

GRRB Wildlife Studies Fund Research (1993-2009)

Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Birds	Forest birds	2008	Financial	Density and diversity of Forest birds in the GSA	CWS (Craig Dockrill)	There is a knowledge gap concerning forest birds throughout areas under or slated for future development in the Mackenzie Valley. Detailed field work is required to attain accurate baseline information for breeding birds in the Mackenzie Valley. The objective of this proposal is to determine the species composition, relative abundance, patterns of occurrence and forest type variance of breeding birds in the GSA. Data will be collected at several areas in the GSA. Densities of breeding birds with the various forested habitats will also be collected.	None to date
Birds	Peregrine Falcon	2000	In-kind	Five-Year Peregrine Falcon Survey	GNWT/GRRB (Carriere/Benn)	In July helicopter flights over the portion of the Mackenzie River in the GSA will survey Peregrine falcon nest sites and determine population health (nesting density and success). The results of this survey will be compared to historical data to determine changes in health among years. Results will be used to determine if the population is healthy enough to sustain a portion of the proposed collection of Northern Peregrine falcons in the US.	
Birds	Peregrine Falcon	2000	In-kind	Productivity survey and satellite telemetry of Peregrine Falcons (anatum subspecies) in the GSA	GNWT/GRRB (Carriere/Benn)	This is part of a North American 5-Year Survey and will provide health information of falcon populations in the GSA before a US proposal to annually collect 250 Northern Peregrine falcons (which nest in the NWT and Nunavut) is effective. We will use a spring survey of falcon nest sites in the GSA to determine occupancy and clutch size. Results will be compared to historical data to determine changes in population health. Satellite tracking of two <i>anatum</i> Peregrine falcon females will examine migration route and timing. This will help to determine a need for further study of the migration of the core population, given the US proposal.	May have been funded through WWF Endangered Species Recovery Fund.
Birds	Peregrine Falcon	1995	Financial	Peregrine Falcon Surveys	GNWT (DRR)	This project will survey peregrine falcon populations in order to provide information to the GRRB on the status of populations.	
Birds	Scoters	2002 2001	Financial	Habitat Requirements of Scoters	University of Saskatchewan (Shannon Haszard)	This project will examine how wetland characteristics affect the abundance, distribution, and productivity of white-winged and surf scoters in the GSA. The forested wetlands of the GSA are among the most important breeding sites in North America for these two species of sea ducks. The combined scoter population has declined by 75% during the past 40 years and this is of concern to subsistence hunters from the GSA and wildlife managers across North America. A long-term decline in the population of these key harvested species threatens the availability of this traditional food source. Understanding the habitat requirements of these ducks is an important first step in explaining this decline.	Haszard. 2002. Habitat requirements of White-winged and surf-scoters in the Mackenzie Delta Region, NWT. 2001 Progress report to the GRRB. Haszard. Black Duck Project: Fall 2002 Progress Report. Haszard, S. 2004. Habitat use by white winged and surf scoters in the Mackenzie Delta region, NWT. M.Sc. thesis. University of Saskatchewan.
Birds	Tundra Swans	2002 2001	Financial	Reproductive Ecology of Tundra Swans in the Mackenzie Delta Region	Univ. of Northern British Columbia (Heather Swystun)	The Mackenzie Delta is an important breeding area for waterbirds in NA. The delta is also known for its development potential and exploration is now underway. Development and changing regional climate may contribute to changes in waterbird populations. Tundra swans are important to the Inuvialuit and the Gwich'in but few studies have been done to quantify breeding habits in this region. Management of tundra swans in the U.S. is hampered by a lack of suitable information on tundra swan biology. The proposed study will take place in both Inuvialuit and Gwich'in land claims. The objectives of the study are to integrate TK into the project, document TK of swan biology; assess effects on breeding habits and swan productivity; identify important breeding habitat; establish long-term monitoring plots for tundra swans in collaboration with CWS.	Swystun, H. 2002. Reproductive Ecology of Tundra Swans in the Mackenzie Delta Region. Nontechnical Project Summary Report (on 2001 project) to GRRB. Swystun, H.A., et al. 2005. Monitoring the numbers and productivity of Tundra Swans in relation to potential natural gas development in the Mackenzie River Delta, Western Canadian Arctic 2001-2003. Technical Report Series. No 438. Canadian Wildlife Service.
Birds	Waterbirds	2004 2003	Financial	Middle Mackenzie River (waterbirds/wetlands survey)	Ducks Unlimited Canada (MacDonald)	The research objectives were to provide information to predict what types of wetlands different waterbirds select and to identify important breeding, rearing and staging areas for waterbirds throughout the study area. In 2003, aerial surveys of waterbirds was to be completed and water chemistry sampling of 100 wetlands was to be conducted. In 2004 a digital inventory of wetlands and upland habitats was to be completed and importance of different wetland & upland habitats to waterbirds was to be assessed	Ducks Unlimited, Inc. February 2006. Middle Mackenzie Project Earth Cover Classification User's Guide. 73 pp.

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Birds	Waterbirds	2004	Financial	Peel River Plateau Community Consultation	Ducks Unlimited Canada (Shannon Haszard)	This project's objectives were to: report on and explain to community members what research D.U. Canada has been doing in the Peel Plateau area and why it is important to DU and to wildlife management; to collect local knowledge about wetlands or waterbirds; to provide opportunity for community members to comment on past and future D.U. research.	
Birds	Waterbirds	2003 2002 2001	Financial	Lower Mackenzie River Watershed Project (waterbird/wetlands survey)	Ducks Unlimited Canada (Stuart/MacDonald)	Populations of boreal nesting waterbird species are declining and significant regional information gaps exist. Research objectives were to provide information to predict what types of wetlands waterbirds select and to identify important areas for waterbirds. Three areas of study will be covered: An aerial based landcover inventory of all the vegetation in the study area will be made; waterbird aerial and ground based surveys to collect numbers and species of breeding, rearing and staging birds; water quality of selected wetlands (a subset of aerial-surveyed wetlands) will be assessed.	Charlwood et al. 2003. Lower Mackenzie Water Bird Survey Update - September 2003 Progress Report to GRRB. Ducks Unlimited, Inc. November 2002. Lower Mackenzie River Delta, NT, Erarh Cover Classification: Users Guide. 67pp. Ducks Unlimited, Inc. 2001. Lower Mackenzie River Project (Waterbirds Survey) Interim report to GRRB by Ducks Unlimited. Dufour et al. 2001. Lower Mackenzie Waterbird Inventory Project Year 2001 Survey results. Interim report. March 2001.
Birds	Waterbirds	2000	Financial	Breeding waterfowl in the GSA	GRRB? DU? (Shannon Haszard)	The GSA contains wetlands that are important breeding sites for waterbirds in NA. Although best evidence suggests greater scaup populations are stable, there has been a steady long-term decline in the populations of scoters and lesser scaup and this is of concern to wildlife managers in the GSA and across the continent. To date, scoter species have not been separated during aerial surveys making it difficult to assess whether one or both species have declined. This study will document composition, abundance and distribution of these species in wetlands of the GSA and provide baseline information on nest site characteristics, breeding & brood rearing habitat.	
Birds	Waterbirds	1999 1998 1996	In-kind & Financial	Gwich'in Territorial Park waterfowl survey	GRRB (Shannon Haszard, John Marshal)	The Gwich'in Territorial Park (GTP) is an important area for waterfowl. It provides suitable habitat for staging, rearing young and forage. Developments planned for the park may negatively affect the life cycles of waterfowl. Waterfowl surveys were completed in 1996 and 1998 to collect baseline data. It is necessary to continue these surveys as development of the park continues to monitor the effects that this might have on the waterfowl population in the area. In addition, this project will give students from the Natural Resource Technology Program at Aurora College the opportunity to learn important surveying techniques in a hands-on environment.	Marshal, J.P., Firth, A. 1999. Gwich'in Territorial Park Waterfowl Survey 1998. Gwich'in Renewable Resource Board Report 99-05. Edwards, J. 1997. Gwich'in Territorial Park Waterfowl Survey 1996. Gwich'in Renewable Resource Board Report 97-02.
Birds	Waterbirds	1994	Financial	Waterfowl Harvest Study	GNWT (DRR)		

