacent to channels and lakes; emergent communities dominated by Equisetum fluviatile, E. arvense, Arctophila fulva, and Carex aquatilis; and low shrub associations dominated by Salix alaxensis, S. pulchra, and S. richardsonii. The distribution of vegetation on shorelines of channels and lakes was closely related to flooding, sedimentation, and erosion. Of particular importance were the timing and magnitude of the annual spring flood, water level fluctuations over the growing season, and the amount and texture of alluvium deposited during flooding. Also important were temperatures and precipitation over the growing season, competition from other plants, and grazing by waterfowl and muskrat. Seedlings were particularly susceptible to dry surface soils during germination and emergence and sediment deposition the following spring. In the outer delta, the depth of the active layer each summer and frost disturbances within the soils also influenced the distribution of vegetation….

Author(s) Pearce, C.M. V37
Title **Vegetation in the Mackenzie Delta**
Affiliations University of Western Ontario [Affiliation]
Publication (1986)
lib. code ASTIS 19370
Libraries
Summary Objective: To conduct a survey of the vegetation in the **Mackenzie Delta**. This project is a continuation of one initiated in 1983. Itinerary: **Mackenzie River Delta**. Aug. 5-12, 1986.

Author(s) Pearce, C.M. V38
Title **Vegetation dynamics on shorelines of Mackenzie Delta, N.W.T.**
Affiliations University of Western Ontario [Affiliation and Sponsor] Natural Sciences and Engineering Research Council Canada [Sponsor]
Publication (1987)
Lib. code ASTIS 21219
Libraries
Summary Objective: To analyze the environmental processes that control plant distribution and succession on shoreline of the **Mackenzie Delta**. Specific objectives of the research are to examine (1) the colonization and establishment on exposed mudflats and other newly-available sites, (2) the responses of the shoreline plants to fluctuations in the biophysical environment, and (3) the chemical and physical properties of shoreline substrates. This work is a continuation of the 1986 licence #6102.

Author(s) Polunin, N. V39
Title **Report on botanical explorations in arctic America, 1946-48**
Affiliations
Publication *Arctic*, v. 2, no. 1, (May 1949), p. 45-55
lib. code ASTIS 9656
Libraries ACU
Summary Brief account, in general terms, of the author's field-trips in the northern Quebec, Southampton Island, and Baker Lake (Keewatin) regions, summer 1946; in the northwestern part of Mackenzie District, summer 1947; and in Fairbanks, Alaska, 1948, whence he made high altitude, aerological, bacteriological, collecting flights to the North Pole. Includes remarks on the vegetation in regions visited in 1946 and 1947.

Author(s) Reid, D.E. V40
Title **Vegetation of the Mackenzie Valley : Part One**
Affiliations Northern Engineering Services Company Canadian Arctic Gas Study Limited [Sponsor] Alaskan Arctic Gas Study Company [Sponsor]
Publication Arctic Gas. Biological report series, v. 3, pt. 1 (1974)
lib. code ASTIS 15441; TD 195 .P5 A67 V.003
Libraries ACU; ARI
Summary ... Broadly, the objective of this vegetation survey project was to classify the landscape of a portion of the **Mackenzie Valley** between **Fort Good Hope** and **Fort Norman** into ecologically significant vegetation-terrain units.

Author(s) Reid, D.E. V41
Title **Vegetation survey and disturbance studies along the proposed Arctic Gas route**
Affiliations Northern Engineering Services Company Canadian Arctic Gas Study Limited [Sponsor]
Publication Arctic Gas. Biological report series, v. 37 (1977)
lib. code ASTIS 200
Libraries ACU
Summary The four chapters in this volume of the Biological Report Series contains the following reports: …the vegetation of the **Mackenzie Delta** region.

Author(s) Reid, D.E. Calder, G.M. V42
Title **The vegetation of the Mackenzie Delta area**
Affiliations
Publication (1975)
lib. code ASTIS 30262
Libraries ACU
Summary This study describes the vegetation-terrain relationships of portions of three physiographic divisions in the **Mackenzie Delta** area: the modern delta north of tree line or outer delta, the lower slopes of the Richardson Mountains, and the wetlands on the Peel Plain between the Peel and **Mackenzie Rivers**. The aim of the study was to provide base line information on the vegetation composition, structure, successful process and relationships to the environment, for use in impact assessment and pipeline route selection.

