

STRATEGIC CONSERVATION ASSESSMENT FOR THE NORTHERN BOREAL MOUNTAINS OF YUKON AND BRITISH COLUMBIA

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Back Cover photo: Fritz Mueller

Report to T-Gear Charitable Trust

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Wildlife Conservation Society Canada (WCS Canada) was incorporated as a conservation organization in Canada in July 2004. Its mission is to save wildlife and wildlands by improving our understanding of — and seeking solutions to — critical problems that threaten vulnerable species and large wild ecosystems throughout Canada. WCS Canada implements and supports comprehensive field studies to gather information on the ecology and behavior of wildlife. Then, it applies that information to resolve key conservation problems by working with a broad array of stakeholders, including local community members, conservation groups, regulatory agencies, and commercial interests. It also provides technical assistance and biological expertise to local groups and agencies that lack the resources to tackle conservation dilemmas. Already, WCS Canada has worked on design of protected areas (Nahanni National Park), monitoring and recovery of species (grizzly bear, lynx, wolverine, and woodland caribou), restoration of ecosystems, integrated management of large landscapes, and community-based conservation.

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EXECUTIVE SUMMARY

Straddling the boundary of British Columbia and Yukon, the Boreal Cordillera terrestrial ecozone covers a remarkably diverse set of ecosystems and biodiversity, including a major salmon-bearing river, magnificent unpolluted lakes, extensive wetlands, remnant Beringian grasslands, boreal and subalpine forests, and alpine tundra. These elements provide highly valued ecosystem services, ranging from subsistence foods to spiritual sustenance, for people locally, nationally and internationally. Wildlife Conservation Society Canada has chosen this ecozone as the approximate extent of its Northern Boreal Mountains site, a region where it proposes to invest conservation expertise and energy for a prolonged period of time.

This document, a Strategic Conservation Assessment, provides much of the information needed to direct WCS Canada's work in the Northern Boreal Mountains site in the next 5 to 10 years. It outlines the scope and components of the regional conservation challenge, and provides an overview of our opportunities for future and long-term engagement through field-based science, administrative process, policy and regulatory review, and political engagement.

The Northern Boreal Mountains site is full of conservation challenges and opportunities. WCS Canada will choose work that combines one or more of the following characteristics: (i) precedent-setting, in terms of bringing a novel view of the world through analysis or synthesis; (ii) empowering, in terms of being a useful tool for agencies with the power to make decisions; (iii) large-scale, in terms of addressing a large piece of geography or a conservation issue that is widespread through the site.

A number of key topics or themes (*italics*) have emerged from the analysis. *Land Use Disposition* has historically lacked the benefit and direction of strategic planning, and has been dominated by individual dispositions. Various strategic land and resource planning processes are envisaged by governments in the short to mid-term. WCS Canada can serve conservation and natural resource management well by providing decision-making processes and agencies with wildlife habitat mapping and connectivity mapping at pertinent scales. Our role would be to encourage a more strategic approach to conservation and land use zonation, and a more explicit consideration of wildlife values. Ungulates (caribou and moose), and large carnivores (notably grizzly bears, wolverine) are suitable focal species for strategic land use planning. For forest resource planning, key issues will be reduction in the extent and quality of mature and old

growth timber stands (focal species: caribou (winter range), marten, and cavity-nesting birds), and shift away from the optimum patch size in forest succession (focal species: snowshoe hare and lynx).

Wildlife faces its biggest threats in the loss of *valley bottom, riparian and wetland habitats*, the places most desired by people for agriculture, timber, settlement, and access corridors. Our goals are to focus on these habitats for protection and management reserves in land use planning, and to produce best management practices for these habitats when faced with natural resource extraction. Valley bottoms, riparian areas and wetlands support the highest levels of biodiversity regionally, and also a wide variety of habitats. Caribou often have to rely on low elevation, mature forest, winter ranges in valley bottoms. Key questions facing these biological communities are: (i) for species that depend on wetlands, how much adjacent riparian and upland habitat is required? (focal species: moose; cavity nesting ducks); (ii) for species that rely on wetlands, how large is the interconnected set of waterways and wetlands to support a viable population? (focal species: river otters; beavers); (iii) for riparian habitat types that go through successional change, what is the temporal scale of that change, what are the patterns of change, and what food webs are affected? (focal species: beaver; lesser yellowlegs).

Managing access through wildlife habitats is a key concern, with a proliferation of formal trails and roads for mining exploration and development, and informal all-terrain vehicle trails for back-country recreation. Access is detrimental to wildlife primarily because it allows easier harvesting, and frequently local overharvesting, and because it disturbs wildlife thereby alienating certain habitats. The key focal species are those most harvested (moose, caribou, thinhorn sheep, lake char, grayling), and those most clearly disturbed and displaced (thinhorn sheep, mountain goat, wolverine, grizzly bear, wolf).

The risk of *climate change* to conservation actions will pervade all our activities. We will work towards a better understanding of what climate trends are currently occurring, and will consider climate change a dominant factor in our decisions about what work to do. Focal species will vary with the climate trend that is viewed as threatening. The increased frequency of wild fire means a focus on species that depend on older forest types (caribou, marten). Increasing winter precipitation in some areas means a focus on species with critical winter ranges (caribou; thinhorn sheep). Increasing evapo-transpiration and reduced late summer run-off reduces the habitat quality of many streams and wetlands and argues for a focus on species that are affected (notably salmon) or can influence the situation (notably beaver). The increasing frequency of thaw and ground flooding during winter warm spells is a big risk to hibernators (arctic ground squirrels; jumping mice).

WCS Canada's *choice of other institutions with which to engage* will be key to our success. We will work with numerous partners in the pursuit of new science, and in the interpretation and presentation of existing science and knowledge for improved conservation outcomes. These include governments (First Nations, territorial, federal), academia, non-governmental organizations, and industry. We will aim to make our analyses and results accessible to all agencies, in the best interests of improved conservation. First Nations partners frequently are interested in species of subsistence and/or cultural value

(focal species: caribou, moose, thimblehorn sheep, arctic ground squirrels, hoary marmots, salmon, lake char, grayling, whitefish), or species that are perceived to be detrimental to these harvested species (focal species: bison, elk, wolf). Governments also have an obligation and interest in rare and threatened species (focal species: bison, peregrine falcon, short-eared owl).

Within this large site there is a great deal of *regional diversity* in ecosystems and conservation opportunities. We need to look for themes or topics that can be actively researched or pursued in different parts of the site for common purpose, and partners who could help the work. We need to focus on particular regions within the site where issues are most acute or institutional processes provide particularly valuable opportunities. WCS will have to choose from among the quite large array of focal species it might address, and, depending on the conservation issue at hand and the role of partners, deal with just a few at a time.

In summary, the conservation challenges in the Northern Boreal Mountains are diverse, urgent and growing in number and intensity. At the same time the opportunities for WCS Canada to engage and make a difference, by going beyond what any other agency can do, are clearly numerous and urgent. There is a potential powerful role for WCS Canada to play in this region with its amazing array of wildlands and wildlife.

ACRONYMS

ARRC	Alsek Renewable Resources Council
B.C.	British Columbia
CAFN	Champagne and Aishihik First Nation
CTFN	Carcross/Tagish First Nation
CYFN	Council of Yukon First Nations
CYI	Council of Yukon Indians
DKRRC	Dan Keyi Renewable Resources Council
HPA	Habitat Protection Area
KDFN	Kwanlin Dün First Nation
KFN	Kluane First Nation
LRRC	Laberge Renewable Resources Council
LSCFN	Little Salmon/Carmacks First Nation
NND	First Nation of Na-Cho Nyak Dun
NWT	Northwest Territories
ORV	off-road-vehicle
RRC	Renewable Resources Councils
RRDC	Ross River Dena Council
SARA	Species at Risk Act
SLWCC	Southern Lakes Wildlife Coordinating Committee
SMA	Special Management Area
TKC	Ta'an Kwäch'än Council
TRRC	Teslin Renewable Resources Council
TTC	Teslin Tlingit Council
WRFN	White River First Nation
YCS	Yukon Conservation Society
YESAA	Yukon Environmental and Socio-economic Assessment Act
YESAB	Yukon Environmental and Socio-economic Assessment Board
YFN	Yukon First Nation
YFWB	Yukon Fish and Wildlife Branch
YFWMB	Yukon Fish and Wildlife Management Board

INTRODUCTION

In a world full of conservation challenges and opportunities, the northern boreal mountains of western Canada still include large wilderness landscapes with robust ecosystems and wildlife populations. Such extensive tracts of undisturbed land are rare globally, making this region particularly alluring for conservation. Straddling the boundary of British Columbia and Yukon, the Boreal Cordillera terrestrial ecozone¹ covers a remarkably diverse set of ecosystems and biodiversity, including a major salmon-bearing river, magnificent unpolluted lakes, extensive wetlands, remnant Beringian grasslands, boreal and subalpine forests, and alpine tundra. These elements provide highly valued ecosystem services, ranging from subsistence foods to spiritual sustenance, for people locally, nationally and internationally. Wildlife Conservation Society Canada has chosen this ecozone as the approximate extent of its Northern Boreal Mountains site, a region where it proposes to invest conservation expertise and energy for a prolonged period of time. Our vision is a region in which current wildlife species and ecological processes continue to thrive, or adapt to change in the most robust fashion, as a result of forward-looking land use planning and management, and wise use, based on solid scientific information.

This document, a Strategic Conservation Assessment, provides much of the information needed to direct WCS Canada's work in the Northern Boreal Mountains site in the next 5 to 10 years. It outlines the scope and components of the regional conservation challenge, and provides an overview of our opportunities for future and long-term engagement through field-based science, administrative process, policy and regulatory review, and political engagement.

Although the Assessment is strategic in scope, it does not cover all aspects of a strategic approach to conservation work in a site. It focuses most on the interests and mandates of the various government and non-government agencies that WCS Canada will have to engage as political and technical partners in conservation work. Achieving conservation gains on the ground will depend largely on the strength and influence of partners that can affect legislation, policy, regulation and practice. The document does not include such strategic elements of conservation planning as a conservation area design (e.g., a suite of recommended high value protected areas), or an exhaustive analysis of high priority species. WCS Canada will rely on the BEACONS project² and its strategic evaluation of conservation hotspots across boreal Canada, to provide direction on priority locations for attention as ecological benchmarks and other forms of

¹ This is based on the ecozone classification followed by Parks Canada.

http://www.pc.gc.ca/apprendre-learn/prof/itm2-crp-trc/html/ecozone_e.asp

² Boreal Ecosystem Assessment for Conservation Networks (BEACONS). <http://www.beaconsproject.ca/>

protected area. The mapping algorithms developed by the BEACONS project can be augmented with regionally pertinent parameters to tailor outputs to this WCS Canada site in the northern boreal mountains. Regarding choice of focal species for WCS Canada attention, a recent workshop has identified a candidate list³. This Assessment does not re-visit the process of choosing focal species. In the Summary section we provide a set of species we think can be used as indicators for dealing with each of the priority conservation challenges.

Wildlife Conservation Society Canada has developed this Assessment with funding assistance of the T-Gear Charitable Trust. To do so we contracted Brian Pelchat, one of the Assessment's authors, to meet with representatives of a large cross-section of the institutions and organizations that have an influence on conservation of wildlife and wild lands in Yukon and northern British Columbia, so as to better understand the opportunities and constraints they currently anticipate. Based on his more than 25 year experience working for territorial and federal environment agencies, often in close collaboration with First Nations governments and co-management institutions, Mr. Pelchat was also able to provide direct advice and recommendations on how WCS Canada might best engage and influence the conservation agenda. We have incorporated much of his contracted Report into this Assessment. Another author, Donald Reid, has also interviewed a substantial number of potential conservation partners and interested agencies, to supplement Brian Pelchat's Report. Dr. Reid has lived and worked for WCS Canada in Yukon for 5 years, an experience that is also reflected in the Assessment. The third author, WCS Canada biologist Dr. John Weaver, has done field work within and close to the northern boreal mountains in collaboration with the Kaska First Nations, the Yukon government, and Parks Canada. His experience and knowledge is also expressed in this Report.

This Assessment offers considerable new information to orient and direct WCS Canada's work in northern British Columbia and southern Yukon. The process of gathering this information has been as valuable as the information gathered because it has meant face-to-face meetings with interested individuals, so new relationships have been identified and explored. The potential conservation agenda is huge, and we believe that many new relationships will lead to specific conservation gains.

³ Canadian Parks and Wilderness Society – Yukon. 2005. Towards a Yukon Conservation Strategy: Workshop Report. CPAWS-Yukon, Whitehorse. 44pp. Available (Nov 2009) at: <http://www.cpawsyukon.org/resources/yukon-conservation-science-reports.html>

THE NATURAL SETTING: ECOSYSTEMS IN THE BOREAL MOUNTAINS

Geographic setting

Wildlife Conservation Society Canada's Northern Boreal Mountains site sits in middle to high latitudes (57° to 65° North latitude), straddling the Yukon – British Columbia border in northwestern Canada (Figure 1). It is a land of boreal forests blanketing much of a complex topography of mountains and plateaus created by the massive uplift of the western North American cordillera and the extensive alpine glaciations of the Pleistocene, – the Northern Boreal Mountains. We define the Northern Boreal Mountains site by fairly homogeneous physiographic, climatic and consequently ecological character, by watershed boundaries, and by jurisdictional boundaries. Our intent is to derive a conservation agenda for a geography where there is some consistency in natural conditions, some inherent integrity in terms of ecological processes, and some direct relevance in application to human institutions.

The core of the site is the Boreal Cordillera ecozone of the Canadian ecological land classification system⁴. This ecozone covers approximately 440,000 km², and includes the headwaters of the Yukon River drainage as far downstream as the Alaska border, most of the Alsek-Tatshenshini drainage, the Liard drainage downstream to the Taiga Plains ecozone, and much of the Stikine-Iskut drainage. We also include portions of the Taiga Cordillera ecozone on the western side of the Mackenzie Mountains, so as to fully encompass the headwaters of the Liard drainage to the Yukon-Northwest Territories border and most of the traditional territories of the Kaska First Nations. This is a very large piece of geography with considerable ecological variety. We describe some of this variety here, acknowledging that most of the information comes from a few key publications⁵.

⁴ Marshall, I.B. and P.H. Schut. 1999. A National Ecological Framework for Canada: Overview. Environment Canada and Agriculture Canada, Ottawa. Available (Nov 2009) at: <http://sis.agr.gc.ca/cansis/nsdb/ecostrat/intro.html#ecological%20map%20units>

⁵ Demarchi, D. 1996. An introduction to the ecoregions of British Columbia. Wildlife Branch, Ministry of Environment, Victoria. Available (Nov 2009) at: http://www.llbc.leg.bc.ca/public/PubDocs/bcdocs/325282/techpub_rn324.pdf

Meidinger, D., and J. Pojar. 1991. Ecosystems of British Columbia. Ministry of Forests, Victoria.

Smith, C.A.S., J.C. Meikle and C. F. Roots (Editors). 2004. Ecoregions of the Yukon Territory: Biophysical properties of Yukon landscapes. Agriculture and Agri-Food Canada. PARC Technical Bulletin No. 04-01. Summerland, British Columbia. 313 p.



Coldfish Lake in Spatsizi Provincial Park, British Columbia, stores large reserves of freshwater near the headwaters of the Stikine River drainage in the Boreal Mountains and Plateaus ecoregion. (Photo: Donald Reid).

Ecological Setting

Ecological conditions are defined by bedrock, physiography (slope, aspect, glacial and hydrological history), climate, and interactions of these in the condition of soils, patterns of drainage, and patterns and vigour of plant communities. Ecologists find similarities in these conditions at different spatial scales allowing an ecological land classification with increasing homogeneity in pattern within smaller areas of land. In Yukon, scientists have adopted the Canadian ecological land classification system, stepping down from ecozones to ecoregions, and then to ecodistricts. In British Columbia, ecologists have adopted different names for some of the units, with ecoprovince being approximately equivalent to ecozone, and ecosection equivalent to ecodistrict. Ecoregions are equivalent in both classifications, so we can summarize the full list of ecoregions in our Northern Boreal Mountains site (Table 1). The proportion of each Yukon ecoregion protected is in Table 2. Ecoregions range from approximately 20,000 to 100,000 km². The full extent of each ecoregion is included in our site with the exception of the Selwyn Mountains ecoregion which largely falls within the Northwest Territories. The ecoregions in Yukon are displayed in Figure 2.

Figure 1. The Wildlife Conservation Society Canada Northern Boreal Mountains site in northwest Canada. The set of Provincial Parks in the southeast section of the site are part of the Muskwa-Kechika complex, and those south of Dease Lake are Mt Edziza and Spatsizi Provincial Parks. The map does not include a number of smaller protected areas in Yukon and B.C. because of the scale.