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Birds & Mammals	Scaup, Scoters, Small mammals (hare, mice, lemmings, voles)	2008 2007 2006 2005	Financial	Breeding Ecology of Lesser Scaup (Blue Bills) and White-winged Scoters (Black Ducks - Njaa)	Ducks Unlimited Canada (Stuart Slattery)	White-winged Scoters and Lesser Scaup populations have been declining in the Mackenzie Valley by more than 50% in the past 30 years. This study will provide information on what factors are contributing to the decline. The study will: examine nest productivity and survivorship; food availability; nest habitat conditions; parasite loads; contaminants & body condition of adults & young; availability of small mammals as alternate prey for duck predators; identify populations of birds using this region, wintering origins and sources of nutrients needed for eggs	Breeding Ecology of Black Ducks (Scoters) and Blue-bills (Scaup) in the Lower Mackenzie River Watershed, NWT. Progress Report submitted to GRRB, Sept. 2007 Slattery & Norstrom. 2003. Breeding ecology of blue-bills (scaup) and black ducks (scoters) Progress Report -Field Season, 2003. DeVink et al. (in press) Is selenium affecting body condition and reproduction in boreal breeding Scaup, Scoters, and Ring-necked ducks? Environmental Pollution. DeVink et al. (in press) Are late-spring boreal lesser scaup (<i>Aythya affinis</i>) in poor body condition? Auk. Koons et al. 2007. Lesser Scaup Population Dynamics: What can be learned from available data? Avian Conservation Ecology. (online journal) http://www.ace-eco.org/vol1/iss3/art6/
Community-based Monitoring	All	2009 2008 2007 2006 2005 2004 2003 2002 2001	Financial	Community Based Ecological Monitoring, Aklavik and Fort McPherson	Arctic Borderlands Ecological Co-op (Deanna Lemke)	Arctic Borderlands is a co-operative that was established in 1994 to carry out community-based ecological monitoring and to record, synthesize, and communicate local knowledge about the environment. Each year interviewees go out into the communities across the north Yukon and adjoining NWT and ask a series of questions to people who spend a lot of time on the land. This information is then used to monitor changes in the land, fish, and wildlife.	Project information, maps and database available at http://www.taiga.net/coop/index.html
Fish	All	2008 2007 2006 2005 2004	In-kind & Financial	Population Analysis of Harvested Fish Species in Travaillant Lake	DFO (Kim Howlad) GRRB (Nathan Millar / Les Harris)	Identified as an important cultural and biological resource, the Travaillant Lake basin also falls in the path of the proposed Mackenzie Gas Pipeline. In anticipation of development in the area, a series of studies were conducted. A five year netting study collected a wealth of information on the presence of fish species and their biological characteristics. In the summer, netting takes place in the lake, while in the fall netting takes place in the rivers. The fall netting captures broad whitefish and lake whitefish as they move into the rivers to spawn.	Howland, K. and L. Harris. 2005. Population analysis of harvested fish species in the Travaillant Lake system, Northwest Territories. GRRB 05-05. Harris, L. and K. Howland. 2004. Travaillant Lake fish movement study and population assessment 2003. GRRB 04-03.
Fish	All	2008	In-kind	Riverine Nutrient Fluxes	Simon Fraser University (Lance Lesack)	This project will require monthly sampling of the Mackenzie, Peel and Arctic Red Rivers from September 2008 through March 2009. Local Gwich'in beneficiaries will be hired to accompany a GRRB employee to three sites where water samples will be taken. Samples will be shipped to a laboratory in Winnipeg to aid in the quantification of Mackenzie River nutrient fluxes to the Beaufort Sea.	
Fish	All	2007	Financial	Tsiigehtchic Fisheries Co-ordinator	DFO Inuvik (Erin Hiebert)	This money goes to hiring a fisheries Harvest Study / Fisheries Management Co-ordinator for Tsiigehtchic. This individual conducts interviews with fishermen to record harvest information, collects any unusual specimens, and helps to co-ordinate the collection of salmon.	None yet
Fish	All	2007	In-kind	Traditional Knowledge of Fish in the Arctic Red and Mackenzie Rivers	GRRB (Nathan Millar / Amy Thompson)	This study aimed to document the traditional knowledge of fish species from the Arctic Red River and the Mackenzie River. Harvesters were interviewed and information was recorded about timing of migration, spawning areas, and other relevant observations about the fish.	Thompson, A. and Millar, N. 2007. Traditional knowledge of fish migration and spawning patterns in Tsiigehtchic (Arctic Red River) and Nagwichoonjik (Mackenzie River), Northwest Territories. Gwich'in Renewable Resource Board Report 07-01.

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Fish	All	2006 2005 2004 2003	Financial	Arctic Red River Fish Study	GRRB (Les Harris / Nathan Millar)	In 2002/2003, the GRRB began a study of the fish resources of the Arctic Red River. The river has long provided food for families (and dogs) and a source of income. The whitefish species in the river also play an important role in the ecosystem food chain, as well, been identified as an important spawning, rearing and over wintering area. The study researched the impact, both culturally and economically, of accelerated oil and gas development in the Mackenzie Delta. The study was carried out to mirror the Peel River Fish Study (see below).	Harris, L. 2004. Arctic Red River Index Netting Study 2003. Gwich'in Renewable Resource Board, Inuvik, Northwest Territories. Report 04-04.
Fish	All	2004 2003 2002	In-kind	Local Knowledge of Travaillant Lake Fish	GRRB (Janet Winbourne)	Identified as an important cultural and biological resource, the Travaillant Lake basin also falls in the path of the proposed Mackenzie Gas Pipeline. In anticipation of development in the area, a series of studies were conducted. Local knowledge of fish and fish habitat was gathered in interviews with elders from Tsighetchic. This study provided information about fish distribution, movement, and habitat use.	Winbourne, J. 2004. Local knowledge of fish movements and habitat use in the Travaillant Lake system. GRRB 04-06.
Fish	All	2003 2002	Financial	Travaillant Lake Fish Movement Study	GRRB (Melanie VanGerwen-Toyne)	Travaillant Lake is the largest lake in the GSA and an important area for fish and wildlife harvesting, but little was known about its fish populations and whether the fish are lake-locked or migratory. There is significant potential for development activities near the lake (proposed oil and gas pipeline, transportation corridor) that may affect lake and fish. The study aimed to collect information on fish movements, determine if fish populations in the lake system are migratory or lake-locked, gather biological information for fish species. To do this, the researchers conducted traditional knowledge interviews with knowledgeable elders. Work at the lake involved floy tagging fish in July and September. A portion of fish caught were sampled for biological characteristics.	VanGerwen-Toyne, M. 2002. Travaillant Lake Fish Movement Study: Traditional Knowledge Interviews. GRRB Report 02-02. VanGerwen –Toyne, M. 2003. Travaillant Lake Fish Movement Study, 2002. GRRB Report 03-01.
Fish	All	2000 1999	Financial	Lower Mackenzie River Index Netting	DFO Inuvik (Sam Stephenson)	The GRRB funded a DFO led project to use index netting concurrently at many locations in the Mackenzie River drainage to investigate fish stocks. The study relied on community field workers using experimental gill nets (2" - 5.5") set each night for a week in July.	Stephenson, S. A. 2001. Results of the 2000 lower Mackenzie River index netting study. Report to the FJMC, GRRB and SRRB.
Fish	All	1999 1998	Financial	Campbell Creek/Lake Study	DFO (Ross Tallman) GRRB	Campbell Creek is an important recreational and subsistence fishing area and since recreational use is expected to increase with the development of the Gwich'in Territorial Park, fish populations may be affected. The researchers aimed to gather information on fish populations in the lake to understand how fish use the lake and creek. To do this, they set gillnets at 13 locations in the lake at different times of the year and floy-tagged a number of fish to follow their movements.	Tallman, R. 2001. Project Report: Fish species diversity in Campbell Lake. DFO unpublished report.
Fish	All	1999	In-kind	Database of Fish Research in the GSA	GRRB (Staff)	The GRRB produced a database of all the fisheries related research that took place in part or in its entirety in the Gwich'in Settlement Area. The database is searchable by fish species, location, type of data collected, and other parameters. It provides a comprehensive tool to access information of fisheries research in the GSA.	GSA Fish Research Database
Fish	All	1998	Financial	GTP Creel Census		No information available	
Fish	All	1997 1996	Financial	Biodiversity and Habitat Study of Fish Lakes on Bridged Creeks on Aklavik Trail	DFO Inuvik (Ian McLeod)	The goal of this study was to determine the presence/absence and diversity of fish in the system. Fish were caught and researchers recorded biological characteristics (e.g., age, weight, size). Another goal was to determine the presence of spawning and over-wintering habitat.	
Fish	Broad Whitefish	2005 2004	Financial	Tracking Movements of Broad Whitefish in Travaillant Lake	GRRB (Les Harris / Nathan Millar)	Identified as an important cultural and biological resource, the Travaillant Lake basin also falls in the path of the proposed Mackenzie Gas Pipeline. In anticipation of development in the area, a series of studies were conducted. In 2004 radio transmitters were surgically implanted into mature broad whitefish. These fish were then tracked over nearly two years. Their movements allowed the identification of critical habitats for feeding, spawning, and over-wintering.	Harris, L. 2005. Tracking the movements of a lake-locked population of broad whitefish (<i>Coregonus nasus</i>) in the Travaillant Lake system, Northwest Territories (plain language version). GRRB 05-04. Harris, L. and K. Howland. 2004. Travaillant Lake fish movement study and population assessment 2003. GRRB 04-03.

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Fish	Broad Whitefish	2005	Financial	Broad Whitefish Genetics	GRRB (Les Harris) UBC	The goal of this study is to determine the number of stocks of broad whitefish (<i>Coregonus nasus</i>) in the lower Mackenzie River. Fish fins were collected from fishermen through the Gwich'in Settlement Area. The population structure was determined using genetics (microsatellites).	Semi-annual up-dates
Fish	Broad Whitefish	2001	In-kind	Local knowledge of Broad Whitefish in the GSA	GRRB (Bobbie-Jo Greenland)	This project collected and summarized community concerns and knowledge about broad whitefish within the Gwich'in Settlement Area. This study was done to inform the development of Integrated Fisheries Management Plan for Broad Whitefish (<i>Coregonus nasus</i>) in the lower Mackenzie River. Integrated management plans use both scientific and traditional knowledge. No management plan is yet in place for broad whitefish.	Greenland, B.J. and J. Walker-Larsen. 2001. Community concerns and knowledge about broad whitefish (Coregonus nasus) in the Gwich'in Settlement Area. GRRB 01-08.
Fish	Broad Whitefish	1995	Financial	Discrimination of Stocks Using Otoliths	DFO Winnipeg (John Babaluk)	This research aimed to assess the feasibility and application of micro-PIXE analysis of otoliths for determining the spawning site of the individual broad whitefish from the lower Mackenzie River (6 from Peel and 6 from Arctic Red).	
Fish	Broad Whitefish, Lake Whitefish, Inconnu, Herring	2009 2008 2007	In-kind & Financial	Mackenzie River Fish Tagging Study	DFO Winnipeg (Melanie VanGerwen-Toyne)	The research aims to document the spawning patterns of anadromous broad whitefish, lake whitefish, inconnu, and herring. Radio transmitters were surgically implanted into fish and these fish were relocated on tracking flight by helicopter and fixed-wing aircraft. Goals of the study are to identify spawning and over-wintering areas.	VanGerwen-Toyne, M. 2006. Mid-term report on Mackenzie River Fish Study. Report submitted to GRRB.
Fish	Dolly Varden	2009	In-kind	Dolly Varden Char Habitat Research	DFO (Neil Mochnacz)	Dolly Varden populations in the Rat and Big Fish Rivers appear to be stressed from local habitat change. The objectives of this research are to quantify habitat use and availability, identify and measure the extent of critical habitat, establish baseline habitat reference conditions, and investigate the stock structure and life history of northern populations.	None yet.
Fish	Dolly Varden	2009	In-kind	Adaptation in a Changing Arctic (Aklavik char TK etc.)	U of Manitoba (Eva Patton)	To document the management process for Dolly Varden char in the region used by the communities of Aklavik and Fort McPherson and a current focus on the Integrated Fisheries Management Plan and COSEWIC consideration. I will look specifically at how the land claims co-management groups work to combine local knowledge and interests with science in resource management decision-making. This information may be helpful to better understand how co-management groups support communities in maintaining the continued health and access to important subsistence resources even under changing conditions	None yet.
Fish	Dolly Varden	2008 2007 2006 2005 2004 2003 2002 2001 2000 1999 1998 1997 1996 1995	In-kind & Financial	Rat River Char Monitoring	DFO Inuvik (Lois Harwood)	A harvest-based monitoring program was initiated in 1995 and continues annually. Gwich'in fishermen are hired as monitors (locations of monitoring: Aklavik, Husky Channel, big Eddy, mouth of Rat River, and Destruction City) to collect biological data on fish caught by themselves and other beneficiaries throughout the late summer (fish migrating upstream are targeted). This monitoring program provides information on age, sex, maturity, body condition, and abundance. The monitoring program is an important component of the Rat River Char Fishing Plan and is central to obtaining population estimates every three years.	Yearly reports and updates. Rat River Char Fishing Plan. Harwood, L. A. 2001. Status of anadromous Dolly Varden (<i>Salvelinus malma</i>) of the Rat River, Northwest Territories, as assessed through community-based sampling of the subsistence fishery, August-September 1989-2000. Canadian Science Advisory Secretariat. Research Document 2001/090.