Author(s) Reid, D.E. Janz, D.E. V43
Title **Vegetation of the Mackenzie Valley : Part Two**
Affiliations Norman Engineering Services Company Canadian Arctic Gas Study Limited [Sponsor] Alaskan Arctic Gas Study Company [Sponsor]
Publication Arctic Gas. Biological report series, v. 3, pt. 2 (1974)
lib. code ASTIS 12481
Libraries ACU
Summary … Generally, the major objective of this survey project was to classify the landscape of the **southern Mackenzie Valley** into ecologically significant vegetation - terrain units. ... The specific objectives are: (1) To gain an understanding of the ecological relationships of the vegetation, soil, and terrain types in a corridor extending from **Fort Norman** south to the Alberta border (60 degrees N). (2) To estimate forest productivity and to examine vegetation succession on areas disturbed by fire and seismic activities. (3) To prepare maps at the detailed level showing the characteristic vegetation units on the major terrain types.

Author(s) Ritchie, J.C. V44
Title **A Holocene pollen record of boreal forest history from the Travaillant Lake area, lower Mackenzie River basin**
Affiliations
Publication *Canadian journal of botany*, v. 62, no. 7, (July 1984), p.1385-1392
lib. code ASTIS 14449
Libraries ACU
Summary A 396-cm sediment sequence from SW Lake in the boreal woodland zone near Travaillant Lake, Northwest Territories, Canada, provides a Holocene record of pollen percentages and species interactions. Three local pollen assemblage zones are described: a Betula-Populus-Juniperus zone from 10500 to 9000 years BP, a Picea-Betula zone from 9000 to 5100 years BP, and a Picea-Betula-Alnus zone from 5100 years BP to the present. The earliest vegetation recorded at this site is a mosaic of poplar groves, juniper and Shepherdia shrub, and fragmentary patches of tundra, replaced rapidly by spruce woodland at roughly 8500 years BP, dominated initially by Picea glauca. Picea mariana spread extensively between 8500 and 5000 years BP, probably as a function of increasing paludification. The present spruce-dominated vegetation was in place by 5000 years BP. Some changes in the pollen record can be explained by the Milankovitch early Holocene period of warmer summers followed by a cooling to modern conditions by 5000 years BP. Others require explanations in terms of edaphic factors or biological interactions among the main taxa.

Author(s) Richie, J.C. V45
Title **Past and present vegetation of the far northwest of Canada**
Affiliations
Publication University of Toronto press (1984)
lib. code QE 931.1 .R57 1984
Libraries ARI
Summary Paleobotany and botany in the Yukon and the NT- **Mackenzie River Delta**.

Author(s) Richie, J.C. V46
Title **Comparaison entre la végéetation du Mackenzie et du Nord québécois à l'Holocène = Comparison between Holocene vegetation from the Mackenzie region and northern Québec**
Affiliations
Publication *Géographie physique et quaternaire*, v. 41, no. 1, (1987), p. 153-160 [French, abstract in English]
lib. code ASTIS 20965
Libraries ACU
Summary Northern Quebec-Labrador and the **Lower Mackenzie region** have several phytogeographic characteristics in common, but their postglacial vegetation histories are distinctly different. ... The regional differences can be explained by the differences in the timing of deglaciation, the influence of the residual ice sheet on the general climate, and the proximity of floristic source populations and their migration routes.

Author(s) F.F. Slaney & Company V47
Title **1972-1974 environmental program, Mackenzie Delta, N.W.T. : volume 3 : landform and vegetation**
Affiliations Imperial Oil Limited [Sponsor] Gulf Oil Canada [Sponsor] Shell Canada Limited [Sponsor] Canadian Arctic Gas Study Limited [Sponsor]
Publication F.F. Slaney & Co., (1974). Part of a seven volume set.
lib. code ASTIS 30275; TD 195 .G3 F47 1974
Libraries ACU, ARI
Summary The objectives of this program were: 1. to identify and map the distribution of vegetation units; 2. to determine floral composition of mapping units; 3. to examine basic edaphic characteristics of the mapping units.