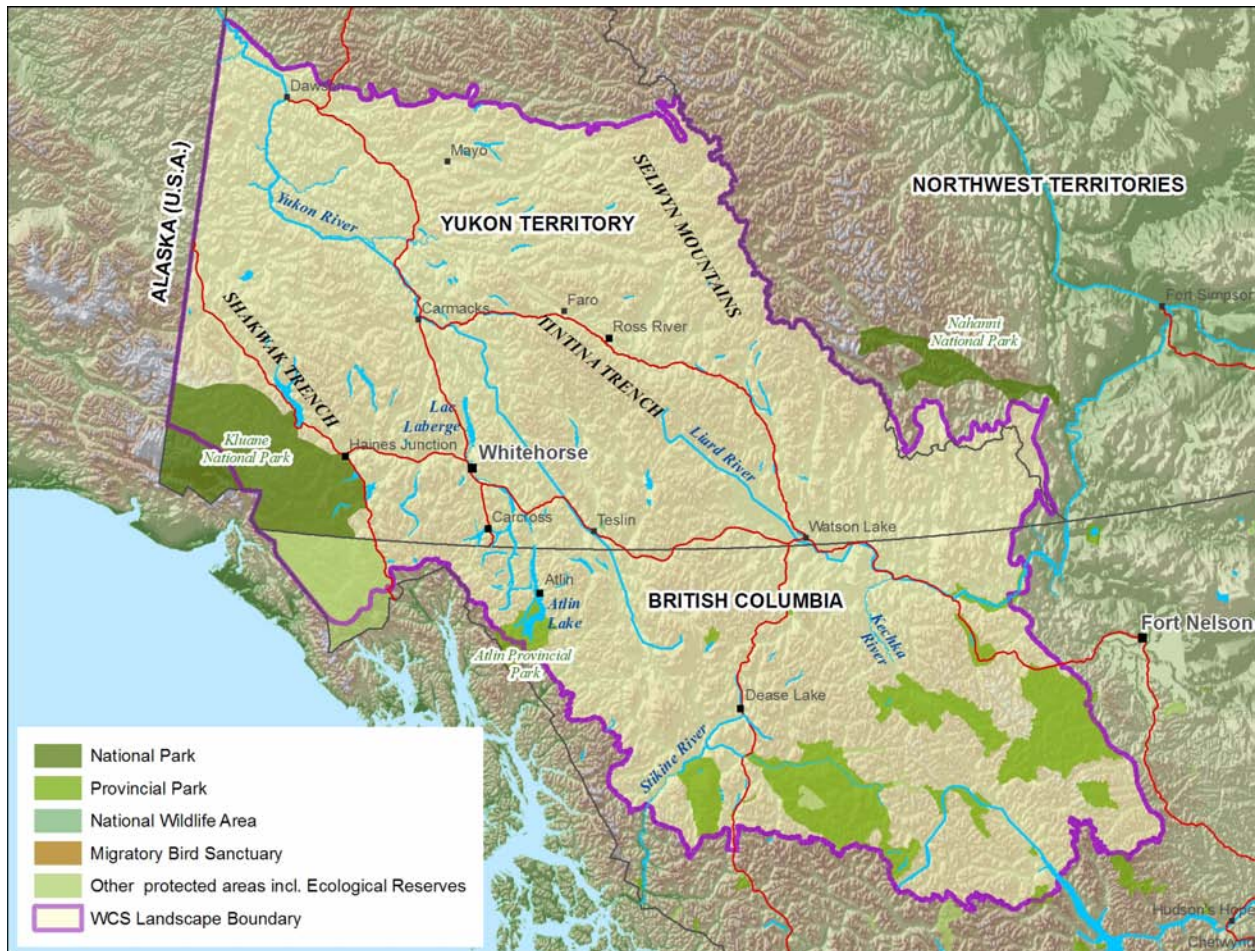


Table 1. Component ecoregions of the WCS Canada Northern Boreal Mountains site. The same ecoregion name in both jurisdictions indicates the ecoregion straddles the border. Blank cells indicate the ecoregion does not exist in the other jurisdiction. Name in brackets is the British Columbia ecosection name for the small area of the corresponding Yukon ecoregion.

BRITISH COLUMBIA		YUKON	
EcoProvince	EcoRegion	Ecoregion	EcoZone
		Selwyn Mountains	Taiga Cordillera
		Klondike Plateau	Boreal Cordillera
		Ruby Ranges	
		Yukon Plateau Central	
		Yukon Plateau North	
Northern Boreal Mountains	St. Elias Mountains	St. Elias Mountains	
	Yukon-Stikine Highlands	Yukon-Stikine Highlands	
	Yukon Southern Lakes	Yukon Southern Lakes	
	Boreal Mountains and Plateaus	Boreal Mountains and Plateaus	
	Boreal Mountains and Plateaus (Tuya Range)	Pelly Mountains	
	Liard Basin	Liard Basin	
	Hyland Highland	Hyland Highland	
	Northern Canadian Rocky Mountains		

Table 2: Proportion of Yukon ecoregions covered by protected areas. Areas are in square kilometres.

Ecoregion	Total area	Area Protected	% Protected
Selwyn Mountains	35,578	0	0
Klondike Plateau	38,471	0	0
Ruby Ranges	22,737	0	0
Yukon Plateau Central	26,803	142	0.5
Yukon Plateau North	57,091	1,687	3.0
St. Elias Mountains	19,245	19,245	100.0
Yukon-Stikine Highlands	7,028	3,113	44.3
Yukon Southern Lakes	29,892	725	2.4
Boreal Mountains and Plateaus	948	0	0
Pelly Mountains	34,258	55	0.2
Liard Basin	21,113	16	0.1
Hyland Highland	14,661	0	0



The Yukon River, at Five-Finger Rapids, cuts a wide valley through the Yukon Plateau Central ecoregion, and drains close to one-half of the Northern Boreal Mountains site. (Photo: Donald Reid)

Climate

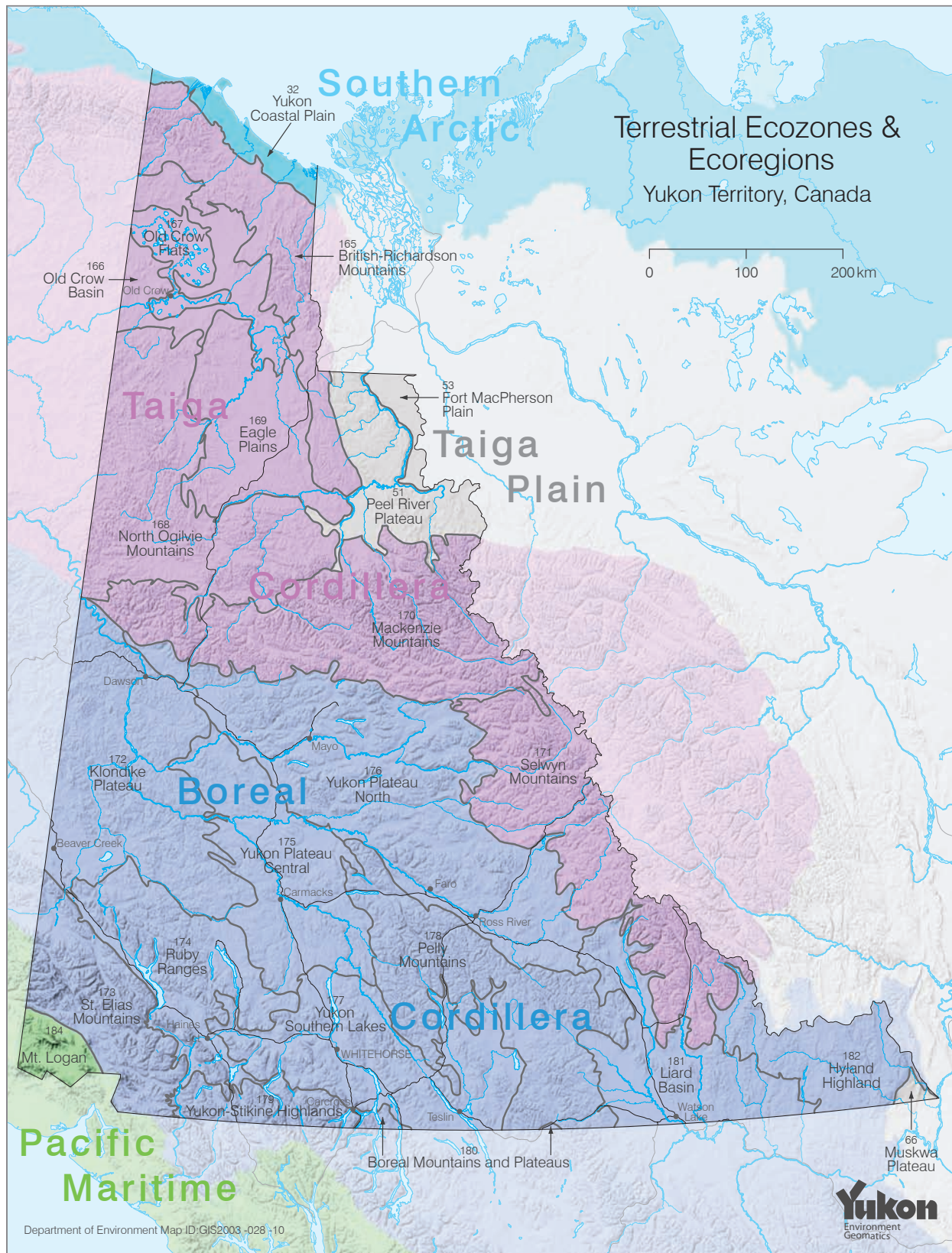
The climate is a continental subarctic type characterized by long, cold winters and short, warm summers. Position with respect to mountain barriers, altitude, and mountainside orientation all play strong roles in local climatic conditions. Climate regimes exhibit a persistent interplay between low pressure systems coming inland from the Gulf of Alaska, and continental high pressure generating in Alaska and northern Yukon. The frequent eastward flow of air from the Pacific drops heavy precipitation on the Coast Mountains (at least 600 mm annually even on their lee slope) and moderates the temperature regime in the lee of these ranges. This air often flows north and east across the landscape, once again dropping significant precipitation through the Pelly, Cassiar, Mackenzie and Northern Rocky Mountains (600-700 mm annually). There is a prominent precipitation shadow running northwest to southeast through most of the landscape with annual values of 250-400 mm on the interior plateaus and valleys of Yukon and west of the Cassiar Ranges in BC⁶. Much precipitation (c. 35-60% water equivalent) is snow, especially in the mountains, so hydrological regimes throughout the landscape are strongly influenced by spring melt patterns with peak flows in May and June. Hydrological minima occur in March when groundwater inflow is least towards the end of the long winter, and some streams in the interior may be effectively dry at this time⁷.

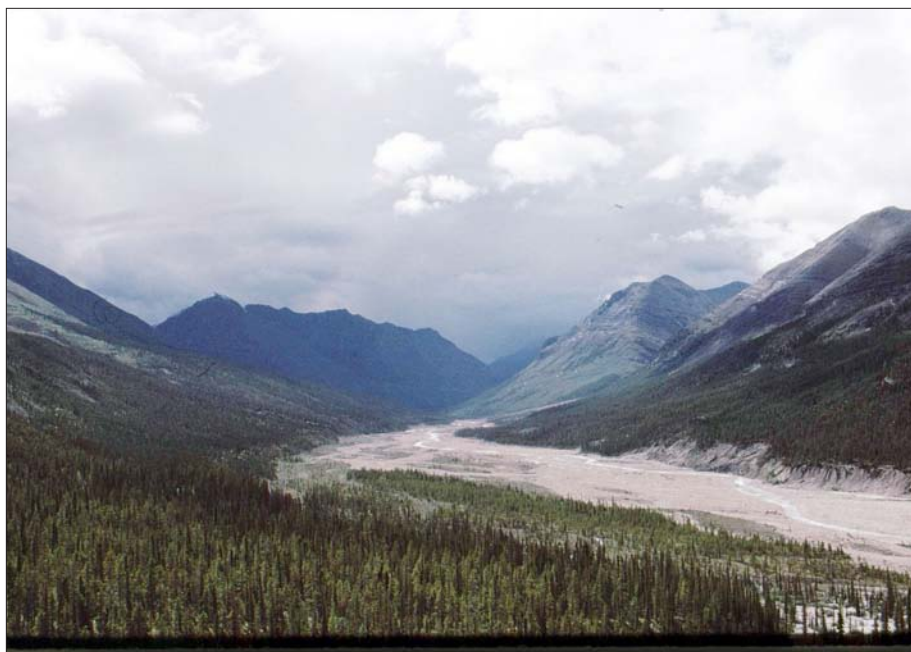
Mean annual daily temperatures in valley floors vary from about -4°C in the northern areas to close to 0°C in B.C. In summer, the long daylight and lack of cloud cover over the dry interior can result in remarkably warm temperatures;

⁶ Wahl, H. 2004. Climate. *In* Smith, C.A.S., J.C. Meikle and C. F. Roots (Editors). 2004. Ecoregions of the Yukon Territory: Biophysical properties of Yukon landscapes. Agriculture and Agri-Food Canada. PARC Technical Bulletin No. 04-01. Summerland, British Columbia. p. 19-23.

⁷ Janowicz, R. 2004. Watershed and hydrologic regions. *In* Smith, C.A.S., J.C. Meikle and C. F. Roots (Editors). 2004. Ecoregions of the Yukon Territory: Biophysical properties of Yukon landscapes. Agriculture and Agri-Food Canada. PARC Technical Bulletin No. 04-01. Summerland, British Columbia. p. 15-18

Figure 2. Ecoregions of Yukon Territory. The WCS Canada site includes the Boreal Cordillera ecozone, and Yukon portions of the Selwyn Mountains ecoregion in the Taiga Cordillera ecozone.



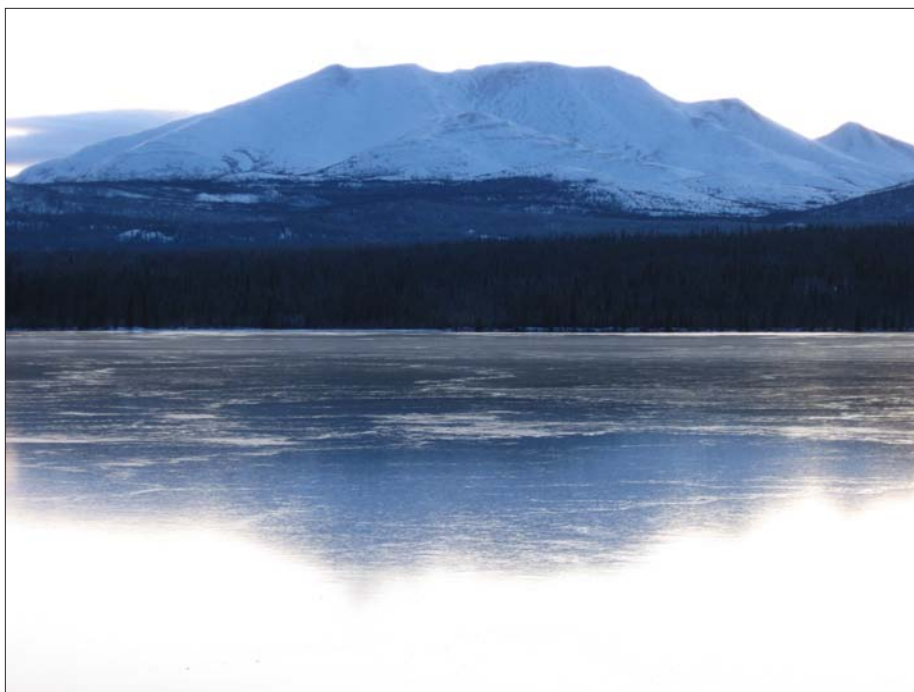


Water-laden clouds from the Pacific Ocean threaten rain over the Northern Rocky Mountains near Muncho Lake Provincial Park, British Columbia. (Photo: Donald Reid).

mean daily temperatures in July reach 15°C in the northern Yukon valley, but 10°C or less in southern areas. This temperature and daylight regime causes lots of evaporation in a relatively dry seasonal climate, so water limitation is a reality for many components of the ecosystem. In winter, the arctic high pressure and reduced moderating influence from the Pacific Ocean, mean that these northern interior valleys have mean daily temperatures in January of about -30°C whereas closer to the coast they are -20°C, and in the southern part of the region in BC closer to -15°C. The cold at low elevations is often exacerbated in winter by sinking cold air so there is a temperature inversion with elevation. The interior valleys clearly have much stronger seasonal extremes. Sun exposure on north-facing slopes is far less than other aspects at these latitudes, and discontinuous permafrost predominates on the north aspects.

The regional, and continental, climate is strongly influenced by two inter-related and periodic patterns in ocean temperatures: the El Nino Southern Oscillation (periodicity of 6 to 18 months), and the Pacific Decadal Oscillation (PDO; periodicity of 15-25 years). The PDO involves shifts in the distribution of sea surface temperature anomalies in the north Pacific. A warm phase PDO occurs with a relatively cold north Pacific but warm water up the coast of North America all the way to southern Alaska. It results in above average air temperatures (October to March) in northwestern North America, but below average spring snow packs. A cool phase PDO occurs with warm water throughout the north Pacific but somewhat cold water up the coast as far as Alaska. It results in below average temperatures and above average spring snow packs⁸. We have most recently been in a cool phase.

⁸ Mantua, N. The Pacific decadal oscillation. Unpublished report. Available (Nov 2009) at: http://www.atmos.washington.edu/~mantua/REPORTS/PDO/PDO_egeg.htm and Mantua, N. J., and S. R. Hare. 2002. The Pacific decadal oscillation. *Journal of Oceanography*, 58, 35-44.



The first winter ice cover reflects mountains in Fox Lake in the Yukon Southern Lakes ecoregion. (Photo: Donald Reid)



The Yukon River near Tatchun Creek. Unforested southerly exposures are common in the dry interior plateaus of the Yukon, sometimes maintained by ongoing river erosion, but commonly the result of limited water availability for tree growth. (Photo: Donald Reid)

The climate is changing in this site. Assessments of historical data show the following trends for the northern boreal mountains⁹:

- Increasing annual mean temperature (at least 1.0 °C) throughout.
- Strong increases (>2.0°C) in spring mean temperature.
- Increasing length of frost-free period (c. 10 days).
- Increasing mean annual precipitation (c. 15 cm) in southern portions of the site.
- Decreasing ratio of spring snow to precipitation throughout.
- Decreasing annual snow cover duration.

These trends are derived from global circulation models (GCMs) that do not provide sufficient resolution for understanding or projecting climate changes within a landscape that is so topographically and climatically diverse. An on-line modeling tool, ClimateBC, gives us the ability to summarize historical climate data for all areas of the Northern Boreal Mountains site, and derive projections of future climates based on GCMs¹⁰. The Canadian Climate Change Scenarios Network provides access to long term weather data sets from all Environment Canada weather stations, and tools for extracting trends¹¹.

Physiography, Geology and Soils

The bedrock geology of this site is very complex, and not often well correlated with ecoregion boundaries because of the strong influence of climate and topography on ecoregion delineation. The geological history can be characterized as the progressive formation of a series of mountain ranges from ancient continental sediments because of the coming together (subduction, accretion, deformation and faulting) of two crustal plates. The result is a complex of sedimentary and metamorphic rocks, often with unusual mineral composition which affects plant distribution and vigour. Today the mountain ranges and plateaus resulting from this tectonic activity run in largely parallel belts trending from northwest to southeast, with the older ranges generally towards the eastern side of the site, and the coastal ranges still undergoing uplift. Ranges are separated in part by two major faults – the Shakhwak trench adjacent to the coastal mountains (especially in Yukon), and the Tintina trench which joins the Rocky Mountain trench of northern British Columbia in the Liard basin. Scattered through this general pattern of mountain ranges we also find volcanic extrusions, granitic intrusions now exposed on the surface, and younger sedimentary deposits resulting from erosion of the ancient ranges¹².

The present-day Coast Ranges that form the west side of the site, and the Mackenzie and Rocky Mountains forming the east side, are rugged with extensive areas of permanent snow, ice and exposed bedrock. The ranges lying within the site are more subdued and often plateau-like (Klondike Plateau, Pelly Ranges, Cassiar Ranges), displaying the flat to rolling features of mature erosional surfaces. Most of the site was covered by repeated glaciations. The exception is an area largely coincident with the Klondike Plateau ecoregion that is classed as part of unglaciated Beringia. This ice age refugium, joined to Siberia, isolated numerous species from their unglaciated range south of the cordilleran and continental ice sheets, often resulting in novel speciation and also a biogeographic legacy in North America of species that originated in Eurasia.