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Fish	Dolly Varden	2007 2006 1999 1998 1997	Financial	Investigation of Vittrekwa River Dolly Varden	GRRB (Nathan Millar) Tetlit RRC (1997)	Apart from the Rat River, the only other population of Dolly Varden char (<i>Salvelinus malma</i>) that is harvested in the GSA is the population that spawns in the Vittrekwa River. This research investigated this little known population. Using traditional knowledge, the location of the spawning grounds was determined. We equipped 10 char with radio transmitters and followed their movements through the fall and winter of 2006. We also collected information on the biology of this population and genetic samples. In 2007, we collected a great deal of information on habitat use and more information on the biology of char in the Vittrekwa River. Earlier work involved sampling fish at the mouth of the Vittrekwa and several trips up tributaries to look for char.	Millar, N. 2006. Investigation of Dolly Varden (<i>Salvelinus malma</i>) in the Vittrekwa River, NWT/Yukon. GRRB Report to RRCs.
Fish	Dolly Varden	2007 2004 2001 1997 1995	Financial	Rat River Char Population Estimates	DFO Inuvik (Lois Harwood / Steve Sandstrom)	This project involves floy tagging Rat River char at the fish hole so that next season, as they migrate back up to the spawning grounds, char can be counted and an estimate of the population can be completed. This estimate is repeated every few years to inform the Rat River Char Fishing Plan and harvest levels.	Population estimates that feed into the Rat River Char Fishing Plan Department of Fisheries and Oceans. 2001. Rat River Dolly Varden. DFO Science. Stock Status Report D5-61 (2001).
Fish	Dolly Varden	2007	Financial	Dolly Varden Genetics	DFO Winnipeg (Rob Bajno, Jim Reist)	The research uses genetic techniques (microsatellites) to determine the stock structure of northern Dolly Varden (<i>Salvelinus malma</i>). These tools will also allow the determination of the stock structure of mixed-stock coastal fisheries at a later date.	None yet
Fish	Dolly Varden	2007	Financial	Traditional Knowledge of Char	GRRB (Nathan Millar)	The Rat River Char Working Group recommended that a traditional knowledge study of char be conducted. The aim is to document knowledge of char (generally) and of Rat River char (specifically).	Benson, K. 2009 Draft. Gwich'in Traditional Knowledge: Rat River Dolly Varden Char. Gwich'in Social and Cultural Institute / Gwich'in Renewable Resources Board.
Fish	Dolly Varden	2006	Financial	Rat River Harvest Study	DFO Inuvik (Erin Hiebert) GRRB	After the termination of the Gwich'in Harvest Study, there was very little information on the subsistence harvest of Rat River char. This project involved interviewing residents of Fort McPherson and Aklavik on their harvest of char from the Rat River.	Information for the Rat River Char Fishing Plan
Fish	Dolly Varden	1997	Financial	Rat River Char Spawning Habitat Assessment	GRRB (Cheryl Chetkiewicz)	The goal of this study was to locate and map the exact areas used for spawning by Rat River char and to determine the timing and characteristics of spawning activities.	Sandstrom, S. J. and C. Chetkiewicz. 1996. An Investigation of Dolly Varden Charr (<i>Salvelinus malma</i>) spawning and over-wintering habitat. DFO unpublished report.
Fish	Dolly Varden	1996	Financial	Fish Creek Fish Hole Spring Reconnaissance (Rat River)	DFO Winnipeg (Brian Ferguson / Steve Sandstrom)	The main objectives of this research were to determine the areas of spring upwellings (overwintering habitat) and the physical and chemical characteristics of overwintering pools, locate other suitable habitat sites and a site for a survey guage, install a water temperature recorder, collect water samples, and obtain local knowledge about traditional fishing sites.	
Fish	Dolly Varden	1996	Financial	Rat River Dolly Varden Radio Telemetry	DFO Winnipeg (Steve Sandstrom)	The main goal of this research was to determine the location of anadromous juvenile and adult non-spawners during the fall and determine whether alternative locations of habitat are used/available. The project involved radio tagging 20 silvers: 10 juveniles and 10 larger silvers.	Sandstrom, S.J., Harwood, L.A., and C.B. Chetkiewicz. 2001. Over-wintering habitat of the juvenile Dolly Varden Charr (<i>Salvelinus malma</i>) (W.) in the Rat River, NT as determined by radio telemetry. Can. Tech. Rep. Fish. Aquat. Sci.
Fish	Dolly Varden	1995	Financial	Rat River Hydroacoustics Feasibility Study	DFO Winnipeg (Eric Gyselman)	This study investigated the feasibility of using split-beam hydroacoustic to enumerate the char population in the Rat River. The research focused on finding good spots to test the equipment and complete a population estimate of the char.	
Fish	Dolly Varden	1995	Financial	Assessment of Rat River Char at Fish Hole	DFO Inuvik (Lois Harwood)	The goals of this research were to determine the relative abundance and life history composition of the Rat River stock at the Fish Hole spawning and overwintering site, examine growth and contribution of different fisheries via floy tagging, and do basic river sampling.	Sandstrom, S. and L.A. Harwood. 1997. Rat River Charr Fall Seining and Tagging Project. DFO unpublished report.
Fish	Inconnu	1999	Financial	Coney Index Netting Study		No information available	
Fish	Inconnu	1998	In-kind	Community Concerns About Inconnu in the GSA	GRRB (Patrice Simon)	To support the creation of an integrated fisheries management plan for inconnu, the GRRB distributed questionnaires to collect traditional knowledge, concerns, and priorities on inconnu in the GSA	Simon, P. 1998. Questionnaire results: community concerns on coney (inconnu) in the Gwich'in Settlement Area. Draft GRRB Report.