Author(s) Squires, M.M. V48
Title **Controls on benthic algal growth on artificial substrates in limonocorrals receiving pulses of sediment and nutrients in a Mackenzie Delta lake**
Affiliations
Publication Thesis: Simon Fraser University: Burnaby, BC (1996)
Lib. code QK 571.7 .N6 S68 1996 THE
Libraries ARI
Summary Benthos, fresh water algae. **Mackenzie River Delta**

Author(s) Sylvester, T.W. V49
Title **Fuel characteristics of common plant species found near the Mackenzie Delta, N.W.T.**
Affiliations
Publication Thesis (M. Sc.) University of New Brunswick (1978)
lib. code QK 203 .N7 S94 1978 THE
Libraries U. New Brunswick, ARI
Summary Botany, **Mackenzie Delta**, NT

Author(s) Sylvester, T.W. Wein, R.W. V50
Title **Fuel characteristics of arctic plant species and simulated plant community flammability by Rothermel's model**
Affiliations
Publication *Canadian journal of botany*, v. 59, no. 5, (1981), p. 898-907
lib. code ASTIS 6576
Libraries ACU
Summary The relative fuel-potentials of 12 northern tundra and forest-tundra ground species of the **Mackenzie Delta** area were evaluated from measured fuel characteristics by simulating a test fire with the Rothermel (1972) fire behavior model. The relative importance of the fuel parameters were in decreasing order: moisture content, biomass, fineness (surface/volume ratio), packing ratio, silica-free ash content, and caloric content. The fuel-potential ratings of the vascular species and of the communities were differentiated primarily by their leaf characteristics. ... Subject to the limitations with respect to ether-extractive contents, the relative fuel potential of tundra and forest-tundra plant communities can be rated on measured fuel characteristics, community composition, and the criteria of the Rothermel model. Possible applications of this study were raised, particularly the use of relatively nonflammable plants in land management.

Author(s) Taylor, C.S. V51
Title **Digital database of vegetation types-Mackenzie Valley**
Affiliations Northwest Territories. Dept. of Renewable Resources [Affiliation]
Publication (1991)
lib. code ASTIS
Libraries
Summary The researcher will conduct a survey, **approximately 30 km on either side of the Mackenzie River**, using satellite imagery. A classification will be undertaken of the area from the **Mackenzie Delta** to the **Fort Simpson area**, with wider zones along the E side to include proposed pipeline routes.

Author(s) Taylor, C.S. V52
Title **Digital database of vegetation types of the Mackenzie Valley development corridor**
Affiliations Northwest Territories. Centre for Remote Sensing [Affiliation]
Publication (1992)
lib. code ASTIS 36475
Libraries
Summary The researcher will conduct helicopter surveys of vegetation types. The field data will aid in the computer classification of satellite imagery. The results will be vegetation maps of the **Mackenzie Valley**, which can be plotted on paper or entered into a digital database on a geographic information system (GIS) for further analysis with other data such as wildlife habitat, forest fires and trapline locations.

Author(s) Timoney, K.P. V53
Title **A geobotanical investigation of the subarctic forest-tundra of the Northwest Territories**
Affiliations
Publication Thesis (Ph.D.) - University of Alberta, Dept. of Botany, Edmonton, Alta., (1988)
lib. code ASTIS 29005
Libraries ACU
Summary A geobotanical study of the high subarctic region west of Hudson Bay was undertaken to provide a verifiable and quantitative delimitation of the forest-tundra. …Airphotos were analyzed for percent cover of nine vegetation-terrain types, occurrence of selected patterned ground features, bedrock and parent materials, landforms, and elevations… Tree and upland tundra vegetation are discussed in relation to climate, topography, and landscape….

Author(s) Timoney, K.P. La Roi, G.H. Zoltai, S.C. Robinson, A.L. V54
Title **The high subarctic forest-tundra of northwestern Canada : position, width, and vegetation gradients in relation to climates**
Affiliations
Publication *Arctic*, v. 45, no. 1, (Mar. 1992), p. 1-9
lib. code ASTIS 32021
Libraries ACU
Summary A phytogeoclimatic study of the high subarctic region of Canada between Hudson Bay and the Cordillera at the northern Yukon-Mackenzie border was undertaken to provide a verifiable and quantitative synthesis of forest-tundra vegetation ecology. Three field seasons of vegetation and terrain studies provided ground truth for a grid of 1314 black-and-white air photos that cover ca. 24% of the forest-tundra and adjacent low Subarctic and low Arctic. Air photos were analyzed for percentage cover of nine vegetation-terrain types, bedrock and parent materials, landforms, and elevations….