⁹ Barrow, E., B. Maxwell and P. Gachon (Eds.). 2004. Climate change and variability in Canada: Past, present and future. ACSD Science Assessment Series No. 2. Meteorological Service of Canada, Environment Canada, Toronto. 114p. and

Hansen, J., M. Sato, R. Ruedy, K. Lo, D.W. Lea, and M. Medina-Elizade. 2006. Global temperature change. *Proceedings of the National Academy of Sciences* 103:14288-14293.

¹⁰ ClimateBC. A program to generate climate normal data for western Canada. Centre for Forest Conservation Genetics, University of British Columbia, Vancouver. Available (Nov 2009) at: <http://www.genetics.forestry.ubc.ca/cfcg/climate-models.html>

¹¹ Environment Canada. Canadian Climate Change Scenarios Network. Available (Nov 2009) at: <http://www.cccsn.ca/index-e.html>

¹² Roots, C. and C. Hart. 2004. Bedrock geology. In Smith, C.A.S., J.C. Meikle and C. F. Roots (Editors). 2004. Ecoregions of the Yukon Territory: Biophysical properties of Yukon landscapes. Agriculture and Agri-Food Canada. PARC Technical Bulletin No. 04-01. Summerland, British Columbia. p.11-14.



The Slims River valley floor in Kluane National Park is covered with glacial sediments exposed by recent retreat of glaciers from the St. Elias Mountains in the background. (Photo: Donald Reid).

Ecosystems today are heavily influenced by the spatial patterns of surface deposits from which soils develop. In former Beringia, and along most higher mountain ridges throughout the site, glaciers left no deposits, and soils are derived from bedrock eroded by frost and water, moved downslope by gravity, or carried by water and wind. In the majority of the site, glaciers eroded bedrock and earlier deposits and then re-deposited these, generally at lower elevations, in a complex of till (e.g., moraines and kame), meltwater stream beds (e.g., eskers), and meltwater lake beds¹³. Much of this glacial activity occurred as recently as 12-15 thousand years ago, and the region remains in a cold climate. Permafrost is extensive though discontinuous (50-90% cover) through the northern one-third of the site, and sporadic discontinuous (10-50% cover) in the southern portions. Consequently, soils have had limited time and opportunity to develop, through mineral re-deposition by water, and incorporation of an organic layer from plant materials. Ice-churned cryosols are common at higher elevations in the northern mountains, but most of the site is underlain by brunisols and luvisols. The finer-grained meltwater deposits are the source of luvisols, and brunisols develop on the mildly weathered glacial deposits. Organic soils (mostly peat) are localized in poorly drained wetlands¹⁴.

In summary, this is a geologically diverse but young landscape where soils vary a lot in mineral composition, but, following recent glaciation, are poorly developed, often thin, and affected by cold. Cold climate and scarcity of calcareous bedrock mean that most water bodies are oligotrophic. The growing conditions for plants (mineral and nutrient conditions, water availability, temperature regimes) are remarkably diverse. These create a strong productivity gradient across elevations, with noticeably higher productivity in valley floors. There is also a strong gradient with aspect and its effect on solar exposure.

¹³ Duk-Rodkin, A. 2004. Glacial history. In Smith, C.A.S., J.C. Meikle and C. F. Roots (Editors). 2004. Ecoregions of the Yukon Territory: Biophysical properties of Yukon landscapes. Agriculture and Agri-Food Canada. PARC Technical Bulletin No. 04-01. Summerland, British Columbia. p. 24-26.

¹⁴ Smith, S. 2004. Soils. In Smith, C.A.S., J.C. Meikle and C. F. Roots (Editors). 2004. Ecoregions of the Yukon Territory: Biophysical properties of Yukon landscapes. Agriculture and Agri-Food Canada. PARC Technical Bulletin No. 04-01. Summerland, British Columbia. p. 35-38.

More persistent permafrost on north-facing slopes inhibits plant growth, but intense exposure on south-facing slopes can also inhibit plant growth through water limitation. Differing degrees of water capture by bedrock and surface drainage create another gradient in the relatively dry interior of the site, where wetlands assume special value as habitats

Ecosystems

The ecoregion classification (Table 1) differentiates regions that are relatively homogeneous in terms of large-order landforms, soil groups, meso-scale climate patterns, large water basins, plant assemblages, and assemblages of faunal communities. This, or the next higher level or scale of classification (e.g., ecozone), is a useful scale at which to define meaningful representation of ecosystems in conservation areas. This is because the seasonal or annual ranges or distribution of many constituent species coincide fairly well with these units, and because populations of boreal and subarctic species often operate at this scale through time (e.g., seasonal habitats of populations of long distance migrant birds, seasonally migrating caribou, fluctuations in keystone species such as snowshoe hare). It is also because such a scale is frequently large enough to encompass all conditions to be found through the cycles of change induced by major natural disturbances that reset ecosystem processes (e.g., wildfire and forest succession; hydrological erosion and water quality).

Ecosystems are multi-scalar. We can set conservation objectives for some wide-ranging species based on population or herd-scale assessments of annual and seasonal ranges. These may best be assessed at an ecozone or ecoregional scale (e.g. 1:250,000). In addition, our ability to choose subsets of ecoregions for specific conservation or management action, whether for protection or management under specific resource extraction, depends on a finer resolution of ecosystems. The resolution may depend on the resource in question (e.g., mammal population; forest stand harvest and silviculture regime). For many wildlife species we need ecosystem mapping at the scale of plant associations, species-specific seasonal habitats, micro-climates and stream or lakeshore reaches (a mapping scale of c. 1:20,000 to 1:50,000). Such ecosystem mapping, or biophysical land classification, is incomplete for much of this WCS Canada site.

Forest inventory (1:20,000), with differentiation of forest stands based primarily on species, age and canopy structural characteristics, is available for most of the site, but these data layers do not consistently differentiate alpine or wetland habitats. Wetland habitat mapping is available for some portions of the site in Yukon, and in British Columbia a wetland classification is in place¹⁵ but not fully mapped in the northern boreal mountains. In British Columbia, ecologists have developed a detailed approach to vegetation mapping working on the premise that broad plant assemblages (“biogeoclimate zones or sub-zones” – akin to ecoregion scale) are differentiated primarily by climate conditions (notably temperature and moisture regimes), and that characteristic climax plant communities (“site series”) can be predictably found under certain soil nutrient and soil moisture conditions within each of these sub-zones¹⁶. In

¹⁵ MacKenzie, W.H. and J.R. Moran. 2004. Wetlands of British Columbia: a guide to identification. Research Branch, BC Ministry of Forests, Victoria. Land Manage. Handb. No.52.

¹⁶ Meidinger, D., and J. Pojar. 1991. Ecosystems of British Columbia. Ministry of Forests, Victoria.

¹⁷ Banner, A., W. Mackenzie, S. Haeussler, S. Thomson, J. Pojar and R. Trowbridge. 1993. A field guide to site identification and interpretation for the Prince Rupert Forest Region. Land Management Handbook No. 26. Ministry of Forests, Victoria.

¹⁸ DeLong, C., R.M. Annas and A.C. Stewart. 1991. Boreal white and black spruce zone. In Meidinger, D., and J. Pojar. 1991. Ecosystems of British Columbia. Ministry of Forests, Victoria. p. 237-250.

¹⁹ Pojar, J. and A.C. Stewart. 1991. Spruce-Willow-Birch zone. In Meidinger, D., and J. Pojar. 1991. Ecosystems of British Columbia. Ministry of Forests, Victoria. p. 251-262.

²⁰ Pojar, J. and A.C. Stewart. 1991. Alpine tundra zone. In Meidinger, D., and J. Pojar. 1991. Ecosystems of British Columbia. Ministry of Forests, Victoria. p. 263-274.

²¹ Meikle, J.C. and M. Waterreus. 2008. Ecosystems of the Peel Watershed: A Predictive Approach to Regional Ecosystem Mapping. Yukon Environment, Whitehorse, Canada.



Lupines (*Lupinus arcticus*) grow under a stand of trembling aspen (*Populus tremuloides*) in the Boreal White and Black Spruce biogeoclimatic zone. High levels of light reaching the ground, especially in spring, in such forest stands promote relatively diverse understorey vegetation (Photo: Donald Reid).

the northern boreal mountains the biogeoclimatic zones are boreal white and black spruce (BWBS), spruce-willow birch (SWB), and alpine tundra (AT). The site series for the first two have been described in detail but not yet mapped¹⁷. The zones are arranged in elevational bands with changing temperature regimes being the primary factor differentiating zones. BWBS is a fairly typical boreal forest with climax stands of white spruce, aspen and black spruce, and occurs at the lowest elevations (c. 300-1000 m a.s.l.)¹⁸. SWB is a very extensive sub-alpine zone ranging in elevation from about 900 – 1600 m. White spruce and subalpine fir forests dominate especially at lower elevations and often in bands along valley sides where cold air drainage precludes much tree growth in the valley floor. On colder sites there is a climax shrub parkland of scrub birch and various willow shrubs, often interspersed with dry grasslands¹⁹. The AT zone is also extensive and can be found as low as 1,000 m in some areas²⁰. The conservation problem this zone often faces is its fragmentation into numerous disjunct pieces of mountain-top tundra. Even without climate change these “islands” may be too small for the persistence of viable populations. Climate change will likely exacerbate this issue with the expansion of shrubland and eventually conifers into what is now tundra.

Managers are handicapped by the lack of a comprehensive map coverage of plant associations, whether as site series in the B.C. system or some derivative ecosystems or biophysical land cover units, so there is currently quite a lot of interest, in various government bureaucracies, in developing such coverage. In Yukon some ecologists have derived classifications from remote sensed imagery coupled with ground investigations²¹, and there is also a substantial legacy of field plots in certain regions from which to derive classifications. In B.C., the

current forest inventory is viewed as sufficient for most resource management, but mapping to the site series level in the biogeoclimatic system occurs for individual resource development projects such as new mines.

Wildlife

The present-day fauna of the northern boreal mountains is largely comprised of species that have colonized since the Pleistocene glaciations. There is a strong component of Beringian species, some still limited to that unglaciated region. Other came from refuge south of the continental ice sheet, and some probably found refuge along ice-free continental margin of the west coast. About one half the insect species are widespread in North America, and one-tenth is still limited to what was Beringia²². The wide array of vegetation communities supports a higher diversity of animals than is found in boreal zones east of the cordillera.

The food web of the boreal forest is strongly focused on the snowshoe hare whose 8-11 year population cycles directly or indirectly influence the dynamics of numerous other species, including their predators (e.g., Canada lynx, great-horned owl, northern goshawk, red fox, marten) and alternate prey (e.g., arctic ground squirrel, spruce grouse, small rodents). Ungulates (primarily northern mountain caribou and moose) and their predators (primarily grey wolf, black bear, grizzly bear) comprise another branch of the food web of particular interest to humans as a source of food. Along waterways, beavers have a strong influence on the quality and distribution of habitats for numerous mammal, fish, bird and insect species.

²² Danks, H.V. and J.A. Downes (eds.). 1997. Insects of the Yukon. Biological survey of Canada. Monograph Series No. 2. Ottawa. 1034 pp.



Wetlands created by beaver (*Castor canadensis*) border Little Atlin Lake in the Yukon Southern Lakes ecoregion. Such wetlands support an amazing diversity of species, including tree cavity users such as little-brown bats (*Myotis lucifugus*), tree swallows (*Tachycineta bicolor*) and bufflehead ducks (*Bucephala albeola*), numerous arthropods, and muskrats (*Ondatra zibethicus*). (Photo: Donald Reid).



Ewe and lamb Stone's sheep (*Ovis dalli stonei*) lick minerals and grit from the side of the Alaska Highway in Stone Mountain Provincial Park, British Columbia. On some stretches of roadway close to key habitats, sheep and other wildlife have become habituated to human activity, but safety of both the wild animals and humans can be an issue. (Photo: Donald Reid).

This boreal region is unique in North America in having a strong Pacific salmon run (primarily in the Yukon River and tributaries) that supplies food for numerous predators (river otter, bears, bald eagles) and humans alike. Numerous species (notably lake trout, arctic grayling, burbot and slimy sculpin) are found in both Liard (Mackenzie) and Yukon drainages, but the Yukon system has more salmonid and coregonid species, and the Liard is more typically boreal with the inclusion of more cyprinid, percopsid and gasterosteid species.

The mountains provide habitats supporting a distinctive food web that overlaps the adjacent forests. Most of the world's populations of Stone's sheep live in the site, along with numerous Dall's sheep, and the northernmost populations of mountain goats. Brown lemmings, hoary marmots, ptarmigan and grizzly bears are also alpine inhabitants.

The open woodland and grassland habitats of the dry interior successfully support recently introduced populations of elk and bison, and increasing numbers of mule and white-tailed deer that have colonized from the south. Cougars may be following the deer in a northern range expansion.

The site provides valuable migration flyways and staging grounds for numerous waterfowl, shorebirds and cranes. Most of these are in the Shikwak, Tintina and Rocky Mountain trenches that cut generally south to north through the region, and along the large lakes in the Yukon Southern Lakes ecoregion. The region also supports nesting populations of a number of birds of conservation concern including the Short-eared Owl and Peregrine Falcon. Some mammals of conservation concern nationally (e.g., wolverine, grizzly bear) are remarkably abundant in this site.

Natural Disturbance Regimes

Boreal forests are subject to stand or landscape-scale disturbance and replacement by wild fire and insect infestation, both of which result in varying degrees of canopy and understorey death, release or seeding of suppressed vegetation, and initiation of vegetation succession²³. The repeated occurrence of wild fire is so common in this biome that numerous species are specifically adapted to, or select for, specific successional stages in the ongoing cycle of forest aging, disturbance and rejuvenation. These adaptations appear to include a good fit between body size (and consequently home range) and life history attributes of some species to fit the variation in sizes of habitats created by the disturbance²⁴. Disturbances have different spatial and temporal regimes in forests growing in different ecological conditions (e.g., riparian vs upland forest) and different ecoregions. Because of the strength and pervasiveness of wildfire's effects on wildlife habitat supply, boreal forest managers frequently attempt to mimic such effects as much as possible in forest planning²⁵.

Mountain forests and tundra are subject to avalanche disturbance that frequently resets the successional pathway and maintains a meadow or shrub type of seral stage. The locations of these habitats are very stable over time, and they are highly favoured by some species in some seasons. High latitude landscapes with significant winter snow release large quantities of meltwater in spring. This produces fairly predictable annual flooding of most waterbodies, and a series of plant communities and habitats dependent on the pulse of water and nutrients.

Beavers act as disturbance agents by flooding portions of valley floors, thereby creating new water bodies and novel riparian habitats but also interfering with former patterns of movement of aquatic species such as spawning fish. These habitats can be remarkably stable over time, but are not always so.

²³ Johnson, E.A., H. Morin, K. Miyanishi, R. Gagnon and D.F. Greene. 2003. A process approach to understanding disturbance and forest dynamics for sustainable forestry. Chapter 8. *In Towards Sustainable Management of the Boreal Forest. Edited by P.J. Burton, C. Messier, D.W. Smith and W.L. Adamowicz. NRC Research Press, Ottawa. Pp. 261-306.*

²⁴ Holling, C.S. 1992. Cross-scale morphology, geometry, and dynamics of ecosystems. *Ecological Monographs* 62:447-502.

²⁵ Harvey, B.D., T. Hguyen-Xuan, Y. Bergeron, S. Gauthier and A. Leduc. 2003. Forest management planning based on natural disturbance and forest dynamics. Chapter 11. *In Towards Sustainable Management of the Boreal Forest. Edited by P.J. Burton, C. Messier, D.W. Smith and W.L. Adamowicz. NRC Research Press, Ottawa. Pp. 395-432.*

The spatial and temporal patterns of these disturbance regimes are not well documented in the northern boreal mountains. With a changing climate, there is growing evidence that these regimes themselves are also changing. In recent years increased peak flows in spring flooding have followed the melt of increasingly deep snow packs in the headwaters of the Yukon River. Wild fires are becoming increasingly frequent in the dry interior fire belt (Tintina Trench) of Yukon. These facts indicate a need for new research and monitoring to quantify historical patterns and trends, and relate their spatial distribution to the distribution of critical wildlife habitats (e.g., caribou winter range) in a risk assessment.



A fire-killed lodgepole pine tree (*Pinus contorta*) still stands over a decade after the fire, providing a substrate for lichen growth, a perch for numerous birds, and potentially a refuge for cavity users and overwintering insects (Photo: Donald Reid).

THE CONSERVATION CHALLENGE

A Conservation Paradigm and Tool Box

WCS Canada promotes the vision of a world in which people value and embrace the diversity of life, live sustainably with wildlife, and ensure the integrity of the natural world²⁶. The Northern Boreal Mountains represent an unusual conservation opportunity on a global scale – a region where most ecosystems are intact and functioning with a full suite of species. In much of the world, conservation is about saving the last pieces of wild land and remnant populations of now rare species. Most of the land base, often called the matrix within which conservation lands are perched, is used for other human interests. Conservation in the north can focus on protection of ecosystems at comprehensive scales (i.e. large protected areas), and also on ways to maintain much of the matrix in a condition that continues to support wildlife and ecosystem services. This approach is sometimes called the “reverse-matrix” – an alternative paradigm to the conservation paradigm employed in more human-influenced regions. This is the underlying paradigm or view from which we will orient our work in the Northern Boreal Mountains.

Humans are changing the north with increasing speed and effect, by accessing areas to remove natural resources, converting lands to our immediate needs for food and shelter, and changing the climate that significantly controls the way ecosystems function. The unusual circumstances that allow us to view the entire region as a potential conservation opportunity will not last, and we need a set of strategies (a tool box) to pursue conservation in advance of, and concurrent with, human-induced change. To do this comprehensively we identify the major conditions or forces that wild ecosystems face, and derive a set of strategies to deal with those conditions. These strategies are mostly those in conventional use in conservation biology, and this is just one way to present them all. The principal conditions we consider are: (i) ecosystems function at various integrated scales, from at least the site to the continental, and conservation needs to ensure future functioning at and across all scales; (ii) humans necessarily acquire products and services from ecosystems, but the intensity and rate of acquiring some products will, at some point, compromise the acquisition of other products and services; (iii) the human search for a truly sustainable

²⁶ The Wildlife Conservation Society Canada Vision from *A Conservation Strategy for Canada: 2008—2012*. Wildlife Conservation Society Canada, Toronto.

use of natural resources is a constant challenge, and has rarely been achieved because of the frequent dominance of short-term thinking and lure of material wealth at the expense of collective interest. How does each of these conditions affect and direct our conservation strategies?