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Fish	Inconnu	1998	In-kind	Analysis of Strontium Levels of Coney (Inconnu) Otoliths	DFO (Doug Chipertzak)	The GRRB supported DFO research investigating migration patterns of inconnu (coney, or <i>Stenodus leucichthys</i>) in the Mackenzie River system. Coney were collected from Shingle Point, Tuktoyaktuk harbour, Campbell Lake, Aklavik, the Arctic Red River, the Liard River, and the Mackenzie River (near Fort Good Hope and near Norman Wells). The ear bones (otoliths) from these coney were analyzed for strontium levels to determine whether the fish are anadromous (migrate between freshwater and the ocean) or remain in freshwater exclusively.	Chipertzak, D. 1998. Preliminary results of scanning proton microscope analysis of strontium in inconnu otoliths from the Mackenzie River system. Report to the GRRB. DFO Inuvik.
Fish	Inconnu	1997-1996	Financial	Inconnu Migration Study	DFO Inuvik (Doug Chipertzak)	Little is known about migration routes and timing of coney from the coast to potential spawning areas in the Peel and Arctic Red Rivers. This project identified locations for inconnu spawning, over-wintering, and feeding and identified migration routes and timing. In 1996, the relative importance of coastal habitat on the west side of the Mackenzie Delta to inconnu fisheries at Aklavik, Fort McPherson, and Tsiigehtchic was determined by applying 30 radio tags and 500 floy tags for recapture information. In 1997, the researchers continued to radio-track 30 radio tags and accumulate distribution and harvest data.	Chipertzak, D.B., Howland, K.L., and I. McLeod. 1998. DRAFT: Results from the 1996-1997 inconnu migration study in the western half of the lower Mackenzie River area and Beaufort Sea coast. DFO unpublished report. Chipertzak, D. 1998. Inconnu migration study summary. Report to the GRRB. DFO Inuvik.
Fish	Inconnu, Broad Whitefish, Lake Whitefish, Arctic Herring, Least Herring	2002-2001, 2000-1999, 1998	Financial	Peel River Fish Study	GRRB (Melanie VanGerwen-Toyne) Tetlit Gwich'in DFO	The study was conducted to respond to community concerns that potential developments in or near the Peel River might affect fish populations. The study aimed to determine the timing of fish migrations, the location of spawning sites, and to gather baseline information on fish species in the Peel River (size, age, length, etc.). Gwich'in fishers who had camps along the Peel River were hired each fall to catch and sample fish. The study also provided information on fish age, size, growth, sex ratio and number of eggs. Information was collected for coney, broad whitefish, lake whitefish, arctic herring, and least herring. Helicopter surveys were done to locate potential spawning areas.	VanGerwen -Toyne, M. and R.Tallman. 2000. The Peel River Fish Study, 1998 – 1999 with emphasis on broad whitefish (<i>Coregonus nasus</i>). GRRB unpublished report. VanGerwen-Toyne, M. and J. Walker-Larsen. Under review. Monitoring spawning populations of migratory inconnu and coregonids in the Peel River, NWT: The Peel River Fish Study, 1998-2003. Canadian Manuscript Report of Fisheries and Aquatic Sciences.
Fish	Lake Trout	1999	Financial	Sandy Lake Fish Study	GRRB (Allen Firth)	The idea of establishing a fishing lodge on Sandy Lake prompted this study to assess the feasibility and sustainability of a lodge. Two field trips demonstrated that few, if any, trophy size lake trout inhabit the lake.	Firth, A. 2000. Sandy Lake fish study. GRRB 00-03.
Fish	Lake Trout	1996-1995	Financial	Husky Lake Test Fishery	DFO Inuvik (Doug Chipertzak)	To respond to Tetlit RRC concerns about reduced catches of lake trout in Husky Lake, a study was undertaken to set up a test fishery to assess the condition of the lake trout stock. Goals were to understand population dynamics of the resident lake trout population in Husky Lake and record physical information on the lake (bathymetry).	Chipertzak, D. 1997. Husky Lake Fishery Assessment Project. DFO Unpublished Report.
Fish	Loche	2008-2007	In-kind & Financial	Pathology of Burbot Livers in the GSA	GRRB (Amy Thompson)	Burbot were collected and sampled from each Gwich'in community during the Fall and winter season in 2007. Livers will be analysed for persistent organochlorines, carbon and nitrogen isotope composition as well as age determination. The relationship between burbot health (appearance of liver) and contamination levels will also be investigated. Gwich'in Traditional Knowledge will also be collected.	None yet
Fish	Pacific Salmon	2007-2006	Financial	Fort McPherson Fisheries and Salmon Co-ordinator	DFO Inuvik (Erin Hiebert)	This money will go to hiring a fisheries Harvest Study / Fisheries Management Co-ordinator for Fort McPherson. This individual will conduct interviews with fishermen to record harvest information, will collect and hold any unusual specimens, and will help to co-ordinate the collection of salmon. This will help to collect information about the occurrence and harvest of Pacific salmon in the Peel River.	
Fish	Whitefish	2008	In-kind	Swimming Performance/ Water Velocity Habitat Selection	DFO (Zoya Pawlychyn)	Whitefish within the Mackenzie Delta make long migrations numerous times within their life span, which are energetically expensive. For spawning migrations the fish are swimming against the current, leaving the fish vulnerable to any changes in water flow that may become too fast and therefore create a barrier to the fish migration. With the potential of major road and pipeline developments in the near future it is essential to examine the swimming abilities and the water flow preferences of the spawning whitefish in the Mackenzie Delta.	Presentation made on her behalf at 2009 October Board Meeting.

GRRB Wildlife Studies Fund Research (1993-2009)

Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Fish	Whitefish, Inconnu	2007 2006	Financial	Population Structure of Mackenzie River Lake Whitefish and Inconnu	GRRB (Nathan Millar)	The goal of this study is to determine the number of stocks of coney (inconnu, <i>Stenodus leucichthys</i> , Sruh), and crookedback (lake whitefish, <i>Coregonus clupeaformis</i> , Dalts'an) in the lower Mackenzie River system. Fish fins were collected from fishermen throughout the Gwich'in Settlement Area. For both species we will determine the population structure using genetics (microsatellites). This work is being done in collaboration with Dalhousie University and DFO Winnipeg.	Report to GRRB
Forestry	All	2007	In-kind	Forest management basics and sawmilling training workshop	Tetlit Gwich'in Council	To host a hands on workshop on forest management and wood-mizer operations training	
Forestry	All	2004	In-kind	Sharing knowledge of Forests in the Gwich'in Settlement Area	GTC GRRB	The focus of this project was to develop educational materials. Forest education was to be incorporated into the Gwich'in Renewable Resource Board (GRRB) 'Nature Day' school program with visits to community elementary schools. GRRB staff will use materials prepared during this project in future school presentations, Gwich'in Science Camps and other on-the-land programs. Educator resource kits will also be held by school and college resource libraries for future use.	
Forestry	All	2003	Financial	BW Caribou habitat project (seismic regrowth)	ENR	1. To obtain at least one year of current thrice-daily location information for 5 GPS/satellite-tracked boreal woodland caribou 2. obtain information about vegetation regeneration after disturbance by seismic line cutting and wildfire. 3. determine seasonal patterns of habitat use and selection by boreal woodland caribou in the Inuvik Region.	Final report
Forestry	All	2003	Financial	Sustainable Forest Management Network Contribution	SFMN		
Forestry	All	2003	In-kind	Aklavik value added wood project	Aklavik Indian Band	This project was listed under the "Manufacturing and Value Added for NWT forestry" type.	
Forestry	All	2003	In-kind	Community Monitoring of Seismic Line Forest Regrowth in the Gwich'in Settlement Area	GTC	This project was developed to monitor seismic lines and forest regrowth in the GSA.	
Forestry	All	2003	In-kind	Forestry Business Plan	Inuvik Native Band	The purpose of this project was to produce a forest business plan.	
Forestry	All	2002	Financial	Northern Forest Regrowth after seismic	GRRB ENR	This project was conducted to aid forest management by obtaining a clear understanding of past seismic cutting effects and knowledge of forest regrowth in the region to help predict impacts of timber cutting and refine replanting techniques for northern forests.	
Forestry	All	2002	Financial	Tree phenology study	ENR	To establish plots near Inuvik, Tsigehtchic, and Fort McPherson to monitor the progression of tree development in the Inuvik Region.	
Forestry	All	2002	Financial	Forest management planning - working group	GRRB ENR GTC		
Forestry	All	2002	Financial	Sustainable Forest Management Network Contribution			
Forestry	All	2002	In-kind	Local knowledge and use of driftwood and drift logs in the Gwich'in Settlement Area	GRRB SFMN	To develop a model of driftwood flow down the Mackenzie River. The objective of this research is to quantify the production, movement, decomposition and use of driftwood logs by aboriginal people along the major rivers in the GSA	

GRRB Wildlife Studies Fund Research (1993-2009)

Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Forestry	All	2002	In-kind	GTC request to fund seasonal botanist/biologist	GTC - Townsted	To have one botanist / biologist to assess the vegetation and soils on these permanent sample plots and to train others to continue to do so.	Driftwood Report. GRRB 0202
Forestry	All	2002	In-kind	Enhanced Training of First Nation Environmental Monitors in Plant Identification	GTC	To train first nation Environmental monitors in plant identification.	
Forestry	All	2001	Financial	Regeneration and Productivity of Forest in the Gwich'in Settlement Area			
Forestry	All	2001	Financial	Forest management planning - working group	GRRB ENR GTC		
Forestry	All	2001	Financial	Sustainable Forest Management Network Contribution			
Forestry	All	2001	In-kind	Train the trainers for fire management activities	GTC	Train individuals to train others in fire management.	
Forestry	All	2001	In-kind	The Establishment of Permanent Sample Plots on Gwich'in Lands	GTC	The purpose of this project was to address a community concern about observations of forest changes.	report (McDonald, I. 1998?. Forest Monitoring in the Gwich'in Settlement Area. Prepared by the GRRB for the GTC, FNFP and GRRB).
Forestry	All	2001	In-kind	Developing sustainable NTFP	ENR GRRB SFMN U of A	This project was conducted to examine the potential to develop business opportunities for non-timber forest products in the GSA and focus on berries such as cranberries, blueberries, and cloudberries.	project report 2002-07 (SFMN)
Forestry	All	2001	In-kind	Driftwood model along the Mackenzie River	GRRB SFMN U of A	The objectives of this study are to: 1. understand the use of driftwood in the past and at present 2. estimate the source, amount, and movement of driftwood 3. estimate the decomposition rate of driftwood 4. develop a model of the supply and demand for driftwood on the Mackenzie River.	
Forestry	All	2001	In-kind	Northern Forest Regrowth after seismic	GRRB ENR	This project was conducted to aid forest management by obtaining a clear understanding of past seismic cutting effects and knowledge of forest regrowth in the region to help predict impacts of timber cutting and refine replanting techniques for northern forests.	
Forestry	All	2000	Financial	Regeneration and Productivity of Forest in the Gwich'in Settlement Area			
Forestry	All	2000	Financial	Community Forest Use Plan for part of the Gwich'in Settlement Area	GTC	To develop a community forest use plan for part of the GSA (Fort McPherson and Tsiigehtchic).	Fort McPherson report (GRRB report 01-01) no report for Tsiigehtchic but information on server under (\\grrb-server\1 - Enviro-Biologist\Jen's stuff\Completed Forestry Projects\Community Forest Use)
Forestry	All	2000	Financial	ARNEWS Forest monitoring plot	GRRB	To continue to monitoring the forest monitoring plot.	
Forestry	All	2000	Financial	Inuvik region fire effects camp			

GRRB Wildlife Studies Fund Research (1993-2009)

Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Forestry	All	2000	In-kind	Inuvik forest use planning workshop	GRRB	The goal of the workshop was to identify local forest use issues and to collect and map information about forest and land use in the Inuvik area.	
Forestry	All	1999	Financial	Forest health monitoring plot (ARNEWS)	GRRB	To continue the monitoring work for the ARNEWS plot set up near Campbell Lake in 1998, and propose setting up a second ARNEWS plot.	
Forestry	All	1999	Financial	Biodiversity forest monitoring plot (SI/MAB)	GRRB	To continue the monitoring work conducted in 1998 on the biodiversity plot by mapping and measuring trees, and to begin monitoring the abundance and diversity of wildlife in the plot.	
Forestry	All	1999	Financial	Aklavik forest use project including a forest use planning workshop	GRRB	The objective of this project is to develop a sustainable Aklavik forest use plan using land use information based on both local and scientific knowledge sources. The purpose of the workshop was to identify local forest use issues and to collect and map information about forest and land use in the Aklavik area.	Aklavik forest use planning workshop report - 2000 (GRRB report - 00-02). On server at \\grrb-server\1 - Enviro-Biologist\Jen's stuff\Completed Forestry Projects\Community Forest Use
Forestry	All	1999	Financial	Regeneration and Productivity of Forest in the Gwich'in Settlement Area	GRRB SFMN U of A	The purpose of this project was to study forest regeneration and productivity in the GSA as a step in developing an effective forest management plan which will promote sustainable use of the forest.	a progress report by U of A - 1999
Forestry	All	1999 1998	In-kind	Historical forest use research with the University of Alberta	GRRB U of A	to collect information on historical timber harvest in the GSA. Materials held in the Hudson Bay Archives were reviewed and information relating to cordwood cutting and wood use in the GSA was collected.	Report to the GRRB, NWT - HBC Archive Research. Submitted by Craig Candler, Dept of Anthropology, U of A, November, 1998.
Forestry	All	1998	Financial	Long term monitoring of biological diversity and forest health	GRRB	To develop a long term monitoring program for biological diversity and forest health.	
Forestry	All	1997	Financial	Aerial photography interpretation and mapping	ENR	was this funded... not on excel summary	
Forestry	All	1997	Financial	Timber cruising	ENR	To conduct additional timber cruising in the GSA for the forestry management plan.	
Forestry	All	1997	In-kind	Traditional Knowledge of the Forest	GRRB	The purpose of this project was to fill information gaps on forest use with traditional knowledge	GRRB report # 99-03
Forestry	All	1997	In-kind	Regional Forestry Workshop	GTC	To conduct a regional forestry workshop.	
Forestry	All	1997	In-kind	Eco-forestry training session for community representatives	GRRB & ENR	To train community members in Eco-forestry including the Gwich'in Comprehensive Land Claim Agreement and other forestry issues.	
Forestry	All	1996	Financial	Air photo interpretation	ENR	To interpret the aerial photographs taken in the previous year.	
Forestry	All	1996	Financial	Timber cruising	ENR	To conduct timber cruising for the forestry management plan.	
Forestry	All	1996	In-kind	Community survey, promotional packages, pamphlets and community workshops	GTC	The focus of this project was to develop and distribute community surveys, promotional packages, pamphlets and community workshops	GRRB report # 99-01
Forestry	All	1995	Financial	Aerial photography	ENR	To conduct aerial photography work in the GSA for forest inventory data.	

GRRB Wildlife Studies Fund Research (1993-2009)

Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Forestry	Spruce	2005	Financial	Forest Regeneration Techniques for Black and White Spruce in the Delta and Adjacent Uplands	Concordia University (Dr. David Greene)	The focus of this project is to experimentally study natural tree regeneration as well as alternative regeneration methods following two man-made disturbances: small scale cutting and seismic lines in the northern boreal forest. Non-capital intensive methods for seedbed preparations for enhancement of white and black spruce regeneration on disturbed and undisturbed sites will also be examined. A further goal is to examine techniques for accelerating the subsequent growth of established white spruce under overtopping shrubs.	
Forestry	Spruce	2004	In-kind	Regeneration of black and white spruce on seismic lines in permafrost environments	Concordia University (Dr. David Greene)	The purpose of this project is to identify the factors that promote or retard forest regrowth after seismic line cutting. Further, for lines (or parts of lines) that regenerate poorly, the efficacy and cost of a variety of mitigative techniques that could be used to enhance forest regrowth will be evaluated. Study area is within the two main forest types along the proposed pipeline route from the Mackenzie River delta to Travailant Lake: white spruce forests in the Mackenzie delta and black spruce forests that predominate in the upland areas.	2003 report
Forestry	Timber	2007	In-kind	Timber harvesting and processing for community use	Aklavik Indian Band	To harvest timber in the vicinity of Aklavik for community use.	
Gwich'in Ecological Knowledge	All	2003 2002 2001 2000 1999 1998 1997	In-kind	GEKP Database	GRRB	Based on the information collected to produce the GEKP books, a GAKP database was created. This database provides a tool that makes Gwich'in environment knowledge searchable and easily accessible. This will encourage the use of Gwich'in environment knowledge in renewable resource research and management. The database is accessible for consultation for researchers and managers from the GRRB office.	GEKP Database at the GRRB
Gwich'in Ecological Knowledge	All	2000 1999 1998 1997 1996 1995	Financial	Gwich'in Environmental Knowledge Project Books	GRRB	The GEKP was set up to record (in written format) knowledge held by Gwich'in Elders regarding wildlife, fish, and habitats in the GSA. The information can then be passed down to future generations. This project ensures that Gwich'in Environmental Knowledge (GEK) is recognized and used in conservation and overall management of renewable resources in the Gwich'in Settlement Area. The research was done by interviewing Gwich'in Elders on their knowledge of wildlife species. The compiled information was verified using focus groups.	Gwich'in Renewable Resource Board, 1999. <i>Nanh' Kak Geenjit Gwich'in Ginjik</i> , Gwich'in Words About the Land. GRRB, Inuvik, NT, 212 pp. Gwich'in Renewable Resource Board, 2001. <i>Gwindòo Nanh' Kak Geenjit Gwich'in Ginjik</i> , More Gwich'in Words About the Land. GRRB, Inuvik, NT, 184 pp.
Habitat	All	2000 1999	In-kind	Rat River Biodiversity, Cultural, and Historical Assessment	GRRB (Shannon Haszard)	The Rat River watershed was identified for protection through the Gwich'in land use planning process. This study aimed to document the area's important wildlife and cultural resources and to identify the traditional and historical uses of the area. This research involved identifying and sampling fish, wildlife, and vegetation and documenting cultural knowledge.	Haszard, S. and J. Shaw. 2000. Rat River Biodiversity, Cultural & Historical Assessment. GRRB Report 00-01.
Habitat	All	1999	In-kind	Rat River Biodiversity, Culture and Historical Assessment	GRRB	In 1999 the Board conducted a biodiversity and cultural assessment (traditional and historical use) of the Rat River watershed after the four Gwich'in communities of Fort McPherson, Aklavik, Tsiigehtchic and Inuvik identified it as a proposed protected area for its wildlife and cultural significance. The Rat River watershed area has been used for centuries as an important harvesting area and travel route. Along with many cultural sites, numerous camps also exist along the lower Rat River. Fishing, hunting, trapping and berry picking are still carried-out today. The study also identified the area as home to hundreds of species of plants, fish, mammals and birds.	Haszard, S., Shaw, J. 2000. Rat River Biodiversity, Culture and Historical Assessment. Gwich'in Renewable Resource Board Report 00-01.
Habitat	Flora	1997 1996	Financial	Peel River Watershed Study -Wind, Snake, Bonnet Plume Ecosystem Mapping and Wildlife Habitat Research	CPAWS (Juri Peepre)	This project will provide basic information on wildlife habitat, ecosystem types and wildlife movement routes in the Wind, Snake and Bonnet Plume drainages to help with land use planning and conservation work in the region. Vegetation classification and maps may provide basic information for management issues in the GSA. This project will produce ecosystem maps at 1:100,000 scale with classified information and legend using LandSat imagery at 28.5 resolution as well as ground truthing on the Bonnet Plume.	

GRRB Wildlife Studies Fund Research (1993-2009)

Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Habitat	Flora Mammals	2000	Financial	Forest fire effects on vegetation and wildlife habitat use in the GSA	GRRB (Bryon Benn/ Jennifer Walker-Larsen)	We will study the effects of fire on vegetation succession and wildlife habitat use in the GSA. Permanent vegetation sampling plots and wildlife track transects will be set up in areas that have experienced wildfire at different times before present, up to 40 years ago (esp. the 1999 Tsiigehtchic fire.) We will compare vegetation communities and wildlife use between burns of different ages and will establish permanent plots and transects to monitor change in future years.	
Harvest Data	All	2009 2008 2004 2003 2002 2001 2000 1999 1998 1997 1996 1995	Financial	Gwich'in Harvest Study	GRRB	The Gwich'in Harvest Study was mandated under the Gwich'in Comprehensive Land Claim Agreement. Each month for five years (then extended by five years), harvesters were interviewed and asked to record their harvest in detail (type, location). The information from the Gwich'in Harvest Study will be used by communities in the Gwich'in Settlement Area (GSA), the Gwich'in Renewable Resource Board (GRRB) and other organizations to calculate the Gwich'in Minimum Needs Level and for resource management.	Gwich'in Harvest Study (1995-2001) Harvest Study Database
Mammals	Beaver Muskrat	2007 2006	Financial	Community Based Furbearer Monitoring	GRRB (Brian Dokum)	There is currently no monitoring system in place to estimate furbearer abundance and distribution in the GSA. This project will collect information on the distribution, abundance, and harvest of different furbearer species of the GSA and will evaluate the impact of beaver distribution on muskrat abundance.	None to date
Mammals	Caribou - Barren Ground	2009 2005	Financial	Cape Bathurst and Bluenose-West Caribou Photo-census	GNWT (Marsha Branigan)	This project's objectives are to obtain current population estimates of the Cape Bathurst and Bluenose caribou herds in order to inform and facilitate management of these populations.	Nagy, J.A., Johnson, D. Draft Report. Estimates of barren-ground caribou in the Cape Bathurst and Bluenose-West herds derived using post calving photography, July 2005. 34pp. Nagy, J.A., Johnson, D. Draft Report. Calf:Cow ratios estimated at or near the peak of calving for the Bluenose-West herd, 2002-2005. 62pp.
Mammals	Caribou - Barren Ground	2008	Financial	Barren Ground Caribou Monitoring	ENR (Marsha Branigan)	Barren ground caribou herds are declining in the NWT. Harvest management actions have been taken for the Cape Bathurst and Bluenose-West herds. Ongoing studies and harvest data collection is needed to monitor the recovery of these herds. Most of the ongoing monitoring of the Porcupine Caribou herd is done by the Yukon and Alaskan government staff. A working group has been formed to develop a harvest management plan for the PCH. While the plan is being developed. YTG and ENR are working to collect harvest data including body condition samples. Monitoring for the CB and BW herds includes harvest data, body condition, movements (which requires collared caribou), recruitment, calving distribution, July productivity, and fall composition.)	None to date
Mammals	Caribou - Barren Ground	2004	Financial	Population Dynamics of the Cape Bathurst and Bluenose-West Barren Ground Caribou Herds	DRWED (Nagy)	This project intended to obtain estimates of adult composition of Cape Bathurst and Bluenose-West caribou herds during October rut; to obtain estimates of recruitment to these herds; prepare for a summer 2005 photocensus; to compile all harvest data to obtain an accurate estimate of total harvest from these herds	Gunn et al. 2005. Calf survival and adult sex ratio in the Bathurst herd of barren-ground caribou 2001-2004. GNWT Manuscript report no. 163. 89pp.