Author(s) Timoney, K.P. Wein, R.W. V55
Title **The areal pattern of burned tree vegetation in the subarctic region of northwestern Canada**
Affiliations
Publication Arctic, v. 44, no. 3, (Sept. 1991), p. 223-230
lib. code ASTIS 30984
Libraries ACU
Summary Vegetation and terrain analyses of 1312 air photos spanning the subarctic, low arctic, and portions of the adjacent high boreal region of northwestern Canada permitted geographic characterization of the areal pattern of burned forest and forest-tundra vegetation. In terms of its lower areal extent of burns, and lower frequency of air photos showing burns, the forest-tundra is distinct from both open crown and closed crown forest regions. Burns show a general decrease in areal coverage from the northwest (**Mackenzie River** to Great Bear Lake: 0-50% of the terrain) to the southeast (Great Slave Lake to Hudson Bay: 0-10%). In the northwest, the flat till plains, high cover of continuous mature forest, and scarcity of lakes, coupled with dominance of slowly regenerating white spruce (in the forest-tundra) may help to account for the extensive burned vegetation…. Strong correlations were observed between burn cover and upland tundra cover (-r) and between burn cover and the tree:upland tundra cover ratio (+r).

Author(s) Wein, R.W. V56
Title Recovery of arctic vegetation after burning
Affiliations
Publication Environmental – Social Committee, Northern Pipelines Task Force on Northern Oil: s.l. (1974)
lib. code QH 545 .F5 W45 1974
Libraries ARI
Summary Fire ecology – Tundra ecology, Revegetation. **Mackenzie Delta** region

Author(s) Wein, R.W. Bliss, L.C. V57
Title **Experimental crude oil spills on Arctic plant communities**
Affiliations
Publication *Journal of applied ecology*, v. 10, (1973), p. 671-682
lib. code ASTIS 3012
Libraries ACU NFSMO
Summary ... The objectives of this study were to determine the initial and long-term effects of crude oil on the survival and re-invasion of Low Arctic plant species. Supplementary measurements of thermal and moisture balances in the soil aided interpretation of the plant responses. The research was conducted at three sites in north-western Canada just to the east of the **Mackenzie Delta**. **Inuvik** is located 115 km from the Arctic Coast, **Tuktoyaktuk** is on the coast and **Tununuk Point** is about midway between the two. ... The community types, soil surface characteristics, maximum active layer depths, plot sizes, and date of oil application are given.

Author(s)	Younkin, W.E.	V58
Title	**Revegetation studies in the northern Mackenzie Valley region**	
Affiliations	Northern Engineering Services Company Canadian Arctic Gas Study Limited [Sponsor]	
Publication	Canadian Arctic Gas Study Ltd. : Alaskan Arctic Gas Study Co., (1976). (Arctic Gas. Biological report series, v. 38)	
lib. code	ASTIS 3440	
Libraries	ACU	
Summary	… The final chapter gives preliminary pipeline revegetation specifications for the **Mackenzie Valley** region, N.W.T. Agronomic species, native species, stem cuttings, seed mixes, and fertilizer trials are described in species trials. Specifications are given for drainage, species, fertilizers and implementation.	

Author(s)	Younkin, W.E. Martens, H.E.	V59
Title	**Progress report on rig site seeding tests in the Mackenzie Delta region, N.W.T.**	
Affiliations	Northern Engineering Services Company	
Publication	(1976)	
lib. code	ASTIS 30263	
Libraries	ACU	
Summary	Revegetation research during the past several years has provided information on species and fertilizers suitable for revegetation in northern regions. …The program described herein began in 1973 as a limited study of the logistic and operational problems associated with aerial seeding in remote northern locations. The seed mix selected for these early studies was a combination of both slower establishing winter hardy varieties and rapidly establishing less hardy varieties of grasses selected from species trials conducted in the region. From these studies it became evident that additional seed mixtures would be required to meet a variety of environmental conditions and the program was gradually expanded to include the testing of a number of species and seed mixes. Several variables related to cover production have also come under study. These include geographic location, soil texture, rate of seeding and the number of species included in the seed mix.	

Author(s)	Zoltai, S.C. Pettapiece, W.W.	V60
Title	**Studies of vegetation, landform and permafrost in the Mackenzie Valley : terrain, vegetation and permafrost relationships in the northern part of the Mackenzie Valley and northern Yukon**	
Affiliations	Canadian Forestry Service Soil Research Institute (Canada) Environmental-Social Program, Northern Pipelines (Canada) [Sponsor]	
Publication	Environmental-Social Committee Northern Pipelines, Task Force on Northern Oil Development report, no. 73- 4 (1973)	
lib. code	ASTIS 27379; TD 195 .P5 Z65 1973	
Libraries	ACU OORD; ARI	
Summary	Ecology – Botany – Permafrost. Environmental aspects of pipelines. **Mackenzie River watershed**, NT	