Ecosystem Function and Scale

Ecosystems function at various integrated scales. A boreal forest stand, or small pond, may well support a self-sustaining suite of species for considerable time. But change is inevitable, and both aging and disturbance provide the opportunity and need for inputs from other sites and ecosystems. These small-scale ecosystems are adapted to disturbance within certain bounds (resilience), or adapted to ageing by changing their components, as long as the new raw materials for change (e.g., new species or new nutrients) are available. Conservation then depends on our ability to understand the scales of ageing and disturbances in time and space, and the scales of operation of all the elements and processes involved in responding to these change. So, we have to scale up from the site to some broader resolution within which we feel we have captured the great majority of scales. As we scale up we realize that some of our species live on a continental scale. Migratory birds find nesting habitat in the northern boreal mountains, but require migratory stop-over and wintering habitats in completely different biomes. We are humbled by the realization that we have to think and operate at virtually all conceivable scales often with insufficient knowledge, and that the burgeoning human population is forcing disturbances at many of these scales. For our well being as humans we need many of the processes in these ecosystems to continue to function.

This thought exercise illustrates two key reasons for setting aside portions of the site in zones where human activity and disturbance are minimized: (i) to facilitate resiliency for as many species and processes as possible and minimize the risk that we will lose them as human disturbance crosses the region; (ii) to provide natural laboratories where we can learn more about ecosystem function, and the scales of its operation. Protecting ecosystems in areas with minimal human influence is a cornerstone of the conservation agenda. Such **protected areas** or **ecological benchmarks** come in many sizes and forms. Consistent with the idea that protected areas are absolutely necessary for conservation, is the idea that they should be established on their own merits before the ecosystems are impacted by humans, because waiting until after they are impacted compromises their value. This, in part, is the principle of **conservation first**.

Protected areas should ideally be at sufficient scale to include the prominent and dominant processes operating in the boreal forest, namely the seasonal movements of the animals with largest area requirements at a herd or population scale, and periodic natural disturbances such as wild fire. When they are smaller than those scales they at least need to be designed to ensure the ongoing functioning of the key ecosystems or processes they are meant to protect. Ecosystem components and processes differ significantly from region to region, so protected areas need to be representative of the components and processes in a certain region. The scale of **representation** varies. Canadian National Parks are chosen to represent their ecozone, and the Boreal Cordillera ecozone is currently represented only in small measure within Kluane National Park. Many



Spatsizi Provincial Park, British Columbia, is primarily a wilderness area maintained for wildlife habitat, but also allows backcountry recreation visitors, First Nations hunting, and a commercial guide-outfitting business, which together require ongoing management oversight. (Photo: Donald Reid).

wildlife populations operate in relatively small portions of an ecozone, and ecological conditions can be quite variable within an ecozone, so there are good arguments for representation at an ecoregion scale.

Opportunities to identify and establish protected areas are varied in the northern boreal mountains. Federally Parks Canada seeks representative National Parks in each of the national ecozones. Portions of Kluane National Park fall within the Boreal Cordillera ecozone, but there is still a recognition that this ecozone is not sufficiently represented. The principal processes in British Columbia have been strong grass-roots advocacy for certain areas (e.g. Spatsizi Provincial Park), a scientifically driven Protected Areas Strategy that identified candidate areas²⁷, and often the realization of both these through the catalyst of a government mandated **strategic land use planning process** (e.g. Stikine Grand Canyon and Tuya Mountains protected areas in the Cassiar Iskut-Stikine Land and Resource Management Plan²⁸). Land use plans continue to provide opportunities in B.C., with current development of the Dease-Liard Sustainable Resource Management Plan providing an opportunity for establishment of a protected area centred on the Horseranch Range, and the ongoing Atlin-Taku land use planning process providing opportunities for new protected areas in the Taku drainage and the Jennings Lake and upper Teslin drainages²⁹.

In Yukon, land claims settlements have been the primary vehicle for new protected area establishment. The Umbrella Final Agreement provides the opportunity for such designation which is generally realized within individual First Nation agreements. For example the Kusawa Lake Territorial Park results from the Champagne-Aishihik, Kwanlin Dun and Carcross-Tagish Final Agreements. Many of these new protected areas have been relatively small, and classified as Habitat Protection Areas focused on site-specific habitat retention.

²⁷ Prince Rupert regional Protected Areas Team 1996. A protected areas strategy for British Columbia: The Prince Rupert Region PAS Report. Unpublished report. Ministry of Forests, Victoria.

²⁸ Cassiar Iskut-Stikine Land and Resource Management Plan. 2000. Available (Nov 2009) at: <http://www.ilmb.gov.bc.ca/slrp/lrmp/smithers/cassiar/plan/files/cassiarlrmp/toc.html>

²⁹ Personal Communications from Johnny Mikes, Canadian Parks and Wilderness Committee – BC chapter, and from Norm MacLean, LGL Ltd, adviser to the Kaska Dena Council.

³⁰ Government of Canada, Council for Yukon Indians and Government of the Yukon. 1993. Umbrella Final Agreement. Chapter 11- Land Use Planning. Council of Yukon First Nations, Whitehorse. Available (Nov 2009) at: http://www.cyfn.ca/uploads/qj/R_/qjR_0e8qO21gk95uB_lKGg/umbrellaFinal-Agreement.pdf

³¹ North Yukon Planning Commission. 2009. Final Recommended North Yukon Land Use Plan. Yukon Land Use Planning Council, Whitehorse. Available (Nov 2009) at: http://nypc.planyukon.ca/index.php?option=com_docman&task=cat_

³² Pojar, J. 2010. A New Climate for Conservation: Nature, carbon and climate change in British Columbia. Working Group on Biodiversity, Forests and Climate. Available (Jan 2010) at: http://cpawsbc.org/files/NewClimate_report_CPAWS.pdf

The Umbrella Final Agreement also mandates strategic land use planning for the entire territory, region by region³⁰. Planning processes in the Kluane and Teslin regions (both within this WCS Canada site) have failed to reach the stage of plan ratification. One plan – the North Yukon Regional Land Use Plan – has been ratified by all Parties and did establish some new protected areas above and beyond those established by the Vuntut Gwich'in First Nation Final Agreement³¹. All or significant parts of 6 land use planning regions (Dawson, Kluane, Northern Tutchone, Whitehorse, Dakh Ka, Teslin) overlap our northern boreal mountains site. Also the large Kaska region may receive such attention, but not until this First Nation finalizes a land claim. Meanwhile the Kaska are using the legal need for consultation and accommodation to encourage development interests and the territorial government to undertake a form of land use planning in their traditional territory, but not under the auspices of the Yukon Land Use Planning Commission established by the Umbrella Final Agreement.

Climate change forces us to tailor our conservation strategies to a scenario of persistent change in ecological conditions in the next few centuries. As climate changes, the species comprising ecosystems will change and ecosystem functions will change. Protected areas will have to be extremely large to accommodate changing climate regimes, probably larger than we can envisage at present. Consequently we need to establish and link protected areas as networks within which unprotected lands will also need to provide conservation functions by facilitating movements of organisms, especially plants, in response to changing climate conditions (i.e. range shifts)³².



Small lakes and wetlands are fairly common along valley floors in the northern boreal mountains. Integrity of wetland hydrology and viability of their component species depend on buffering with adjacent upland ecosystems. Connectivity among wetlands is crucial for unhindered movement of numerous species in their annual patterns of movement or in response to changing conditions. (Photo: Donald Reid).

In summary, the opportunities are very real for future establishment of protected areas in this site, but the tools we use will have to stress flexibility. The BEACONS project will provide strategic direction regarding ecological hotspots that deserve attention, and a review of the unfinished Yukon Protected Areas strategy and the BC Protected Areas Strategy will also provide direction regarding priority areas. In both jurisdictions progress requires careful deliberation about which political entity shows interest and will to pursue new protected areas, and which administrative process is open for engagement. Some First Nations are currently motivated, so working with them provides the best opportunity.

Ecosystem Services and Products

Federal, provincial and territorial protected areas are owned and managed by governments. First Nations with settled claims (i.e., Tr'ondek Hwech'in, Nacho Nyak Dun, Selkirk, Ta'an Kwach'an, Kwanlin Dun, Carcross Tagish, Champagne and Aishihik, and Teslin Tlingit) – all in Yukon – own parcels of fee simple land. Various citizens own parcels of land acquired through purchase from the territorial or provincial governments, often by way of agricultural land leases. However, the great majority of the land and water in the northern boreal mountains site is public land (often called Crown land) managed by federal, territorial and provincial governments in trust of all citizens. The future management of these public lands, outside of protected areas, is a key conservation concern, because they currently support high quality wildlife habitats and often robust wildlife populations. At the same time economic interests are increasingly urging development of natural resources on these lands with direct and indirect impacts on wildlife and their habitats.

Wild public lands and waterways provide numerous services and products at present, including: clean water and air; subsistence foods (mammal, bird and fish protein, edible plants); medicines; wood for heating, building and woodwork; soil for growing crops; minerals; oil and gas reserves; carbon sequestration. Exploitation of these common property resources is regulated and managed to varying extents by governments. Our interest is in the wildlife and wildlife habitat resources, commonly referred to as biodiversity. These provide a range of products and services – from bush foods to wildlife viewing opportunities – that are not always mutually compatible.

It is important to note that some resources are managed by giving exclusive, private access to the resource, with effective alienation of most other ecosystem services from that area of land. Examples are mineral deposits (mine developments), and productive soils (agricultural farmland). Once developed, this land is largely unable to support its original biodiversity for a long period of time and without significant restoration. **Strategic land use planning** is a good tool for discriminating where these kinds of resource development should be allowed in relationship to the distribution of wildlife habitats. Agricultural land development is currently encouraged and ongoing in the northern boreal mountains, partly because of the need for more local food production. However, land capable of agricultural production is quite limited to valley bottoms with warmer microclimates and more productive soils.



Grizzly bear (*Ursus arctos*) tracks cross a sandy seasonal stream channel. Rarely is a protected area large enough to encompass a viable population of this species, so we also have to consider conservation of grizzly bear key habitats at useful temporal and spatial scales within the matrix of lands surrounding protected areas. (Photo: Donald Reid).

By contrast, use of some resources (e.g., mature trees and berries in forest stands) is renewable within fairly short time periods. There are real opportunities for sustainable use of these forest resources concurrent with conservation of many of the wildlife and wildlife habitat attributes of the same land. This can only happen if: (i) the human-induced disturbances associated with forest harvest create habitat conditions that continue to satisfy many species that would have used similar habitat conditions following a natural disturbance; and (ii) the region includes a range of natural habitats that are sources of colonizers for the series of habitat conditions created by humans. This is renewable resource management within the **range of natural variability** of habitat conditions, spatially and temporally. In the forest management context, this is referred to as **biodiversity conservation in the matrix**, where every part of the exploited landscape can provide functional habitat for some species if managed well³³. It requires a good knowledge of the dynamics of natural disturbance regimes, their effects on the various types of forest or aquatic ecosystems, and the responses of species to disturbances. It requires forest planning to set aside **reserves** as exclusions from forest harvesting because they provide ecosystem services that cannot accommodate the disturbance (e.g., riparian areas to protect fish habitat in waterways), and because they are a source of colonizing species for the new forest stands as they age. These set-asides can be full-fledged protected areas or **ecological benchmarks**, or closer to stand level riparian and old growth reserves. As a whole this is the **coarse filter approach** to biodiversity conservation, wherein we conserve a representative array of all ecosystem types (often defined at the scale of plant associations) at appropriate scales in space and time.

³³ Lindenmayer, D.B. and J.F. Franklin. 2002. *Conserving Forest Biodiversity: a comprehensive multiscaled approach*. Island Press, Washington.

The coarse filter approach does not ensure the conservation of all species because there will always be some species whose habitat requirements are so unique or site specific (e.g., raptor nests; amphibian reproductive habitat in warm springs; mineral licks; ungulate winter ranges; traditional migration or movement corridors) that they require specific attention, often as **reserves** from timber harvesting or any other development. This is the **fine filter approach**, and considerable scientific information is required to understand and manage for these habitat requirements. Implementing coarse and fine filter approaches will often require explicit tactical- and operational-scale **best management practices or standards**.

Successful application of the coarse and fine filters within a range of natural variability is bedeviled by climate change. Changing climates are changing the patterns of wild fire and insect infestation, two dominant boreal disturbances. These processes and changes are still poorly predictable in time and space, but require **modeled projections** to better understand their potential implications. Certain ecosystems, notably growing and old growth forests as well as peat lands, can provide the service of **carbon capture and storage**. We need to identify the high value landscapes where nature currently performs these services, and where they can be achieved in the future.

Sustainable land uses and harvest

Successful conservation of wildlife and their habitats depends on humans controlling their direct and indirect effects within limits of sustainability. Wildlife and wildlife habitats on public lands are common property resources, and therefore at direct risk to the **tragedy of the commons**, whereby a lack of collective control on the many individuals accessing a resource results in unsustainable use of the resource. Unfettered self-interest ultimately destroys the resource.

The pioneer-age ethos of uncontrolled access to the land and its resources for self-interest is still real and alive in the mind of many northerners. It is expressed in the free entry management of mineral claim staking where all public lands are open to exploration, and the mere act of staking a claim then has precedence over any other land use. This policy precludes conservation on much of the land base, and severely compromises sustainable use of natural resources. At present there is a need for a **collective forum** for discussion and debate of this problem. A sustainable future may depend on **land use zoning** that precludes mineral staking on portions of the land base, perhaps on a rotating basis. The ethos of self-interest is also embodied in the continued free access to public lands by all citizens, using any motorized or un-motorized technology. Roads to access one set of resources then allow people to access other resources with direct or indirect impacts on wildlife (e.g., increased wildlife harvest, and wildlife disturbance by all-terrain vehicles). Roads and other linear travel routes can change wildlife movement patterns, being barriers for some, and enhanced ways of finding prey for others (notably most predators). **Access management** is a key conservation tool, and may require more understanding of how linear corridors affect wildlife.

The risk of falling prey to the tragedy of the commons is acknowledged and addressed through government imposed **quotas and season limits** on harvest of many common property resources in this site, notably fish and wildlife populations. However, setting quotas and limits on harvests requires solid data on population size (acquired through sufficient inventories), and on actual harvests. Both of these are imperfect, and require focused attention. In the case of freshwater fish such data are rarely available, and to achieve sustainable harvests we need to consider **alternative management regimes** to the free access regime currently in place.

Finding a balance between realization of self interest, and adherence to collective controls, is an ongoing dance within northern politics and the newly-formed co-management regimes following land claims. The search for a balance comes to a head in government-to-government strategic land use planning processes where many stakeholder interests urge consideration of their positions though they are not directly represented at the planning table. In Yukon, these processes have proven contentious and have often failed, largely because stakeholders have not had a **collective forum** for expression and discussion of their interests territory-wide. In B.C. the processes have had more success working from a round-table forum of all stakeholders, or a government more intent on finding accommodation in the absence of settled claims. A future for conservation will require considerable patience and **long-term engagement** within the site.



A bull moose (*Alces alces*) on the look-out for mates during autumn rut. This species is highly prized by most hunters, and can be over-harvested without adequate population surveys, quotas, and harvest reporting. (Photo: Fritz Mueller)

First Nations cultures frequently had a measure of collective sanction on individual behaviour, but in a management regime where access to the resource is managed individual by individual, the sense of collective responsibility is at risk. The primacy of First Nations' access to wildlife for harvesting in Yukon is embedded in the Umbrella Final Agreement, but there has rarely been the political will to curtail either non-First Nation or First Nation harvest, so a number of populations are over-harvested.

Needs and Opportunities

Introduction

In this section we provide a synopsis of the key science-related conservation needs and opportunities in the site. We have derived this list from our collective experience working in the site, and from a series of interviews with the majority of the government agencies, co-management agencies and non-government organizations with an interest in conservation. The section is organized mostly in terms of the natural resource sector with which we have to engage to promote conservation.

Fish and Wildlife Harvest

The development of regulations, policies and procedures related to hunting, fishing and trapping have been focal activities of Yukon Environment for many years. Much of their operational budget and staff time is devoted to work in these areas, and there is little interest in engaging WCS Canada. First Nations governments have a keen interest and responsibility for harvest management, and they have a growing interest to develop a harvest reporting database to track this issue³⁴. Potential activities include:

- Achieve a better understanding of the relative impact of hunting on current densities of moose and caribou populations (the two ungulate species most hunted), through an assessment of primary factors likely affecting density (hunting access by road and trail; extent and dispersion of high quality or critical habitats; predator densities; proximity to human settlements). This has moderate potential value, but would be hampered by incomplete data.
- Assist First Nations in developing a reporting system and database for First Nations harvest records. This has high potential value.
- Assist First Nations and Renewable Resource Councils in a program of predator control to enhance ungulate populations. This is not a priority for WCS Canada.
- Assist some First Nations in better delineating the bounds of certain ungulate populations. This is not a priority for WCS Canada except if those populations use a significant part of a protected area.

³⁴ Personal communication with Dawna Hope, Lands Policy Manager, Nacho Nyak Dun First Nation, Mayo. November 2009.



Sunset over Big Salmon Lake on the edge of the Pelly Mountains. Mountains and lakes are two focal elements of aesthetic interest to those seeking wilderness and proposing new protected areas (Photo: Donald Reid).

Protected Area Establishment

The BEACONs project of University of Alberta will produce a set of models and maps identifying ecological hotspots across the region, and therefore high quality candidate areas for protection. WCS Canada should use this strategic approach and tool set, perhaps with modifications for greater resolution within this site, to guide our search for protected areas. Protected areas can best be established if there is a strategic scale land use planning process combined with the political will of key governments to identify and pursue special areas for protection. Some First Nation governments (notably the Kaska Dena Council and the Ross River Dena Council) are presently keen to pursue protected areas. Land use planning exercises are nearly finalized in B.C., except for the eastern half of the Tlingit lands (Jennings / Teslin Lakes). Some potential activities include:

- Study the outputs of BEACONs modeling exercises that identify the ecological hotspots across the region, with the goal of understanding why they are so valuable, and how those values can best be realized through land use allocations and land use planning at an ecoregional scale.
- Revisit the draft Protected Areas strategy that was partially completed by the Yukon Ministry of Environment in the early 2000s to see how its recommendations for ecoregional representation overlap or vary with the recommendations of the BEACONs project. This is an important strategic exercise, and deserves comprehensive attention in advance of land use planning.
- Work with Ross River Dena Council on land use planning in their traditional territory. This has high potential, with strong stakeholder and government engagement.