GRRB Wildlife Studies Fund Research (1993-2009)

Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Mammals	Caribou - Barren Ground	2003 2002 2001 2000 1999 1998	In-kind & Financial	Bluenose Caribou Range Use and Movements	GNWT (John Nagy)	Satellite tracking and DNA studies were done between 1995 and 1999 indicate that there are three separate herds within the area known as the range of the Bluenose caribou herd. As a continuation of this work, we will collect additional caribou locations via satellite collars. This information will be used to assess fidelity to calving areas; obtain current information on the distribution and movements of caribou during pre-calving, calving and post-calving to help mitigate potential impacts of development activities; obtain current information on themovements of caribou during the post-calving and early summer period; and provide current information on the distribution and movement of caribou to local harvesters.	Nagy et al. 2005. Seasonal ranges of the Cape Bathurst Bluenose-West and Bluenose-East barren ground caribu herds. GNWT Manuscript report no. 167.
Mammals	Caribou - Barren Ground	2001 2000 1999	Financial	Bluenose Caribou: Recruitment	DRWED (Nagy)	Current recruitment data for Bluenose caribou are lacking; the last survey was done in 1994. Estimates of recruitment cannot be derived from productivity data alone, therefore data on recruitment are essential in order to properly assess population dynamics of the Bluenose Caribou herd. Baseline recruitment data must be collected because development activities are beginning and in all likelihood will continue. In order to assess the impacts of development on the population we need to know what recruitment levels can be with minimal development and document how they vary with different amounts of perturbation. The objectives of this study are to determine the number of calves per 100 2-year-old and older females present in the population in March and compare this value with values estimated in the previous July.	Theberge, M., Nagy, J.A. 2001. Bluenose-West and Cape Bathurst Caribou herds. Calving Ground Classification Surveys: June 200,2001. 25pp.
Mammals	Caribou - Barren Ground	1996	Financial	Bluenose Caribou Herd Range Use	GNWT (DRR)	This project will assist in defining the seasonal ranges and movements of barren-ground caribou that calve in the Melville Hills and near Bluenose Lake. This project will assist in determining whether barren-ground caribou that calve in the Melville Hills and near Bluenose Lake are part of one population or are two separate sub-populations	
Mammals	Caribou - Barren Ground	1996	Financial	Bluenose Caribou Census	GNWT (DRR)	Funds provided from the GRRB for this project will assist in barging 20 drums of fuel to Paulatuk in anticipation of Bluenose caribou census work in the summer of 1997.	
Mammals	Caribou - Barren Ground	1995	Financial	Precensus tracking survey and photocensus on Bluenose caribou	GNWT (DRR)	This project will track radio collared caribou to determine herd location. Once locations are determined, a photocensus of the caribou herd will be conducted.	
Mammals	Caribou - Barren Ground	1995	Financial	Bluenose caribou radio collaring	GNWT (DRR)	The Department of Renewable Resources currently does not have a reliable population estimate for the Buenose caribou herd. This project will radio-collar caribou in preparation for the July 1995 Bluenose caribou census.	
Mammals	Caribou - Grant's (Porcupine herd)	2009	Financial	Porcupine Caribou Rut Composition Count	Gov of Yukon (Dorothy Cooley)	The bull:cow ratio has only been estimated once for this herd, 20 years ago. The rut is the best time to do the count since the bulls and cows should be evenly mixed for breeding. In contrast, the composition count in March is to estimate how well calves survive over winter.	
Mammals	Caribou - Grant's (Porcupine herd)	2008 2006 2005	Financial	Porcupine Caribou Composition Count	Gov of Yukon (Dorothy Cooley)	This project will improve the knowledge about Porcupine caribou productivity and movement and will thus improve the capability of resource managers. Project objectives were to record calf:cow ratio of Porcupine caribou and to document late winter distribution of radio collared caribou. Composition counts are simultaneously with caribou captures to deploy radio collars to optimize time and resources. YTG deploys readio collars purchased by cooperating partners (including GRRB).	State of Alaska Dept. of Fish & Game. 2005. Porcupine Caribou Herd Calving Survey, June 2005.
Mammals	Caribou - Grant's (Porcupine herd)	2006	Financial	Porcupine Caribou Harvest Management Strategy	Porcupine Caribou Management Board (Joe Tetlich)	Project objectives are to develop a harvest management protocol, a harvest management plan and harvest management agreements for Porcupine caribou.	Harvest management plan is still being written and under review

GRRB Wildlife Studies Fund Research (1993-2009)

Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Mammals	Caribou - Grant's (Porcupine herd)	2005	Financial	Porcupine Caribou Body Condition Monitoring	GNWT (Marsha Branigan)	This project used hunter killed caribou to: monitor the estimated body weight, body fat and protein of adult cow caribou over winter, and monitoring trends over time; monitoring of fat deposits of adult bull caribou over winter & monitoring trends over time; study relationship of these trends to other indicators (pregnancy rate, calf survival, herd size, timing of spring thaw, fall storm patterns, winter range snow depth); compare Porcupine herd to other herds; monitor heavy metal contaminants in caribou kidneys.	
Mammals	Caribou - Grant's (Porcupine herd)	2004 2003 2002 2001 1997	In-kind & Financial	Porcupine Caribou Satellite Program	Gov of Yukon (Dorothy Cooley)	This project is an action item in the Porcupine Caribou Management Plan and was approved by the PCMB. Satellite collars were first used on the herd in the 1980s. This session of satellite collars started in October 1997 with 10 used collars from the North Slope Wolf project. Since then we have tried to maintain as many collars as we can on the herd. Currently there are 8 active transmitters. These collars allow us to document annual migration routes and winter range use and are valuable in recording routes and timing of the migrations. Documenting range use is important as various land use issues arise (e.g. exploration in the ANWR; oil and gas development in Eagle Plains area; proposed Dempster lateral pipeline; Dempster highway disturbance).	Wertz et al. 2005. Overwinter mortality of the Porcupine caribou Herd 2004-2005.
Mammals	Caribou - Grant's (Porcupine herd)	2001	In-kind	Porcupine Caribou -Peel River Check Station	DRWED Tim Devine	Dempster highway regulations will be in place next fall to address concerns about public safety, habitat protection, and allowing the caribou leaders to pass. There have been several years of consultation with co-management boards and harvesters in the development of these regulations. It is extremely important that all users are well informed of these new regulations. The purpose of the check station is to collect harvest information from hunters harvesting the Porcupine caribou herd, providing information to hunters pertaining to the new Dempster Highway Regulations, and to provide hunters with hunter surveys.	
Mammals	Caribou - Grant's (Porcupine herd)	2000	Financial	Fall movements of Porcupine caribou herd near the Dempster Hwy.	GRRB/GRWED/ Gov Yuk. (Benn/Nagy /Cooley)	This pilot project will use autumn telemetry flights to find radio-collared caribou, to identify lead animals, and to describe their movements as they approach and cross the Dempster highway. From the ground we will document the behaviour of animals approaching the highway to road hunting. We will also record caribou reactions to other disturbances. The information from this pilot project will be used to assist the development and implementation of new caribou hunting regulations along the Dempster Highway.	Benn, B. 2001. Fall movements of the Porcupine Caribou Herd near the Dempster Highway, August 2000. Gwich'in Renewable Resource Board Report 01-07.
Mammals	Caribou - Woodland (Boreal)	2004	Financial	Habitat Stewardship Program? Boreal Woodland Caribou Habitat	GRRB/GNWT (Auriat/Nagy)		
Mammals	Caribou - Woodland (Boreal)	2003	Financial	Habitat Stewardship Program Boreal Woodland Caribou Winter Habitat Ecology Project	GRRB/GNWT (Nagy? /Auriat?)	Project will assess woodland caribou habitat use and selection to understand current distribution and potential change. Project will provide maps of collared caribou locations to co-management boards and communities; identify key habitat characteristics; quantify habitat use by caribou according to distinct habitat type.	Nagy et al. 2003. Ecology of Boreal Woodland Caribou in the Lower Mackenzie Valley: Work completed in the Inuvik Region 1 April 2002 to 31 March 2003. pp 1-63.

GRRB Wildlife Studies Fund Research (1993-2009)

Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Mammals	Caribou - Woodland (Boreal)	2003	Financial	Habitat Stewardship Program Boreal Woodland Caribou Habitat Project (Seismic Regrowth) **Seems to be part of the same EC funded project with J.Walker-Larsen as a contact**	GRRB/GNWT (Walker-Larsen/Nagy/Gravel)	EC project description: Research undertaken to assess impact of wildlife and human disturbance on vegetation regrowth. Project will quantify forest regeneration and growth rates following fire and seismic line cutting; review inspection reports and seismic program reports at the NEB and DIAND offices;	Seccombe-Hett. P. 2003. Forest growth after clearing seismic lines in the Mackenzie Delta. Community Summary submitted to RRCs. GRRB report 03-06. Seccombe-Hett. P. 2003. Forest regrowth after fire and clearing for seismic lines in Black spruce forests. Community summary submitted to RRCs. GRRB Report 03-07. Seccombe-Hett. P. 2004. Forest growth after fire and clearing for seismic lines in the upland of the GSA. Community Summary submitted to RRCs. GRRB report 04-01. Seccombe-Hett. P. 2004. Forest growth after fire and clearing for seismic lines in the upland habitat of the GSA. GRRB report 04-05.
Mammals	Caribou - Woodland (Boreal)	2003	In-kind	Movements & Distribution of Boreal Woodland Caribou in Sahtu, Gwich'in and Inuvialuit Settlement Areas	GRRB/GNWT	The GRRB and Dept. of Resources, Wildlife and Economic Development (RWED) implemented a project to collect baseline ecological information on the boreal woodland caribou. To date, minimal data has been collected on the species in their northern range. Traditional knowledge on the caribou was also gathered (2001). Data accumulated will be useful in both research and management of the species.	Auriat, D. et al. 2003. Historic and current movements and distribution of boreal woodland caribou below treeline in the Sahtu, Gwich'in and Inuvialuit Settlement Areas. Gwich'in Renewable Resource Board Report 03-05.
Mammals	Caribou - Woodland (Northern Mountain)	2000	In-kind	Mountain Caribou Survey in Northern Mackenzie Mountains in GSA, Sept 2000	GRRB (Shaw/Benn)	In 2000, the GRRB undertook research into mountain caribou in the North Mackenzie Mountains by utilizing aerial surveys and ground classifications. In two aerial surveys, 450-550 caribou were observed and mixed groups of 20-100. The groups were located along the front mountain ranges between Cranswick River & Ramparts River. The ground survey observed 546 caribou with 360 successfully classified (of which ratios existed of 45 calves per 100 cows and 200 bulls per 100 cows). The study also discusses the low harvest levels of caribou, generally secure habitat, endangered species rankings and future research.	Shaw, J., Ben, B. 2001. Mountain Caribou (Rangifer tarandus caribou) Survey in the Northern Mackenzie Mountains, Gwich'in Settlement Area, September 2000. Gwich'in Renewable Resource Board Report 01-03.
Mammals	Caribou - Woodland	2000	Financial	Woodland caribou in the Arctic Red River headwaters region of the GSA	GRRB/DRWED (Bryon Benn / John Nagy)	To date, no assessments of the woodland caribou population or its habitat and use have been conducted in the GSA. Preliminary work will involve a thorough search of the literature and interviews with Gwich'in elders, hunters and trappers, as well as outfitter, guides, hunters and researchers who know the area. This project will undertake a basic, three week evaluation of caribou habitat and use of the region. This will include 2-3 days of aerial surveys and 2 weeks of on the ground data collection. Locations and information on other wildlife species observed will also be recorded.	
Mammals	Caribou - Woodland	1999	In-kind	Genetics of woodland caribou in the GSA	GRRB/DRWED (Marshal/ Nagy)	Woodland caribou are a harvested species in the GSA; however there is almost no scientific information on them. We proposed to use genetic analysis to establish the genetic relatedness of woodland caribou to other caribou in the area (Bluenose). This will help to determine whether these caribou should be managed as a separate population. We will ask hunters to provide tissue samples on which to conduct a DNA analysis. The results will indicate whether the samples are truly from woodland caribou, or from barren ground caribou and that these caribou should not be managed as a separate group.	
Mammals	Caribou - Woodland	1999	In-kind	Woodland caribou management plan community consultation	GRRB (John Marshal)	As a continuing effort at effective wildlife management in the GSA, GRRB and DRWED have been working with the communities to produce management plans for wildlife. So far, management plans for several mammals are in various stages of completion (grizzly bear, moose, furbearers, Dall's sheep). The next plan will be for woodland caribou. To prepare this plan, I will prepare a workshop and travel to the communities to exchange information about woodland caribou, to provide concerns and input for a management plan, and to talk about the types of studies that should be done.	

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Mammals	Dall's sheep	2006	In-kind	Dall's sheep aerial census	GRRB/GNWT (Catherine Lambert/Marsha Branigan)	Did this project happen in 2006? Funding through GNWT?	
Mammals	Dall's sheep	2005 2004	Financial	Northern Richardson Mountains Dall's sheep Ecology	GRRB (Denise Auriat)	This project's objectives include: defining the sheep seasonal ranges and determining their seasonal movements and possible corridors; describing characteristics of sheep seasonal ranges; describing the extent of sheep habitat selection and use Denise was using the project data in her Master's thesis at Royal Road's University; Data will also be used in the development of the Dall's sheep Management Plan that GRRB is participating in developing	The Northern Richardson Mountains' Dall's Sheep Ecology Project. Progress Report for Year 2, 2004/2005
Mammals	Dall's sheep	2004 2003 2002	Financial	Dall's Sheep Management Plan for the GSA	GRRB/GNWT (Auriat/Nagy)	The most effective way to manage Dall's Sheep is to develop a management plan which ensures that everyone is in agreement on what needs to be done and who is responsible for doing it. The GRRB, the RRCs and the DRWED are cooperating to develop and produce a plan for the Northern Richardson Mountains. The plan will provide a framework for the management of Dall's sheep, the protection of their habitats and the protection of Gwich'in harvesting rights.	Dall's Sheep management plan is still in formation and the draft is scheduled for final community review in June, 2008
Mammals	Dall's sheep	2003	Financial	Richardson Mountains Dall's Sheep Productivity and Lungworm Infection Survey	GNWT (Nagy)	Project objectives were to obtain estimates of lamb productivity and recruitment; to describe the prevalence & intensity of lungworm and muscle worm infection.	Richardson Mountains Dall's Sheep Productivity and Lungworm Infection Survey. 1.3 Non-technical (GNWT)Project Summary.
Mammals	Dall's sheep	2003	Financial	Dall's Sheep Habitat	Denise Auriat		
Mammals	Dall's sheep	2002	Financial	Experimental Infections of Dall's Sheep with Lungworm	GNWT (Nagy)	Muskoxen on the northwestern mainland of Nunavut and Northwest Territories are infected with the protstronglylid lungworm. The geographic range of this muskox population is expanding to the south and west and it is anticipated that these animals will eventually become sympatric with Dall's sheep in the Mackenzie and Richardson Mountains. To address the concern of wildlife managers that this lungworm may infect and adversely affect Dall's sheep, four lambs and one muskoxen were each given 100 3rd stage lungworm larvae and were monitored for 9 months. No first stage lungworm larvae were recoverend from the lambs and no evidence was found that the parasite had established in these animals. It is improbable that thinnhorn sheep are suitable hosts for this lungworm species.	Kutz, S. et al. 2004. Muskox lungworm (<i>Umingmakstrongylus pallikuukensis</i>) does not establish in experimentally exposed thinnhorn sheep (<i>Ovis dalli</i>). Journal of Wildlife diseases, 40(2): 197-204.
Mammals	Dall's sheep	2001	In-kind	Dall's sheep habitat assessment	GRRB/DRWED (Benn/Nagy)	new project -no description in contribution agreement binder.	
Mammals	Dall's sheep	2000	Financial	Dall's sheep in the Richardson and Mackenzie Mountians	GRRB (Bryon Benn/Jennifer Walker-Larsen)	This population of Dall's sheep is thought to be isolated from other populations making it susceptible to over-harvesting, which is a concern in light of potential sport hunting of this population. A literature review of all research and interviews with hunters and other community members will be conducted to collect traditional knowledge on Dall's Sheep populations, movements, and hunting mortality. This information will be used to assist planning management of the sheep population if sport hunting is implemented in the GSA.	
Mammals	Dall's sheep	1999	In-kind	Lungworm in Dall's sheep	DRWED (John Nagy)	Dall's sheep are an important wildlife species for subsistence and sport harvest in the NT. Wild sheep populations in some areas are severely affected by lungworm, and die-offs of 80% have been documented in some areas. Because of this concern, we propose to gather baseline information of lungworm infection in Dall's sheep in the Richardson Mountains. We will conduct this study by collecting feces from frequently-used sheep areas in the Richardson Mountains, and by collecting gastro-intestinal tracts from hunted sheep.	
Mammals	Dall's sheep	1997 1996	Financial	Northern Richardson Mountains Dall's sheep Census	DRWED (John Nagy)	This project is part of an on-going program to monitor the sheep population in the Northern Richardson Mountains. The aerial survey will help to develop a population estimate (including the number and productivity) of Dall's sheep in the study area.	