- Work with various First Nations, Parks Canada and CPAWS-BC on the idea of a National Park in the Boreal Cordillera of northern BC. This has moderate to high potential. It is largely a question of whether some focused wildlife research or synthesis could act to catalyse a process.
- Engage with the Teslin-Tlingit FN, the BC government (Integrated Land Management Branch) and CPAWS-BC to better understand the scope and implications of the land use planning in the Jennings-Teslin area, which will follow the Atlin-Taku planning. This has unknown potential right now, but potentially high value.
- Work with selected Yukon First Nations to help them bring forward ecologically meaningful Habitat Protection Area proposals initiated with their knowledge and interest in the land. Many of these have previously been identified but not brought forward in land claims settlements. This has moderate potential but a long time horizon in a combative political environment.

Forest Management

About 40% of the Northern Boreal Mountains site is comprised of forested lands, and strategic-scale forest management plans determine how much of the forested lands would be considered available for harvest management (may vary from 5 to 80% of the forested lands depending on the forest planning region). In B.C. the majority of the potential forest harvest has been allocated to the Kaska First Nation (mostly in Liard Basin), but harvest is not economical at present. In Yukon harvest of timber for firewood and local manufacture is considerable, although large-scale commercial timber harvesting is not economical at present³⁵. In Yukon the primary projected timber harvests will come from the Watson Lake, Teslin and Haines Junction timber supply areas, all in the south of the Territory. The Forest Management Branch of Yukon Ministry of Energy, Mines and Resources is mandated to manage the existing forest harvesting industry and prepare and promote the possibility of a future large-scale commercial industry. The government has recently passed a new Forest Resources Act (2009), and its attendant Regulations and Standards are currently under development. The Forest Resources Act requires strategic-scale Forest Resources Management Plans (FRMPs) for all forest regions, and tactical-scale Timber Harvest Plans, and operational-scale Site Plans for actual harvesting. Although wildlife populations and habitats are not “forest resources” under the Act, there is opportunity for conserving wildlife habitats primarily in FRMPs by active consideration of habitat distribution and spatial relationship to the timber resource when designating the harvestable land base. There is also opportunity for habitat conservation in Timber Harvest Plans and Site Plans through implementation of useful best management practices for riparian, wetland and other habitats, and by development of wildlife habitat areas for fine filter elements. Potential activities include:

- Assist First Nations in their engagement in Forest Resources Management Planning (strategic scale) by helping them develop ecosystem mapping, wildlife habitat quality mapping, and connectivity mapping for consideration by planning processes. A Southern Lakes FRMP is starting

³⁵ PriceWaterhouseCoopers LLP. 2005. Economic Assessment of Forest Industry in south-east Yukon. Report prepared for Watson Lake Chamber of Commerce. Available (Nov 2009) at: http://www.alaskacanadarail.com/documents/WPA2/WPA2b%20PWCYukonForestIndustryFeasibilityFINAL2006_01_06.pdf

in 2009 and will run for 2 years. WCS Canada is intent to assist the Kwanlin Dun, Ta'an Kwach'an and Carcross-Tagish First Nations with this process.

- Assist First Nations in the process of developing access management plans within FRMPs. This has high potential if the First Nations show interest and a specific planning opportunity arises.
- Work with governments and other NGOs to prioritize wetlands for conservation value and potential action, especially in the light of adjacent land uses and climate change. Wetlands have already received considerable attention across the region, but demand more focused attention because of their diverse ecosystem services. This has high potential and high value.
- Work with all governments and agencies in the refinement of Standards and Best Management Practices for Riparian and Wetland Areas, Cutblock Size and Pattern, Landscape Connectivity, Silviculture. These will require new research (on response of wildlife to cutblock sizes, disturbance regimes in riparian areas, and enhancement of ungulate winter range) to inform practice. This has high potential but a fairly long time horizon for doing the new research.
- Work with all governments, and commercial interests behind Timber Harvest Plans, to locate elements in the timber harvesting land base and monitor management practices aimed at their conservation. This will require inputs of traditional knowledge. It has moderate potential at present, with importance increasing with likelihood of harvest.

Agriculture

Less than 2% of Yukon's 483,450 km² is suitable for agricultural development because of limitations of geography, climate and soils (Figure 3). The average frost-free period ranges from 93 days in the Watson Lake area to 21 days at Haines Junction. Soil-based agriculture is limited to major river valleys including those of the Yukon, Tahkini, Pelly, Stewart and Liard. For the most part, agricultural activity is located on river sediments³⁶.

From 2005 through 2007 the Yukon government received 20-40 agricultural land applications annually, and issued land titles totaling 250-550 hectares of Crown land annually for agricultural use. By 2007 the total amount of land disposed of by the Yukon government for agricultural use was 13,500 hectares in 274 dispositions. Land dispositions are predominantly around the Whitehorse area, with 74% of lands within 60 km of Whitehorse. Nineteen percent of agricultural land is used for dry land crops, 7% for irrigated crops, 7% for seeded pasture, and the remainder is natural pasture and other titled purposes³⁷.

The Yukon government grants grazing rights in undesignated areas of Crown land in the form of a grazing agreement. Applications for grazing agreements are submitted to the agricultural branch for initial screening for conflicts with wildlife, existing land and resource uses, other land applications and aboriginal

³⁶ Yukon Agriculture Branch. 2008. Yukon Agriculture: State of the industry 2005-2007. Agriculture Branch, Yukon Ministry of Energy, Mines and Resources. Whitehorse. Available (Nov 2009) at: http://www.emr.gov.yk.ca/agriculture/pdf/Final_SOL_Agriculture_2005-2007_-_Web_Version.pdf

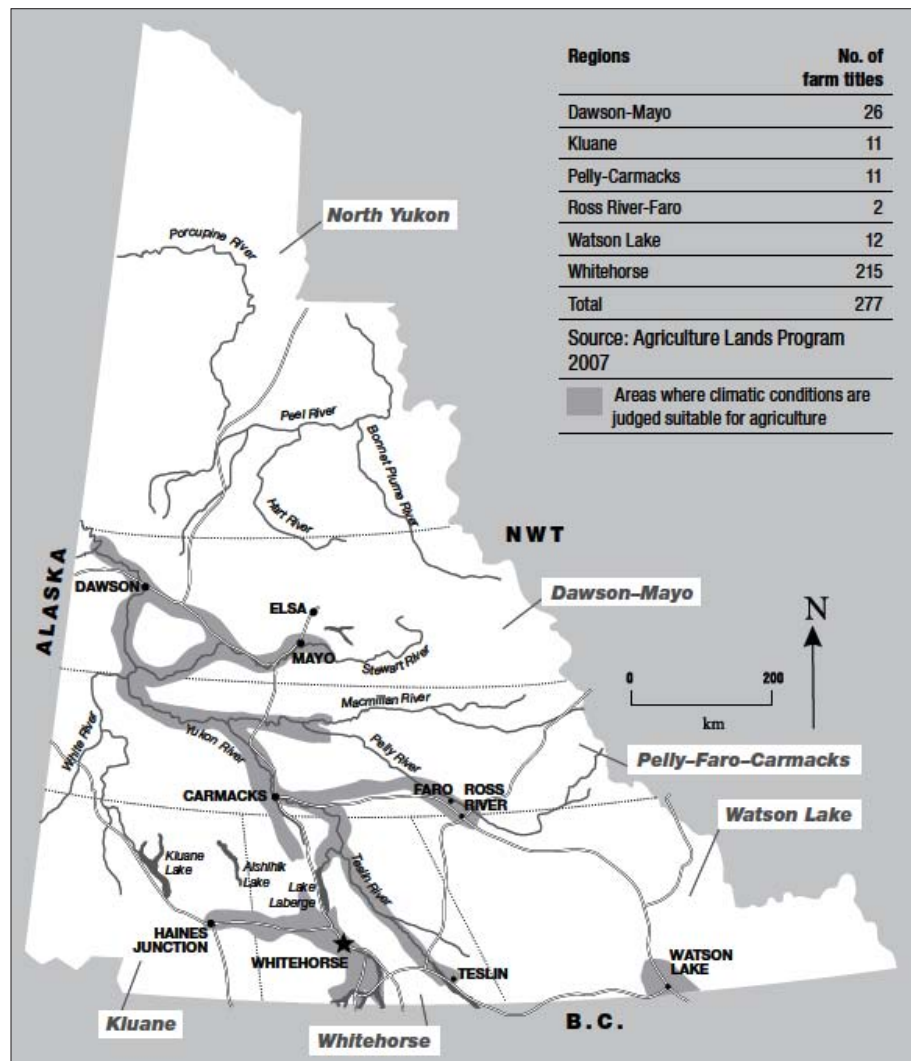
³⁷ Yukon Agriculture Branch. 2008. *op. cit.*

claims. If the land included in the grazing application is suitable for grazing, further review will be required by the Agriculture Branch, and will be subject to a Yukon Environmental and Socio-economic Act (YESAA) assessment by the appropriate Designated Office. If fencing is required as part of the grazing management plan, the Designated Office will assess the grazing proposal and make a recommendation to the Yukon government. The Agriculture Branch monitors grazing agreements to ensure compliance with grazing management plans. An average of 39 grazing agreements totaling 11,245 hectares of Crown lands are administered annually by the Yukon government. The Yukon has four elk farms and one bison ranch³⁸.

³⁸ Yukon Agriculture Branch. 2008. *op. cit.*

³⁹ Yukon Agriculture Branch. 2009. *Yukon Agriculture: State of the Industry 2005-2007*. Agriculture Branch. Yukon Ministry of Energy, Mines and Resources, Whitehorse. Available (Nov 2009) at: <http://www.emr.gov.yk.ca/agriculture/publications.html>

Figure 3. Areas in the Yukon where climatic and soil conditions are suitable for agriculture, and the number of farm titles in each area in 2007³⁹.



The Yukon Agriculture Policy framework has a target stating that there will be no significant loss of key wildlife habitat as result of new agricultural land development. It also advocates best management practices for maintaining wildlife habitat along farm edges, leaving wildlife corridors, maintaining riparian buffers, and preventing disease transmission between domestic animals and wildlife⁴⁰. A key issue is the ability of biologists to quantify carrying capacity, or indicator-species density estimates, of wildlife habitats that are of interest for agriculture so that population-level impacts of trade-offs in land disposition can be estimated and brought forward to environmental assessment reviews⁴¹.

In British Columbia there are limited private agricultural lands in the lower Dease valley, the Liard valley and its tributary the Toad, and in the upper Iskut drainage. These largely produce hay and domestic livestock. It is possible this agriculture could expand on the relatively productive valley-bottom soils, but distances to markets limit the likelihood at present.

Potential activities include:

- In conjunction with the Agriculture Branch and the agriculture industry, quantify the spatial extent of overlap and proximity of potential agricultural lands (agricultural capability mapping) with high quality valley-bottom and wetland wildlife habitats, based on habitat quality mapping for a few indicator species, probably moose, caribou, beaver, and some species of songbirds or water birds. This has high potential and direct utility in various land planning exercises.
- Field investigations of the presence/absence and prevalence in wild sheep of diseases and parasites that could be acquired from domestic sheep so as to inform risk assessment and management practices. This has high potential, and demonstrated need with current uncertainty in management.
- Risk assessment of the potential existing and novel disease and parasite transmission issues surrounding wild and domestic ungulates under current management policies, and potential range shifts with climate change. This has high potential, with considerable uncertainty evident at present.
- Work with governments and other NGOs to prioritize wetlands for conservation value and potential action. Wetlands have already received considerable attention across the region, but demand more focused attention because of their diverse ecosystem services. This has high potential and high value.
- Review existing best management practices for riparian management, employed both by forest managers and agricultural land managers, and undertake new field research, to assess the sufficiency of these practices for the conservation of riparian and associated flood-plain and valley-bottom dependent wildlife (notably, beaver, river otter, waterfowl, songbirds). This has high potential for application with a variety of land disposition exercises, including agriculture.

⁴⁰ Yukon Agriculture Branch. 2006. Vision for Yukon Agriculture: 2006 Yukon Agriculture Policy. Agriculture Branch, Yukon Ministry of Energy, Mines and Resources. Whitehorse. Available (Nov 2009) at: http://www.emr.gov.yk.ca/agriculture/pdf/ag_policy_2006.pdf

⁴¹ Personal communication with Tony Hill, Director, Agriculture Branch, Yukon Energy, Mines and Resources, Whitehorse. November 2009.

- Field research to quantify carrying capacity of species-specific ranges that are highly susceptible to potential agricultural developments (e.g., caribou winter range; elk winter range) so that population impacts of agricultural land dispositions can be estimated. This has high potential, but a fairly long time horizon in terms of data acquisition.
- Field research, in conjunction with First Nations and other ground-based knowledge, to map the primary wildlife movement corridors and routes in zones of high potential for near-term agriculture land development. This is moderate potential, depending on the interest of various partners and agencies in the detailed site-specific information.

Backcountry Recreation

Trails and bush roads are common-place in this region because the forests are fairly open, there is a lot of open country, distances to tundra are short, and there is a history of free and unfettered access to mineral exploration sites using bulldozers. The proliferation of all-terrain vehicles (winter and summer) has resulted in a huge network of backcountry routes, and major increases in backcountry harvesting of wildlife and disturbance leading to habitat alienation. This is repeatedly recognized by all conservation interests as one of the biggest wildlife management problems in the region. The problem is not limited to motorized access, because non-motorized users of the backcountry can have detrimental effects on some species during critical seasons (e.g., backcountry spring skiing and wolverine denning).



Snowmobile tracks cover a small lake in the southern Yukon. Such all-terrain vehicles give people quick access to large areas, and have increased the area and frequency in which people disturb wildlife and their habitats. (Photo: Donald Reid).

Potential activities include:

- Organize a pilot experimental study where a collaboration of First Nation and Territorial governments, with affected stakeholders, close a substantial region to motorized backcountry traffic for a period of a few years, and monitor the changes in wildlife distribution and habitat use in the experimental and a control area. This has high potential for instructive and powerful results.
- Produce a meta-analysis of the factors potentially limiting rate of population change for a suite of focal species populations, where the density and dispersion of backcountry trails through the population range are potential independent variables. Thinhorn sheep would be a useful focal species. This has moderate potential for achievement, depending on the ability to get accurate data. It could be highly instructive.

Mineral Development

Mineral exploration and development is experiencing intensive investment at present, with the relatively high international metal prices. Minto Mine (copper), between Carmacks and Pelly, is the only hard rock mine operating at this time. Wolverine Mine (zinc), near Ross River, is completing its milling infrastructure and plans to go to production in 2010. According to Yukon Environmental Assessment Section, the Mactung, Bellekeno, Selwyn, Canadian Creek, Carmacks Copper, and Dublin Gulch projects are the most significant in terms of size, potential impacts and likelihood of proceeding to operating mines. The areas with the most significant potential for major new road access and mine developments are: (i) The North Canol Road – Macmillan Pass – Hess Mountains area where three Faro-like mines are being proposed, including Mactung with an upgrade to the North Canol Road, and Selwyn and Andrews projects in the Hess Mountains area; and (ii) the Casino Trail road extension to access Casino Hill mine site west of Carmacks – a world-class orebody likely to be developed within three years.

The biggest concerns with new developments are: (i) the impact of new roads on wildlife populations through new access for hunters; (ii) the impact of new roads on wildlife by alienating general and specific habitats; (iii) water pollution from tailings waste. Projects are evaluated on an individual basis through the Yukon Environmental and Socio-economic Assessment Board offices, with input from Yukon government, First Nations government and NGOs such as Yukon Conservation Society. There is no particular value for WCS Canada to become involved in these operational-scale assessments because of the large amount of information and recommendations already being reported, and our lack of any novel or site-specific perspective. Our involvement would best be at a strategic scale, reviewing the emerging combination of road access and mine development proposals projected into the future, and assessing these in relation to the distribution of known critical wildlife habitats and potential conservation areas. In Yukon, the government's policy outlining access corridors would be a template for access considerations⁴². This could be done across the whole site, but also in sub-regions. For example, in Kaska First Nations territory, the Ross River Dena Council is negotiating a land use planning exercise in conjunction with mineral development companies (including those in the MacMillan Pass

⁴² Yukon Highways and Public Works. 2008. Northern Connections: A multi-modal transportation blueprint for the north. Yukon Ministry of Highways and Public Works, Whitehorse. (Available (Nov 09) at: <http://www.hpw.gov.yk.ca/pdf/northern-connections.pdf>)



A mineral exploration and drilling site in the Ruby Creek drainage near Atlin, British Columbia, includes numerous roads and trails to access drilling sites, a temporary camp, and a water lagoon. Roads and trails providing access to large landscapes are one of the most detrimental legacies of such operations, and require special management attention. (Photo: Donald Reid)

– Hess Mtns area) so as to ensure that new developments do not intersect or interfere with key wildlife habitats⁴³. WCS Canada can potentially improve the conservation future for wildlife in relation to mineral developments by doing new science and inventory work associated with these developments. Potential activities include:

- Investigate across the whole site, the spatial relationship between elements of mineral development (emerging access road, mineral claims, and likely mineral developments) with high value wildlife habitats and conservation areas, to provide strategic direction and a risk assessment to governments and the conservation community regarding the extent of overlap of conservation and mineral interests and therefore the best opportunities for conservation action. This has high potential and high value given the existing projected road network and existing information on promising mineral finds.
- Assist the Ross River Dena Council in its development of a land use plan to identify areas set-aside from development, and to improve the alignment and management regime associated with new road developments. This is high potential as it is an imminent planning process, with likely tangible outcomes.
- Establish a comprehensive field research study on the impacts of new mine roads on key wildlife populations or habitat uses, including as large a sample of new road developments as possible in a before-after, control-impact experimental design, with population size, movement patterns, degree of use of key habitats, and/or stress levels being dependent variables. This is moderate potential. It would be a huge undertak-

⁴³ Personal Communication with Norm Barichello, Adviser to Ross River Dena Council, Whitehorse. November 2009.

ing, requiring large funding, and may well have results that are difficult to interpret because of the relatively small sample size of new roads and the fact that they will intersect very different portions of the region. It might be more feasible if certain subsets of the bigger question of road impacts were researched, such as the question of minimum road buffer distance from mineral licks or key habitats.

- Work with individual First Nations to bring traditional knowledge and new inventory work to bear on questions of road alignment that best avoids key wildlife habitats. This has moderate potential; it should ideally be part of the environmental assessment process for such developments, but such processes do not always facilitate/require sufficient gathering of such data.