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Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Mammals	Dall's sheep Grizzly Bears Wolves	2008 2007 2006 2005	Financial	Dall's sheep, Grizzly Bear, and Wolf Interactions and Population Dynamics in the Richardson Mountains, NT	GRRB (Catherine Lambert)	Dall's sheep in the Richardson Mountains are declining and have low recruitment rates. The reasons for the decline are not well understood but predation is believed to play a major role. This project will provide an understanding of Dall's sheep and predator (grizzly bear & wolf) dynamics and interactions to contribute to guidelines for wildlife management and land use planning in the GSA. The project will collect baseline information on survival rates, home ranges and spatial patterns of individuals from all three species; will evaluate lamb survival rate and mortality causes during lambing season; will determine sheep predator avoidance strategies; will analyze dietary importance of Dall's sheep to predators; will document habitat characteristics and human related disturbances.	Lambert. 2006. Interim Report to GRRB, Sept 15, 2006 Lambert-Koizumi. 2007. Dall's sheep, Grizzly Bear, and Wolf Interactions in the Richardson Mountains. Progress Report to the GRRB. Carmichael. L.E. et al. 2007. Northwest passages: conservation genetics of Arctic Island wolves. Conservation Genetics. DOI 10.1007/s10592-007-9413-0
Mammals	Furbearers (small mammals)	1999	Financial	Trapline monitoring in the GSA	DRWED (John Nagy)	Furbearers provide an important source of income to people living on the land, and trapping is an important part of the culture of this area. Because of this importance, management of furbearers is an important part of ensuring long-term sustainable harvest of these animals. However, furbearer research has not been common in this area. After discussion with trappers and the RRCs, we will collect marten carcasses from three traplines. To monitor prey abundance, we will establish a snowshoe hare scat transect at each trapline. Smaller mammal abundance will be determined by trapping.	
Mammals	Furbearers (small mammals)	1998?	In-kind	Furbearer Status in the GSA	GRRB		Chektiewicz, C.-L., Marshal, J.P. 1998. Status of furbearers in the Gwich'in Settlement Area, Northwest Territories. Gwich'in Renewable Resource Board Report 98-03.
Mammals	Grizzly bears	1999 1998 1997 1996 1995	In-kind & Financial	Grizzly Bear reproductive rates and cub survival in the Richardson Mountains, NWT and YT.	DRWED (Marsha Branigan)	This is a long term study to gather information about female grizzly bears in the GSA, ISR and VGSA in order to estimate the sustainable harvest rate. In 1993, 15 adult female bears were radio collared. Each spring these bears are located to estimate how many cubs are born and how many survive until age 2; how often females give birth & when; the survival rates of females. In June 1999 we plan to locate bears collared in 1996 and remove the collars in September 1999.	
Mammals	Grizzly Bears	1999	In-kind	Local knowledge mapping of grizzly bear areas in the Richardson Mountains	DRWED (John Nagy)	To provide appropriate management for the harvest of grizzly bears, information on the abundance and distribution is necessary. The objectives of this project are to use the experience of hunters and trappers to determine the abundance and distribution of grizzly bears in the Richardson Mountains. We will request that the RRCs in Aklavik and Fort McPherson hire an interviewer to collect the information. The interviewer and RRC will select individuals in the communities who are knowledgeable about grizzly bears, their locations and habits. We will provide large maps on which to draw locations, and a set of questions to ask each interviewee. Locations on the maps will be digitized in a GIS, and the questions and answers will be used to create time-lines of abundance and distribution changes.	
Mammals	Large	1998	financial	Integrated Large Mammal Management Plan	DRWED (John Nagy)		
Mammals	Large	1998	In-kind	Status of Large Mammals in the GSA	GRRB	Part of Nagy's project?	Chektiewicz, C.-L., Marshal, J.P. 1998. Status of Large Mammals in the GSA, NWT. Gwich'in Renewable Resource Board Report 98-06.
Mammals	Mink, Muskrat	2002	In-kind	Synchrony between mink and muskrat populations in Canada	University of Alberta (Catherine Shier, Mark Boyce)	Mink are successful predators of muskrats, especially in times of stress. This, in combination with the apparent adaptation of the mink to predation n muskrat, could help to provide support for a possible mink-muskrat predator-prey interaction. This research aims to test the hypothesis that the observed geographical variation in the strength of mink predation on muskrats across Canada is due to changes in mink prey diversity. Methods include using mink carcasses obtained from NWT communities to determine what winter prey species mink are using and whether there is a change in mink winter prey diversity as latitude increases.	

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Theme	Species	Year	GRRB Support	Project	Lead Agency (PI)	Project Description	Outcome (selected publications)
Mammals	Moose	2006 2005	In-kind	Moose Abundance and Composition in the GSA	GRRB/GNWT (Catherine Lambert/Marsha Branigan)	Current conservation concerns and recommendations from the GSA moose management plan make it necessary to reassess the current state of the moose population and extend survey efforts to a larger portion of the GSA. This project used aerial surveys (in a stratified random block survey design which stratified the survey area into cells of high and low moose density) to determine moose density, composition and recruitment rate in different ecoregions of the GSA.	Lambert-Koizumi, C. 2006. Moose aerial survey in the Gwich'in Settlement Area March 2006. Gwich'in Renewable Resource Board Report. (Unnumbered)
Mammals	Moose	2001	In-kind	Moose abundance and composition in the Aklavik area of the GSA	GRRB/DRWED (Bryon Benn/Nagy)	A rotational series of moose surveys near each of the Gwich'in communities is necessary to understand the status and trend of moose populations in the GSA. Surveys in each area will take place every 4-5 years. In November, 2001, we plan to survey for moose abundance (population size and density) and composition (sex and age characteristics) in the Aklavik area. To date, no assessments of the moose population in this area have been conducted. Thus, this survey will provide baseline information from which future assessments of the moose population can be made.	
Mammals	Moose	2000	Financial	Moose abundance and composition in the Fort McPherson area	GRRB/DRWED (Bryon Benn/John Nagy)	A rotational series of moose surveys near each of the Gwich'in communities is necessary to understand the status and trend of moose populations in the Gwich'in Settlement Area. Surveys in each area will take place every 4-5 years. In November, 2000, we plan to survey for moose abundance (population size and density) and composition (sex and age characteristics) in the Fort McPherson area. To date, no assessments of the moose population in this area have been conducted. Thus, this survey will provide baseline information from which future assessments of the moose population can be made. Methods will use an aerial stratification survey of sample units in the study area stratified into units of high or low probability of observing moose within them. Locations and numbers of moose spotted will be marked on maps and sex, age and location recorded.	Benn, B. 2001. Moose survey in the Fort McPherson Region of the Gwich'in Settlement Area, Northwest Territories, November 2000. Gwich'in Renewable Resource Board Report 01-06. Benn, B. 2001. Moose abundance & composition survey in the Fort McPherson region of the GSA, NWT, November 2000. Gwich'in Renewable Resource Board Report 01-02.
Mammals	Moose	1999	Financial	Moose abundance and composition in the Arctic Red River area	GRRB/DRWED (Marshal/Nagy)	Moose are an important game species in the GSA. Until recently, there has been little research on moose. As part of a moose management plan, we will set up survey areas where people in the communities tend to hunt. An area of importance to Tsiigehtchic is up the Arctic Red River. With the use of small airplanes and helicopters, we will survey land to either side of the Arctic Red River between Tsiigehtchic and the mouth of the Cranswick River. We will determine an estimate of moose numbers, composition of the population, and distribution to determine a current status of moose in this area. We will compare these numbers to the amount of harvest, to help with determining trends in population and potential for future harvest from the area.	Benn, B. 1999. Moose abundance and composition survey in the Arctic Red River region of the Gwich'in Settlement Area, Northwest Territories, November 1999. Gwich'in Renewable Resource Board Report 99-10.
Mammals	Moose	1999	In-kind	Moose harvest as a factor affecting moose populations in the GSA	GRRB/DRWED (Marshal/Nagy)	Moose harvest is often an important factor affecting moose populations. In several northern areas, overharvest has been suggested as an important contributing factor causing declines or low densities in moose populations. The effect of harvest can be different depending on which animals are harvested (cows, bulls, calves, yearlings). As part of an ongoing study to monitor factors affecting moose populations, we propose to continue the moose harvest study. Harvesters are encouraged to submit the incisor bar of the moose they kill, plus location, date of harvest, and the sex of the moose. When compared to moose abundance, this will provide an indication of the effect of harvest on the population, and whether it is an important factor limiting moose population growth.	
Mammals	Moose	1999	In-kind	Snow depth as a factor affecting moose populations in the GSA	GRRB/DRWED (Marshal/Nagy)	In several areas of the north, snow depth is often an important environmental factor affecting moose populations. Deep snow affects movement and energy expenditure by adult and calf moose, and has been linked to decreases in the number of moose in populations in Alaska. As part of an ongoing study to monitor snow depths and moose abundance, we propose to return to snow transects established during the winter of 1998-1999 to measure snow depth, density, and to describe snow layers. When compared to moose abundance information, snow depth measurement will provide and indication as to what depths snow becomes an important factor limiting moose population growth.	

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Mammals	Moose	1998 1997 1996	In-kind & Financial	Moose population survey in the Inuvik-Tsiigehtchic area	GRRB/DRWED (Marshal/Nagy)	As part of the moose research that has begun in the Inuvik-Tsiigehtchic area, we propose to conduct herd composition and trend surveys over the winter of 1998-1999. This will be the third year of surveys to establish some basic population information about moose in the area. It will provide sex and age ratios, and relative abundance that can be compared to previous years' surveys to determine if the population size is increasing, decreasing or stationary. As we are still evaluating methods and timing of surveys, this survey will be in November 1998 or March 1999, depending on the outcome of a March 1998 survey. November surveys will provide more detailed herd composition data, but March surveys will give a better idea of calf over-winter survival.	<p>___ 1999. Composition survey of moose in the Inuvik-Tsiigehtchic region, NWT, November 1998. GRRB Report 99-04.</p> <p>Marshal, J.P. 1999. Co-management of moose in the GSA, NWT. Alces. 35:151-158.</p> <p>Marshal, J.P. 1998. Composition survey of moose in the Inuvik-Tsiigehtchic region, Northwest Territories, November 1997 and March 1998. GRRB Report 98-05.</p> <p>Chetkiewicz, C.L. et. al. 1998. Population abundance and composition of moose in the Inuvik-Tsiigehtchic Region, November 1996. GRRB Report 98-04.</p>
Mammals	Moose	1998 1997	In-kind & Financial	Moose habitat and harvest in the Inuvik-Tsiigehtchic Study Area	DRWED/GRRB (Nagy/Marshal)	This will be the second part of the moose habitat assessment study that began July 1997. The goal this year is to study the plant and land characteristics of those areas determined from last year's work to be ideal moose habitat. This will involve accessing those sites by helicopter, setting up sampling plots, making an inventory of plant species, measuring browse availability and selection by moose, and recording other habitat characteristics. To collect moose harvest data, we will collect the lower jaw bone of moose from hunters to determine age and nutritional condition, and information on sex and location of harvest.	<p>Marshal, J.P., Nagy, J.A. 1999. Moose browse and snow characteristics in the Inuvik-Tsiigehtchic region, NWT. Gwich'in Renewable Resource Board Report 99-09.</p> <p>Marshal, J.P. & Snowshoe, N. 1999. Data report: characteristics of harvested moose, GSA, NWT. Sept. 1998-June 1999. Gwich'in Renewable Resource Board Report 99-08.</p>
Mammals	Wolves	2003	Financial	Wolf Prey Selection (Dall's sheep)	Denise Auriat		