Hydrocarbon Developments

Within the Northern Boreal Mountains site there are proven and currently producing gas reserves in the Liard Basin, suspected but not producing oil and gas reserves in the Whitehorse Trough, and proven large scale bituminous coal deposits in the Whitehorse trough with potential for methane extraction⁴⁴. The Yukon government is a proponent of increased investment in this industry, and has developed best management practices for some aspects of oil and gas exploration activity⁴⁵. The current interest in expanding the industry is focused on the northern Yukon where sedimentary basins are more extensive, and it is not a major current issue in the Northern Boreal Mountains site. We do not recommend that WCS Canada invest substantial effort in this issue at present; our proposed investments in wildlife habitat mapping in the southern lakes region will largely overlap the Whitehorse trough hydrocarbon basin, and thereby provide information for any future land use disposition issues regarding hydrocarbons.

A related issue is the proposed Alaska Highway natural gas pipeline that will carry gas from Alaska to Alberta. Although this is a major industrial project, the general sense is that it is an inevitable development. It will be subject to substantive environmental assessment by way of established processes. There are substantial concerns regarding stream crossings and impacts on water quality and fish populations. At present we do not consider this a pressing issue for WCS Canada.

Institutional Capacity

This document outlines many potential avenues for WCS Canada engagement in conservation in this site. These are beyond the capacity of current staff to undertake. The addition of a landscape ecologist on WCS Canada staff in Whitehorse in 2010 will enhance our capacity significantly. In addition we will have to engage skilled partners in the pursuit of new science and new analyses. Primary among these will be the academic community, and graduate students. For example, WCS Canada currently administers the W. Garfield Weston Foundation Fellowship in Wildlife Conservation with an annual award to one or more graduate students undertaking relevant research in the Northern Boreal Mountains site. We will continue to build strong relationships with Yukon government biologists and scientists, in all Ministries, and with non-governmental

⁴⁴ Yukon Energy, Mines and Resources. 2009. Yukon Oil and Gas: a northern investment opportunity. Yukon Ministry of Energy, Mines and Resources, Whitehorse. Available (Nov 2009) at: http://www.emr.gov.yk.ca/oilandgas/pdf/northern_investment_opportunity2009.pdf

⁴⁵ Yukon Energy, Mines and Resources. 2007. Oil and Gas Best Management Practices. Oil and Gas Branch, Yukon Ministry of Energy, Mines and Resources, Whitehorse. Available (Nov 2009) at: http://www.emr.gov.yk.ca/oilandgas/best_management_practices.html

organizations. First Nations governments and communities have large amounts of knowledge about wildlife resources, and our applied conservation work on the ground will rely on their inputs and on their use of the results of our research and analyses.

Given that First Nations will be key partners in conservation, WCS Canada can play a strong role in fostering their capacity for conservation at the community, government and individual level. The WCS North America Program has a draft strategy for working with First Nations that focuses on: (i) individuals, -through mentorship, training, and funding for specific projects; (ii) communities – through support of programs that promote a land ethic and intimate experience with nature; (iii) governments or organizations, - through training, grant writing, and capture of traditional knowledge. During the current planning exercise, there are two topics that a number of First Nations governments have identified: (i) capture, storage and use of digital information on wildlife and habitats in up-to-date Geographic Information Systems (GIS); (ii) capture, storage and use of traditional and current ecological knowledge and data gathered by First Nations communities in pertinent databases and GIS.

Potential activities include:

- Work with individual First Nation GIS staff to upgrade their capacity through training and mentoring. This is high potential, with a lot of current interest and need; it will have to be tailored to individuals because current capacities differ greatly among communities.
- Work with individual First Nation staff to establish and/or upgrade existing databases on various topics (e.g., traditional and current knowledge of wildlife distribution, key habitats, and harvests; community-based monitoring projects) so that they are digital and GIS-linked. This is high potential with some high value projects currently envisaged.
- Increase our collaborations with academic researchers working in the site, to encourage research with an applied conservation outcome. This has high potential, and is ongoing.
- Increase our collaborations with researchers working for territorial, provincial and federal governments, where joint work can directly inform conservation practice (e.g., regarding standards for forest management). This has high potential with some relationships already in place.

Climate Change

Climate change is so powerful, fully established and pervasive an issue that we will have to consider it in all our projects. However, the ecological changes it is driving are not linear or predictable. There will be threshold effects and tipping points in some processes, including the potential flip of some boreal forests to grasslands⁴⁶. We lack sufficient knowledge of many of our ecologies to project, let alone predict, the rate of change to abiotic and biotic parameters, or to quantify the effects on individual species. We can make some educated guesses. However, to improve the accuracy of these guesses we need a more thorough assessment of trends in key abiotic parameters (temperature regimes; precipitation regimes; snowfall regimes; evaporation potential; hydrological flows) in different parts of the site, coupled with regional climate modeling. These analyses will be key tools for choosing among conservation strategies.

⁴⁶ Lenton, T.M., H. Held, E. Kriegler, J.W. Hall, W. Lucht, S. Ramsdorft, and H.J. Schellnhuber. 2008. Tipping elements in the Earth's climate system. *Proceedings of the National Academy of Sciences* 105(6):1986-1793.

Climate change threatens to undo many past and current conservation actions because the processes and habitat conditions that we recently and currently strive to conserve may already be untenable, and will likely be untenable, on the same sites within a decade or two. This means we need to thoroughly assess the sustainability of site-specific conservation goals in the light of projected changes.

A broad strategy for mitigating climate change is to promote the carbon sequestration ability of forests and wild lands. Deforestation increases the rate of greenhouse gas emissions (through premature combustion and decomposition), so reducing emissions from deforestation and forest degradation (a strategy called REDD), by keeping forest lands intact and unharvested, is a desirable mitigation strategy and also a strategy for boreal conservation⁴⁷. As well as carbon sequestration, undisturbed forests provide a variety of other ecosystem services that also need recognition, quantification, and analysis to see how vulnerable they are to the effects of novel or increasing loss of forest cover⁴⁸.

Broad strategies for helping ecosystems and species adapt to climate change include protecting refugia (areas most resilient to change); minimizing other threats to populations and habitats; maintaining connectivity (especially of enduring features) to facilitate movement and colonization of plants and other species; focused habitat management or assisted colonization to enhance population viability⁴⁹. There is substantial room to better integrate biodiversity conservation and climate change adaptation strategies, and work on policy initiatives to enhance the value of carbon sequestration in our wild lands⁵⁰. We will need to assess and incorporate all these ideas where possible in our actions.

The WCS North America Program has developed a draft climate change strategy which includes: (i) new research to quantify climate change impacts on key species or processes; (ii) development of adaptation strategies for focal species or ecosystems; (iii) new analyses and projections of hydrological regimes in key regions; (iv) development and implementation of connectivity planning; (v) investigation of carbon offset potential; (vi) reduction in carbon footprint of our work.

Potential activities include:

- Work with partners to produce a synoptic view of historical climate change in different portions of the site, so as to assess dispersion and strength of trends, and extent of divergence from more stable conditions. The ClimateBC portal at University of British Columbia will be a useful tool, as will the Canadian Climate Change Scenarios Network data centre. This is high potential based on existing data sets, and a high need.
- Work with partners, and with new research, to assess the change in patterns and modes of operation of key natural disturbances (wild fire, water flow regimes, beaver dispersion and site occupancy), and how those might relate to a changing climate. This has high potential based on known potential collaborators, and high need given the pervasive effects of natural disturbances.
- Bring forward the issue of connectivity in land planning exercises, with novel habitat mapping and spatial analyses. This has high potential within prescribed planning processes.

⁴⁷ Carlson, M., J. Wells and D. Roberts. 2009. The carbon the world forgot: Conserving the capacity of Canada's boreal forest region to mitigate and adapt to climate change. Boreal Songbird Initiative and Canadian Boreal Initiative, Seattle and Ottawa. 33pp.

⁴⁸ Turner, W.R., M. Oppenheimer and D.S. Wilcove. 2009. A force to fight global warming. *Nature* 462:278-279.

⁴⁹ The Nature Conservancy. 2009. Conservation action planning guidelines for developing strategies in the face of climate change. Central Science Division, The Nature Conservancy, Salt Lake City, and

Heller, N.E. and E.S. Zavaleta. 2009. Biodiversity management in the face of climate change: a review of 22 years of recommendations. *Biological Conservation* 142:14-32.

⁵⁰ Pojar, J. 2010. A New Climate for Conservation: Nature, carbon and climate change in British Columbia. Working Group on Biodiversity, Forests and Climate. Available (Jan 2010) at: http://cpawsbc.org/files/NewClimate_report_CPAWS.pdf



A northern mountain caribou (*Rangifer tarandus*) creates a way through the snow pack with hooves or nose to reach food. Increasing snow depths, and thaw-freeze events hardening the snow pack, may reduce the ability of caribou to reach winter foods on some winter ranges. (Photo: Fritz Mueller)

- Undertake an analysis of the economic benefits of forest retention as necessary direct or indirect habitat for subsistence fish (notably salmon spawning) and wildlife (notably caribou winter range) food sources in the site. This has moderate potential.
- Undertake a spatially-explicit assessment of the overlap of key mature forest habitats (e.g. caribou winter range) with the fire suppression zonation employed in Yukon and BC, to assess the economic costs of bringing these ranges into the immediate suppression zone. This has high potential as a relatively easy exercise, with collaboration from the Forest Management Branch.
- Explore with First Nations the option of selling the carbon sequestration ability of forests on their fee simple Settlement Lands within the emerging international market for carbon sequestration (carbon offsets), as an alternative to forest harvesting. This has high potential, given a continued and internationally mandated role for this market.
- Reduce our individual carbon footprint by reducing travel (minimize aircraft use in particular), finding technologies with lower carbon footprints (more fuel-efficient vehicles), and using alternative energy sources wherever possible. This has moderate potential in that our carbon footprint is already fairly small, and that living and working in Yukon is a relatively carbon-intensive exercise.

INSTITUTIONAL SETTING

Yukon

The number of government agencies, government-sponsored agencies, and non-government agencies having an interest in wildlife and land management in Yukon is huge for a human population of about 34,000⁵¹.

Federal Government

Although most responsibility for natural resources management has devolved to the Territory (analogous to any Province), the federal government still has a strong presence in fish and water management through Fisheries and Oceans Canada (e.g. international salmon harvest management and habitat conservation), in federally managed public lands through Parks Canada Agency (National Parks and Historic Sites) and Environment Canada (National Wildlife Areas), in trans-boundary wildlife through Canadian Wildlife Service (e.g., Migratory Bird Convention), in environmental assessment on federal lands or concerning federally-mandated projects through Environment Canada, and in the implementation of First Nations' land claims agreements through Indian and Northern Affairs Canada.

Yukon Government

The Yukon government manages land (wildlife habitat) and wildlife populations principally through two Departments, – Energy, Mines and Resources, and Environment.

Energy Mines and Resources Yukon is the more powerful Department, and it has five very pertinent branches: Agriculture, Forest Management, Land Services, Oil and Gas Resources, Minerals Resources. Each of these is in charge of administering land dispositions for commercial and private access to the resources under their control and thereby a strong potential effect on the distribution and quality of wildlife habitats, including water quality downstream.

Yukon Department of Environment

Environment Yukon (EY) has four public service branches: Fish and Wildlife, Parks, Conservation Officer Services and Environmental Services. The vision and mandate of EY, as stated in its 2009-10 departmental plan, are:

Vision: *A healthy and biologically diverse natural environment that contributes to the quality of life in the Yukon.*

⁵¹ Yukon Government. 2009. Yukon Fact Sheet. Yukon Bureau of Statistics, Whitehorse. Available (Nov 2009) at: http://www.eco.gov.yk.ca/stats/pdf/yukon_facts_2009.pdf

***Mandate:** The Department, with broad public support and participation, carries out environmental management for the preservation and maintenance of a biologically diverse natural environment and for the sustainable use and conservation of natural resources.*

The Fish and Wildlife Branch was restructured in 2008 to give more prominence to habitat conservation and species at risk protection. Previously these functions were part of a regional operations section, with the other sections being wildlife and fisheries management. Today the branch consists of the following sections:

- Species Programs including freshwater fisheries and laboratory services;
- Biodiversity Programs including species at risk and wildlife viewing;
- Habitat Programs including inventory, protection, mapping & modeling, and fish, wildlife, and habitat planning;
- Regional Programs including wildlife harvest management.

Of these program areas, the primary interest in engaging WCS Canada on conservation activities relates to the inventory and protection of fish and wildlife habitats of focal species and species at risk through the Habitat and Biodiversity Programs sections. These including:

1. Woodland caribou – Northern Mountain population listed as Special Concern under federal SARA, management plan in preparation;
2. Moose – primary hunted big game species, key wildlife areas are difficult to map and protect;
3. Grizzly bears – recommended by COSEWIC for listing as Special Concern under federal SARA, habitat difficult to map and protect;
4. Dall's sheep – primary trophy hunted species, habitat use is highly specific and traditional, high potential for disturbance, management plans in effect in some areas;
5. Wood bison – listed as Threatened under federal SARA, transplanted population, habitat use and range expansion are poorly understood, management plan in effect, Technical Team makes recommendations on



Bison (*Bison bison athabasca*) of the re-introduced herd in southern Yukon graze along a roadside verge. (Photo: Maria Leung).

management to Management Committee, community concerns about impacts on moose population;

6. Wolverine – recommended by COSEWIC for listing as Special Concern under federal SARA, not much known about wolverine habitats and distribution;
7. Short-eared owl – listed as Special Concern under federal SARA;
8. Western toad – listed as Special Concern under federal SARA; management plan in preparation;
9. Bering Cisco – recommended by COSEWIC for listing as Special Concern under federal SARA;
10. Squanga whitefish – listed as Special Concern under federal SARA;
11. Baikal sedge – listed as Threatened under federal SARA; recovery plan in preparation.

Originally established in 1986, the Habitat Programs section is primarily driven by planning needs for fish and wildlife, land-use and forest management, and environmental assessment needs for development projects and land-use applications. Current programs include habitat inventory, monitoring, protection and planning. Inventory and monitoring are focused on understanding the effects of natural and human-caused landscape change and impacts on habitats. With developments in remote sensing tools and statistical modeling techniques, the ability to develop maps and models now support landscape-level resource and land use planning demands. Implementation of Final Agreements and engagement of First Nations has led to collaborative management of fish, wildlife, and their habitats.

The mission of the Habitat Programs section is “to identify and describe, monitor, protect and plan the habitat of Yukon wildlife. The section also leads the development of species, special management area and regional fish and wildlife plans.” The goals of this section are:

1. To maintain, enhance, manage and/or recover sufficient habitat to sustain the natural biodiversity of the Yukon;
2. To work with planning partners to develop fish, wildlife and habitat management plans to meet legislative, regulatory, and policy requirements.

The current workplan of the section includes such activities as:

- Completing fish, wildlife and habitat planning and compliance with Chapter 10 and 16 provisions and timelines of First Nations Final Agreements.
- Conducting ecological and habitat inventory and monitoring, including land cover and vegetation community classification and maintaining the Wildlife Key Area database;
- Ensuring fish and wildlife habitat values and information are incorporated into land and resource planning and environmental assessment processes;
- Developing plans for the conservation and management of species and habitats, including areas designated for habitat protection;
- Developing and designing models and interpreted maps for use in land and resource planning and environmental assessment processes.

Program priorities in the future will include:

- Technical support in the development of the Ecological and Landscape Classification program (now housed in Environment Yukon's Policy & Planning branch);
- Habitat mapping and modeling at local and landscape scales to inform and support decision-making for land and resource planning, and environmental assessment – through the development of approaches & standards, as well as project-based products.
- Guidelines and policies to mitigate development impacts of fish and wildlife habitats.

Established in 2007, Biodiversity Programs section leads on species status assessments (General Status reporting), species at risk management and biodiversity inventory and appreciation. The section also leads on ecological monitoring, and assessing the effects of landscape change, including climate change, species and ecological communities.

The goals of this section include:

1. To track and report on the status of Yukon's biodiversity
2. To monitor, manage and recover species at risk
3. To increase understanding of how landscape change and climate change affect biological diversity and species distribution through Ecological Monitoring.
4. To enhance appreciation of biodiversity through providing public opportunities for wildlife viewing

Activities of the Biodiversity Programs include:

- compiling quality information on the location, conservation status, threats and trends of priority rare species and ecological communities
- conducting wood bison inventory and finalizing the wood bison management plan
- making information on rare and endangered species and ecological communities available to enable conservation and recovery planning of rare and endangered species
- Building capacity to inform species at risk recovery planning and decision making
- Participating in and providing technical expertise to national committees (e.g COSEWIC, National General Status, and CITES)
- Coordinating and delivering Ecological Monitoring programs
- Conducting studies to assess the effect of climate change and landscape change on biodiversity of small mammals

Priorities and Issues

The Habitat and Biodiversity Programs sections would benefit from collaboration with WCS Canada on the following activities (more detail in Appendix):

1. **Ecological land classification and mapping.**

Ultimately, an ecological and landscape classification system and map is needed for the entire Yukon. Opportunities to work with First Nations in the Southern Lakes area are developing, and would support the need for land planning in this area.

2. **Identification of critical habitats for protecting species listed under the federal Species at Risk Act.**

For the Yukon government this would include:

- **Northern Mountain Population of Woodland Caribou** – The Northern Mountain population is the caribou of the Boreal Cordillera ecoregion, and includes all woodland herds in the Yukon and northern B.C. A management plan has been drafted and Environment Canada is proceeding with consultations required under the federal Species at Risk Act and First Nation Final Agreements.
- **Wood Bison** – Wood Bison were reintroduced in the Yukon in the 1980s as part of Yukon's contribution to Canada's Wood Bison Recovery. Two objectives of the plan are "to develop habitat management strategies that will ensure the maintenance of the Wood bison range in its pristine condition, and to implement mitigative measures to reduce the impact of bison on other ecosystem components."
- **Western toad** – The Western toad was listed as a species of special concern in 2002 requiring the drafting and approval of a management plan.
- **Baikal sedge** – The Baikal sedge was listed as a threatened species in 2005 requiring a recovery and action plan including habitat protection measures. This is a geographically restricted species of three sand dune areas that serve as habitat for five populations.

3. **Standardized guidelines around habitat mapping and supply modeling.**

This is a critical and developing activity among organizations responsible for wildlife, habitat and land-use planning in the Yukon. However, some of the approaches and products that are currently in use for land use planning are based upon tenuous and developing methodologies.

4. **Protection of key habitats in established Habitat Protection Area.**

A number of Habitat Protection Areas (HPA) has been established in the Yukon. Each area has an approved management plan identifying the protection of key habitats. There is now a requirement to inventory and map these habitats, and to apply standardized protocols for their ongoing monitoring. HPAs that require this work, in order of priority, are:

- **Lutsaw Wetland Habitat Protected Area** – This HPA was established in 2006 according the Special Management Area provisions of the Selkirk First Nation Final Agreement. It is located along the east side of the North Klondike Highway 8 km south of Pelly Crossing and includes a string of lakes from Long Lake in the north to Duck Lake in the south.
- **Horseshoe Slough Habitat Protected Area** – Horseshoe Slough is an oxbow lake 70 km upstream of Mayo. The HPA was established according to the Special Management Area provisions the First Nation of Nacho Nyak Dun Final Agreement.
- **Ddhaw Ghro Habitat Protection Area** – Ddhaw Ghro HPA is an isolated mountain block of about 1,600 km² lying between the Pelly and Stewart Rivers in the central Yukon. The area is home to Fannin

sheep, the Ethel Lake woodland caribou herd, and habitats critical to moose, waterfowl breeding, and nesting for peregrine falcons, gyrfalcons and golden eagles.

5. Collaboration on delivering habitat commitments in cooperative fish and wildlife management plans with First Nations.

First Nations and the Yukon government have jointly developed a number of regional, community-based fish and wildlife management plans in First Nation traditional territories of the Yukon. These plans coordinate management priorities (e.g., identification and management of important habitats) and propose solutions to address these priorities. The Habitat Programs section could collaborate with the WCS Canada on delivering selected habitat actions in these plans.

The *Environmental Affairs (EA) Branch* of Environment Yukon administers the department's participation in the reviews of development projects, water-use and land-use applications. The EA Section's goal, for both Yukon Environmental and Socio-economic Assessment Act (YESAA) and non-YESAA reviews, is to provide the Designated Office Assessor, (delegated) Decision Body and/or Resource Manager with available data and expert opinion regarding the department's mandates, programs and information as it relates to proposed development projects and land use applications. Specifically, the EA Section is responsible for identifying potential effects to freshwater fish, wildlife, habitats, water resources, wildlife viewing, parks, outdoor recreation, hunting, trapping, outfitting, and climate change.

About 90% of the work of the EA Section involves reviews of development projects and land use applications as a "Technical Expert" pursuant to YESAA. The information and recommendations submitted to YESAB are, for the most part, valued and reflected in their recommendation to the Decision Body. However, the Decision Body for most YESAB recommendations is the Yukon government with the Departments of Energy, Mines & Resources, Community Services, and Highways and Public Works making the final decisions on whether to accept, vary or set aside a recommendation. Final decisions typically approve the YESAB recommendations with some degree of varying (deleting and rewording) of the original input from Yukon Environment. It is therefore important for EA Section to engage development agencies in an ongoing dialogue to change attitudes and educate staff about ecologically sound environmental management practices, and Yukon government obligations pursuant to environmental legislation. Critical and ongoing concerns are typically dealt with through an interdepartmental Integrated Resource Management process.

The *Parks Branch* of Environment Yukon, in conjunction with local First Nations, administers and manages lands set aside for protection of natural values. Primary among these are Territorial Parks, of which there are 5 existing or planned within the WCS site (Tombstone, Asi Kayeh, Kusawa Lake, Agay Mene and Coal River Springs). The Branch is responsible for Yukon's contribution to the management of 4 Canadian Heritage Rivers (Bonnet Plume, Thirty Mile (Yukon), Alesk, and Tatsenshini). It works with First Nations governments in the management of Habitat Protection Areas which are frequently on settlement lands.

Yukon First Nations Governments

The Yukon is home to 14 First Nations, representing approximately 9,500 people. Their traditional territories are depicted in Figure 4, but note that the territory of the White River First Nation, and the two First Nations comprising the Kaska in Yukon (i.e. Ross River, and Liard) are not differentiated on this map. The Northern Boreal Mountains site includes all, or portions of, every traditional territory except that of the Inuvialuit, the Tetlit Gwich'in and the Vuntut Gwitchin.

In 1973, the Yukon First Nations formed an umbrella organization, known as the Council for Yukon Indians (CYI) to pursue a comprehensive land claim with the federal government. In 1995, CYI changed its name to the Council of Yukon First Nations (CYFN) and now functions as a political association that represents 10 Yukon and 4 Northwest Territories First Nations on matters of regional interests. In 1989, the federal and Yukon governments and CYI reached an agreement in principle that became the basis for the Umbrella Final Agreement (UFA). Shortly after the conclusion of the agreement in principle, the parties also agreed that, instead of a single, territory-wide agreement, individual final agreements – embodying word-for-word provisions of the UFA – would be concluded with each Yukon First Nation (YFN). Each Yukon First Nation Final Agreement would also include provisions that were specific to it. The UFA also provided for the negotiation of self-government agreements (SGA) with each YFN as separate documents.

Today, 11 final and self-government agreements have been signed and brought into effect. Enabling legislation in the form of the Yukon First Nations Land Claims Settlement Act and the Yukon First Nations Self-Government Act received Royal assent on July 7, 1994. The Yukon Surface Rights Board Act, an essential companion piece of legislation, received royal assent on December 15, 1994. All 3 acts came into effect of February 14, 1995. The 11 self-governing YFNs comprise approximately 7,000 beneficiaries. Under their final agreement, 31,603 km² became Settlement Land, 20,949.4 km² of which include First Nation ownership of mines and minerals (sub-surface resources) (Figure 5). The self-governing Yukon First Nations also receive financial compensation payments of \$195,254,166 paid over 15 years, commencing with their respective effective dates. In addition to compensation dollars, Canada also provides funding to CYFN and to various Boards and Committees for implementation of the land claim.

Three Yukon First Nations – the White River First Nation, the Liard First Nation and the Ross River Dena Council – have not concluded agreements. The Liard FN and Ross River FN collectively claim Kaska lands in Yukon (Figure 4). On March 31, 2002 a Memorandum of Understanding signaling the conclusion of all substantive negotiations of land claims and self-government agreements was signed by the White River First Nation, but not by the Ross River and Liard First Nations where negotiations are currently inactive. On February 11, 2005 discussions with White River were discontinued due to increasing concerns as to First Nation's commitment to finalize its agreements.

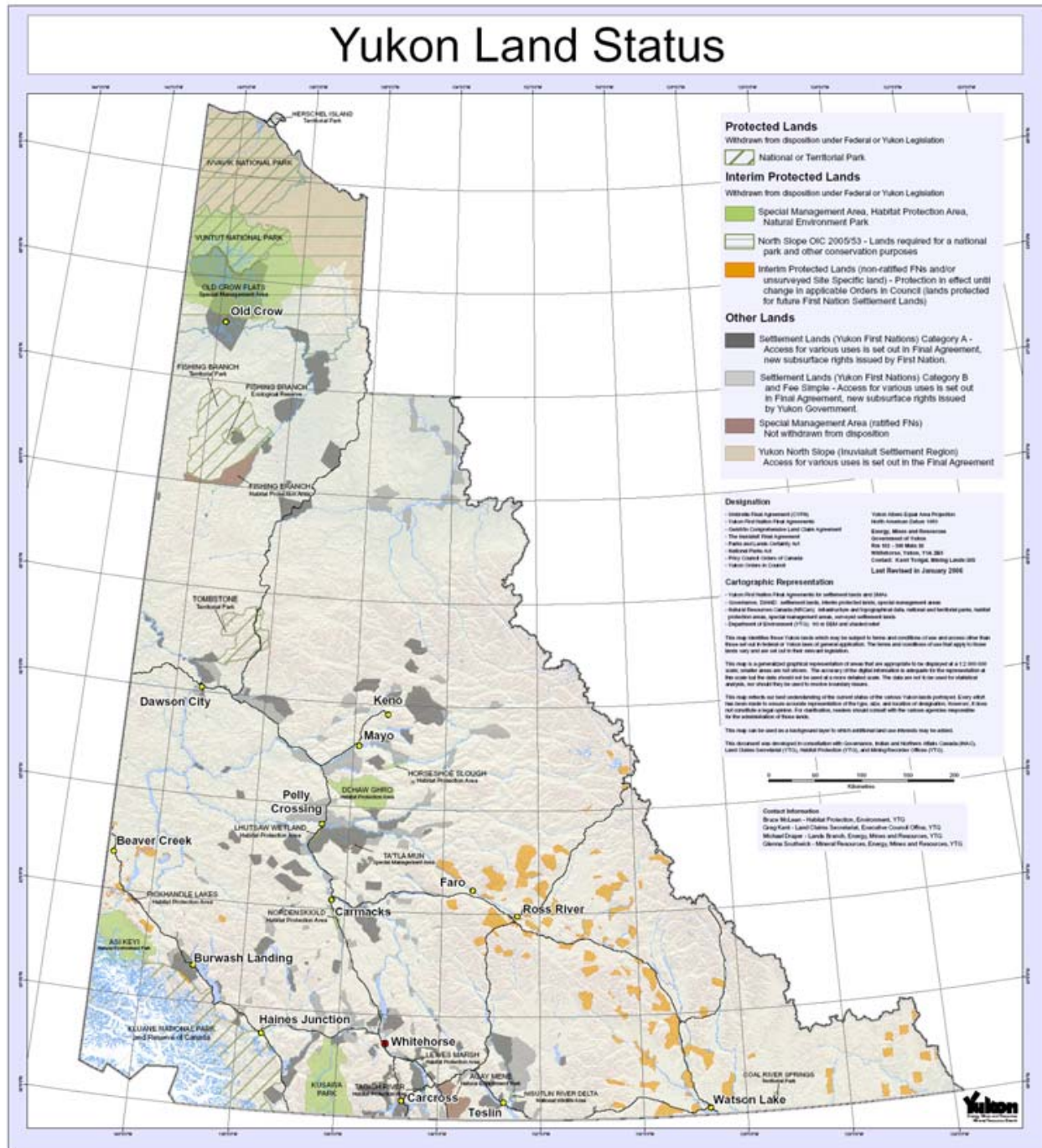
Figure 4. Traditional territories of Yukon First Nations. Map available from Environment Yukon (<http://www.environmentyukon.gov.yk.ca/geomatics/maps.html>).



Department of Environment Map ID: GIS2003-047-02

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Figure 5. Status of Yukon lands. Map produced by Energy, Mines and Resources Yukon and available at: http://www.emr.gov.yk.ca/mining/pdf/yukon_land_status_map_jan2009.pdf



Here we provide a synopsis of the history, traditional territory and governance structure having to do with each First Nation's interests in fish, wildlife and land management, including some priority issues each one has identified. Additional information is presented in the Appendix.

Ta'an Kwäch'än Council

The Ta'an Kwäch'än take their name from Taa'an Män (Lake Laberge) in the heart of their traditional territory. Their ancestral lands extended north to Hootalinqua at the confluence of the Yukon and Teslin Rivers, south to Marsh Lake, west to White Bank Village at the confluence of the Takhini and Little Rivers, and east to Winter Crossing on the Teslin River.

Under its final agreement, the TKC traditional territory covers approximately 12,079 km², of which 796 km² are designated as settlement lands. Settlement Lands include:

- 5 rural blocks for a total of 405 km² Category "A" Lands (surface and sub-surface);
- 17 rural blocks for a total of 365 km² Category "B" Lands (surface rights only);
- 105 rural site-specific selections for a total of 7 km²;
- 47 community site-specific selections for a total of 19 km²;
- 1.3 km² Lake Laberge Indian Reserve No. 1 with specific provisions outlined in section 29, Retained Reserves, of the TKC self-government agreement.

The Heritage, Lands and Renewable Resources Branches form one Department and have one common goal: the protection of the land, resources and history for the benefit of Ta'an Kwäch'än citizens.

Lands Programs and Services: The Lands Branch provides a wide range of administrative and spatial decision support services to the TKC and citizens. The Branch is responsible for land, water and resource planning, and land tenure allocations. Services include:

- Spatial analysis and modeling;
- Sustainable development – working with the government branches of the TKC and with Ta'an Kwäch'än citizens to understand land and resource values and opportunities;
- Land policies, settlement land use and sustainable resource management plans;
- Protected area strategies and land use planning;
- Water management planning;
- Managing and providing information pertaining to the natural resource sector;
- Reviewing and monitoring land use applications in the traditional territory of the TKC and on its settlement lands

Renewable Resources Programs and Services: The Renewable Resources Branch is responsible for implementing the provisions of Chapter 16 (Fish and Wildlife) and Chapter 17 (Forest Resources) of the TKC final agreement.

Renewable Resources Branch activities include:

- Wildlife resource inventory, wildlife research, population and habitat management, and a fish and wildlife management plan.

- Participation on the Southern Lakes Wildlife Conservation Committee. The Committee has three years to complete an assessment of wildlife in the Southern Lakes Region and make recommendations to the Yukon and first nation governments.
- Fish resource inventory, fish research, population and habitat management, and salmon restoration and enhancement projects.
- Community stewards to assist in the delivery of departmental programs, build capacity for Ta'an Kwäch'än citizens, and provide employment opportunities.
- Fox Creek Chinook Salmon stock restoration.
- Range Road dump clean-up and stabilization.
- A Yukon River working group that keeps renewable resources managers abreast of particulars from the previous salmon runs and forecasts the size of the run for the next season. The group participated in weekly Yukon River-wide teleconferences to exchange information about the salmon run size, catch effort and border escapement, and to discuss management plans and catch efforts for each first nation community.
- Yukon River salmon basic needs allocation negotiations among YFNs; obligation under Chapter 16 of the TKC final agreement.
- Harvest management including harvest surveys, game guardian program, hunter and trapper education, Category 1 trapline management, outfitter relations and basic needs negotiations.
- Developing the terms of reference for a forest management plan.
- Climate change research focused on gathering and providing relevant information, education, and assessing potential impacts on future resource and environmental management decisions.

Heritage Programs and Services: Among other activities, the Heritage Branch participates in the YESAA process and contributes to impact assessments in the TKC traditional territory to ensure that Ta'an Kwäch'än heritage resources and interests are protected for future generations.

TKC traditional territory is the most intensively developed and populated region of the Yukon. Land uses include residential development, agriculture, roads and trails, recreation, timber harvesting, mineral exploration and pipeline development. Country residential and agricultural developments are expanding, as are roads and trails systems. Although there are community plans for the City of Whitehorse and some local areas, such as Takhini and Golden Horn, there is currently no regional land use plan to provide strategic and broad-scale land and resource management direction within the traditional territory. In the absence of land use planning, which will likely not occur for some time, many land use decisions are currently made in an improvised manner.

As a consequence, the most urgent priority for TKC is capacity and information development for land conservation. The Lands Branch is undertaking a major new initiative on cultural and ecosystem assessment in support of land use decision-making by the TKC. The goal of this initiative is to identify important conservation areas and to develop an information database to support TKC on time range of land use decisions including local area planning, forest management planning, environmental assessments, and settlement land management.

Teslin Tlingit Council

The Teslin Tlingit Council (TTC) signed its Final and Self-Government Agreements in 1993 and the agreements came into effect in 1995. The TTC mission statement is:

“The Teslin Tlingit Council is mandated to cooperatively continue to preserve and develop the social, economic, political and cultural well-being of the TTC First Nation, to maintain our pride and independence based on trust and respect, and to conserve the wildlife habitat and the traditional territory for the well-being of our future generations.”

The TTC traditional territory in the Yukon covers about 10,000 km². The lands retained by the TTC include 230.24 km² of Category A Land (surface and subsurface title) 1,165 km² of Category B Land (surface title only) and 33.36 km² of land set aside as reserve.

Fish, wildlife and land management is the responsibility of the *Lands and Resources Department*, which is one of five departments within the TTC clan system of government. The mission of the Lands and Resources Department is to maximize Tlingit control and jurisdiction over the lands and resources within the Teslin Tlingit traditional territory for future generations. The department consists of a director and five technical/support staff. The director reports to a Management Board, which in turn reports to an Executive Council, which reports to the General and Elders Councils under the oversight of five distinct Clans.

In 1998 the TTC developed a Fish and Wildlife Act for the purposes of:

- Ensuring conservation in the management of all wildlife and their habitat;
- Preserving and enhancing the renewable resource economy of citizens;
- Preserving and enhance the culture, identity and values of citizens;
- Integrating all aspects of renewable resource use and management;
- Developing responsibility for renewable resource management by citizens;
- Honoring wildlife harvesting customs of citizens;
- Providing for the ongoing wildlife needs of citizens; and,
- Ensuring the maintenance of essential ecological processes and the preservation of biological diversity.

Implementation and enforcement of this Act are limited due to the lack of judicial powers and procedures. Although the Yukon government could enforce this Act with permission from the TTC, this is not being pursued, as TTC citizens do not desire enforcement by outside agencies.

The Nisutlin River Delta National Wildlife Area⁵² was established in 1995 according to Schedule A, Chapter 10 of the TTC final agreement to conserve nationally important wildlife habitats and traditional uses of the area. The area is 5488 ha in size, is located 10 km northeast of Teslin, and includes the Nisutlin River delta and Nisutlin and Colwell Bays on Teslin Lake (Figure 6). This is an internationally important fall staging area for migratory waterfowl. As water levels drop, thousands of ducks, geese, swans and shorebirds stop here to feed on exposed mud flats before they continue on their long journey south. TTC Lands and Resources Department has developed a joint management plan for the area with Environment Canada and the Teslin Renewable Resources

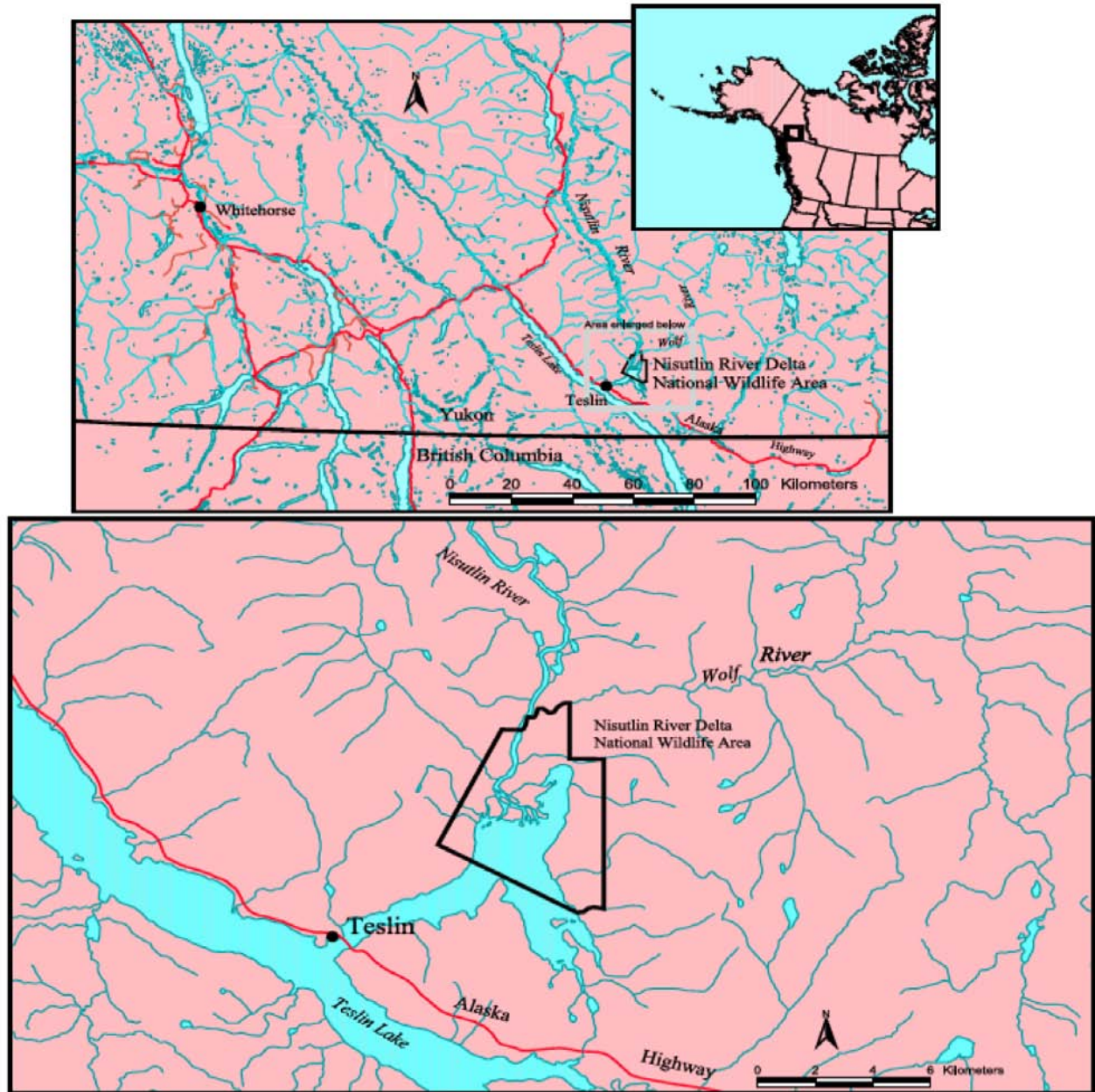
⁵² The management plan for the Nisutlin River Delta National Wildlife Area is available from the Yukon Office of Canadian Wildlife Service and the Teslin Tlingit Council.

⁵³ The community-Based Fish and Wildlife Management Plan for the Teslin Tlingit Council Traditional Territory is available from the Yukon Fish and Wildlife Branch and the Teslin Tlingit Council.

Council, which was approved by the federal Minister of Environment in the summer of 1997 and updated in 2005.

TTC Lands and Resources Department has developed a wildlife management plan jointly with the Yukon Fish and Wildlife Branch and the Teslin Renewable Resources Council for the period 2007-2012⁵³. The plan primarily addresses community concerns and is intended to provide guidance for the management of fish and wildlife populations and their habitats in Teslin Tlingit Traditional Territory.

Figure 6. Map of Nisutlin River Delta National Wildlife Area, from Nisutlin River Delta National Wildlife Area Management Plan, September 2004.



Key issues and actions addressed by the plan include:

- Increase the harvest of grizzly bears and wolves to reduce predation on moose.
- Get more information on caribou herds and caribou harvest.
- Look into ways of monitoring/managing trout populations on Teslin Lake and grayling populations at Johnson's Crossing. (People primarily fish for grayling and lake trout and are concerned about overfishing.)
- Improve communications to help people understand fisheries regulations and the status of fish populations especially in Quiet and Teslin Lakes.
- Improve documentation of key wildlife habitat areas.
- Increase quality/quantity of information on the status of moose populations.



Moose (*Alces alces*) are strongly associated with wetlands and riparian forests, especially in summer when they frequently feed on aquatic vegetation. (Photo: Fritz Mueller).

- Develop an effective harvest data program to collect, compile and store first nation harvest information.
- Increase public education and collect more data on effects of non-resident and cow harvesting of moose.
- Subdivide Game Management Subzones (GMS) to reflect management needs for moose.
- Look at possibilities of reintroduction of sheep to historic use areas.
- Research and educate the public on the effect of predation on sheep populations.

The Teslin Strategic Forest Management Plan⁵⁴ (TSFMP) was approved by TTC and the Yukon government in February 2007. The purpose of the TSFMP is to provide a sustainable development strategy for the forests of the Teslin Tlingit Traditional Territory, and is a response to an on-going need for forest management in the region. In developing the plan, the values and views of the region's residents, the TTC, the Teslin Renewable Resources Council (TRRC), and the Yukon government, as well as those of stakeholders and Yukon non-governmental organizations, have been considered. The plan has the goals of:

- Conserving biological diversity;
- Maintaining forest ecosystem health and productivity;
- Conserving and maintaining soil and water resources;
- Maintaining and enhancing multiple socio-economic benefits; and
- Maintaining and enhancing community sustainability.

Yukon government, in partnership with the TTC, has established a joint management committee to implement the plan. Implementation will involve determining and allocating the "allowable annual cut" and will identify timber harvest projects and site plans for submission to the YESAA process. Development will initially focus on the Pine Lake, Teslin, Sidney Lake, East Teslin River and North Nisutlin River landscape units. Initial planning has commenced on the East Teslin River Landscape Unit where an annual allowable cut of 25,000 m³ has been agreed to until further studies have been completed. TTC feel forest resource management is proceeding well and any concerns can be dealt with in the context of the TSFMP.

The current wildlife priorities of the Lands and Resources Department are moose and salmon conservation and management. Salmon is dealt with through federal and inter-national government institutions. The moose conservation issues are focused geographically on the Nisutlin River area, and include issues of access and off-road-vehicle (ORV) monitoring and control, land use reviews for environmental assessment purposes, and public information and education. Moose management programming consists of population monitoring and inventory, first nation harvest reporting and regulation, on-the-land monitoring of people/wildlife activities, and a study of moose distribution and movements using radio tracking in the Nisutlin River area. Details of each of these are provided in the Appendix.

Champagne and Aishihik First Nations

The Champagne and Aishihik First Nations (CAFN) signed its final and self-government agreements in 1993 and the agreements came into effect in 1995. Its mission statement is:

We, the Champagne and Aishihik First Nations people and government, shall promote a healthy, unified and self-reliant people, while conserving and enhancing our environment and culture.

CAFN is one of the largest first nations in the Yukon with a membership of 1,188. Its traditional territory covers 41,000 km², of which 29,000 are located in the Yukon and 12,000 in British Columbia. The easterly portion of CAFN's traditional territory lies in the Yukon River watershed while the larger, westerly

⁵⁴ "Strategic Forest Planning." *Government of Yukon*. Web. October 31, 2009. http://www.emr.gov.yk.ca/forestry/planning_strategic.html

portion lies in the Alsek River watershed where the Alsek River flows into the Gulf of Alaska. Much of Kluane National Park (Yukon) and all of Tatshenshini-Alsek Park (BC) lie within CAFN's traditional territory.

CAFN's Land Claim Agreement provides for the ownership of some 2,427 km² of land. It also continues to provide guaranteed access to fish and wildlife resources. Most importantly, the agreement establishes the CAFN government as co-managers of all natural and cultural resources in its traditional territory.

CAFN is a full partner on the Kluane National Park Management Board, the Alsek Renewable Resources Council (ARRC) and has representation on numerous other regional and territorial boards that make recommendations on heritage, educational, environmental and economic issues.

On January 25, 2008 CAFN approved a Strategic Plan for the term of the current Chief and Council, which establishes clear direction and responsibilities for CAFN government departments. The Strategic Plan is updated annually. Goal 7 of the plan, "*Protect, Respect and Sustain the Environment*" includes the following strategies and initiatives:

Strategies:

- Maintain environment in keeping with CAFN values and principles
- Influence and control activities taking place on our land
- Prepare for and adapt to environmental change
- Ensure access to traditional harvesting opportunities
- Foster cooperation with other first nations

Initiatives:

- Actively participate in managing Transplanted Species (bison, elk) to reduce their populations and impacts.
- Educate citizens on harvesting rights on settlement land and elsewhere, hunting licence requirements, and ethical hunting.
- Manage fish and wildlife populations based on core CAFN values.
- Prepare for a regional Land Use Plan. Initiate rural block and local land use planning, and trail management to guide CAFN and external decision-making processes.
- Develop a harvest support program that promotes use of first nation traplines; and advocate on behalf of trappers to ensure fair compensation for resource development.
- Promote awareness and strategize for climate change impacts.
- Research and develop an overall (strategic) mandate to conserve and protect water on CAFN lands for future use.
- Ensure planning and management of Kusawa Park reflects CAFN's strong culture and heritage in the area, retains CAFN rights and interests, and works toward establishing a first nations park.

The *Heritage, Lands and Resources Department* administers lands, renewable resources and parks management within the traditional territory in partnership with Yukon and federal agencies. The Department's Mission is to "Develop and maintain a vibrant traditional culture, and protect, respect and sustain the environment". The department programs include (underlined items have been completed):

- Delivering a Settlement Lands Policy, a Best Practices code for the mineral industry, and preparing a Minerals Policy for Category B Settlement Land.
- Providing input into environmental assessments for many projects that are occurring in its traditional territory. The department noted an increase in agricultural applications in the past year.
- Working with other first nations on the YESAA 5-Year Review.
- Providing input on forest management planning, including the Timber Harvest Project Plan for Pine Lake and Canyon. This plan describes areas to be harvested, volume to be harvested and methods to be used by harvesters.
- Implementing the National Forest Pest Strategy Pilot Project with Natural Resources Canada.
- Conducting summer fieldwork, hosting workshops and developing a cabin FireSmart pilot project.
- Working with Yukon Government on the Shāwshe (Dalton Post) Management Plan to address the management of this traditional settlement to ensure protection of the site's historic character and heritage buildings. This is an outstanding Final Agreement obligation now 11 years overdue. The department is conducting interviews with citizens on the resource management and land use issues at Shāwshe and surrounding area, and will be finalizing and implement planning options and recommendations.
- A draft wildlife management plan was completed in 2007 for the Champagne and Aishihik First Nations' Traditional Territory. Though the plan is not yet finalized, the department is implementing some identified action items. This plan was created from community concerns and issues.
- Finalizing the draft Dezadeash Lake Management Plan with the Alsek RRC, which was drafted several years ago but was never finalized because of unresolved issues. Fish concentrations at the mouths of cold-water creeks make them very easy to harvest and there is concern that the lake is being over fished.
- Delivering the Healing Broken Connections project for Kluane National Park. Funding is winding down, and the department is looking at ways to ensure the positive relationships and good work continues into the future. With partners at Parks Canada and Kluane First Nation, CAFN is helping members reconnect with lands in Kluane National Park and finding ways of using traditional knowledge to manage the Park. CAFN hosted a Gopher Camp at Dalton Pass in Kluane National Park and KFN hosted KaKon Camp.
- Managing Tatshenshini Alsek Park in partnership with BC Parks. A Parks Board sets priorities and workplans, and CAFN provides two seasonal park Rangers and provides all operations, maintenance and management activities in the park.

- Participating on a steering group with the KDFN and CTFN and the Yukon Government to developing a management plan for Kusawa Park.
- Working on overlap agreements with the KDFN and CTFN.
- Working with the Yukon government to eradicate winter ticks from the Yukon.
- Participating on the Wood Bison Steering Committee and Technical Team along with the Yukon and federal governments, and the KDFN and Little Salmon/Carmacks First Nation (LSCFN). The bison technical team developed recommendations for changing the hunting regulations and an open hunt for all Yukon residents is now in effect. This was done because the Wood Bison population has now exceeded 1000 and is well above the target of 500 animals. The department administers a registration hunt for CAFN citizens, hosted two community hunts and distributed the meat.

The Department has participated in a number of planning initiatives for the management of fish, wildlife and forest resources within their traditional territory, and participates in implementing these plans. Plans include (more information in the Appendix):

Alsek Moose⁵⁵: This plan was drafted and delivered in the late 1990s to deal with moose management issues in the CAFN traditional territory in the Haines Junction area and south, and primarily along the Haines Highway.

Aishihik Caribou⁵⁶: This plan was drafted in 1992 in order to proceed with a wolf control program in the Aishihik area to recover caribou and moose populations.

Integrated Wildlife Management Plan⁵⁷: This plan was drafted after the completion of the Aishihik wolf control program to restore managed hunting to the Aishihik area, and was in effect for the period 1999 to 2004.

Dezadeash Lake: A draft Dezadeash Lake Management Plan was completed in 2002 to address local concerns about fish populations in the lake.

Community-Based Fish and Wildlife Management Plan for the Champagne/Aishihik First Nations Traditional Territory⁵⁸: This plan is not yet approved by the parties but is used operationally to coordinate fish and wildlife management by the Yukon government and Champagne and Aishihik First Nations, and the Alsek Renewable Resources Council.

Wood Bison Management⁵⁹: The Yukon government is participating in the national effort to bring about recovery of this endangered species by establishing a free roaming herd of viable size.

Southern Lakes Wildlife Coordinating Committee⁶⁰: The CAFN participates as a government member of the SLWCC according to the terms of Schedule B, Chapter 16 of the KDFN final agreement.

Strategic Forest Management Plan for the Champagne and Aishihik Traditional Territory⁶¹: The CAFN traditional territory has been experiencing the largest Spruce Bark Beetle outbreak ever recorded in Canada. The outbreak has been actively growing since the late 1980s and continues today, covering an

⁵⁵ "Management Plans." *Yukon Co-operative Fish and Wildlife Management*. YFWMB. Web. October 31, 2009. <<http://www.yfwcm.ca/mgmtplans/mooseplan/index.php>>

⁵⁶ A copy of this plan is available from the Yukon Fish and Wildlife Branch or the Champagne and Aishihik First Nation.

⁵⁷ "Management Plans." *Yukon Co-operative Fish and Wildlife Management*. YFWMB. Web. October 31, 2009. <http://www.yfwcm.ca/mgmtplans/aishihik-wmp/index.php>

⁵⁸ A copy of this plan is available from the Yukon Fish and Wildlife Branch or the Champagne and Aishihik First Nation.

⁵⁹ "Management Plans." *Yukon Co-operative Fish and Wildlife Management*. YFWMB. Web. October 31, 2009. <http://www.yfwcm.ca/mgmtplans/bisonplan/index.php>

⁶⁰ "Southern Lakes Wildlife Coordinating Committee." YFWMB. Web. October 31, 2009. <http://www.yfwcm.ca/slwc/>

⁶¹ "Strategic Forest Planning." *Government of Yukon*. Web. October 31, 2009. http://www.emr.gov.yk.ca/forestry/planning_strategic.html .

area close to 400,000 hectares. In response to this outbreak, in December 2004 the Yukon government, the Alsek RRC and the CAFN developed and approved this plan.

Integrated Landscape Plan for the Champagne and Aishihik Traditional Territory: The purpose of the Integrated Landscape Plan is to provide guidelines for sustainable timber harvest planning for the forested lands within the Strategic Forest Management Plan.

Blanchard River Salmon Stocks: Dwindling salmon stocks in the Blanchard River are a serious concern for CAFN. In 2009 the CAFN General Assembly passed a resolution requesting that the CAFN government engage other governments and stakeholders for the purpose of developing and implementing a management plan for the Blanchard River.

The current priorities and issues for the department are (more information in the Appendix):

Sheep Management: The department believes the current sheep management regime needs to be examined, starting with harvest management and regulations including outfitter quotas.

Access Management: Access to previous backcountry and wildlife ranges is increasingly becoming a problem with many facets.

Habitat Mapping: Comprehensive habitat assessments should be done for the CAFN traditional territory, including the classification and mapping of key habitats for focal species together with animal movement corridors and migration routes that connect these habitats.

Aboriginal Traditional Knowledge: A priority for the department is to advance the use of aboriginal traditional knowledge in decision-making in order to give it equitable standing with scientific knowledge.

Salmon Habitat Protection: Protection of salmon habitat is a concern in the CAFN traditional territory as salmon management and conservation are almost entirely focused on sustainable harvesting with little attention on habitat.

Carcross/Tagish First Nation

The CTFN consists of six clans. Each clan appoints an Executive Council representative who speaks on their behalf at meetings, ceremonial activities, or any other public event. The Executive Council selects one member to become the Kha Shade Heni (Head Man Standing Up).

CTFN signed its final and self-government agreements on October 22, 2005 and the agreements came into effect on January 9, 2006. The self-government agreement enables the CTFN to establish the legal and political framework for its government relations with Canada and Yukon. The CTFN is entitled to enact its own laws from a set of predefined terms set out in the self-government agreement, including internal administration and management, and management of rights and benefits from the land claim such as wildlife and settlement lands⁶².

The CTFN traditional territory in the Yukon covers 10,790 km² and, in British Columbia, covers 7,275 km². The provisions of the Final Agreement include:

⁶² Carcross/Tagish First Nation Self-Government Agreement



Mountain goats (*Oreamnos americanus*) inhabit portions of the new Agay Mene Territorial Park in the Carcross-Tagish First Nation's traditional territory. (Photo: Donald Reid).

- A total of approximately 1553 km² of settlement land in which 1036 km² is Category A Land (surface and subsurface title), and 518 km² of Category B Land (surface title only), and 7 km² in reserve lands.
- Financial compensation of \$17,687,553 paid over the next 15 years, less outstanding negotiation loans.
- Economic Development Strategic Investment funding of approximately \$5.6 million.
- Establishment of Agay Mene Natural Environment Park and Tagish River Habitat Protection Area.
- Specific rights for fish and wildlife harvesting and economic and employment opportunities.
- Wildlife harvesting rights and participation in decision-making bodies dealing with renewable resources management on non-settlement land within the traditional territory.

CTFN has signed a Letter of Understanding with the Kwanlin Dun First Nation, Kluane First Nation and Ta'an Kwach'an Council in order to collectively address common issues. Most noteworthy will be the cooperation needed to deal with third party interests in and around Whitehorse including mining, forestry, agriculture, outfitting and residential land tenures.

The *Heritage and Natural Resources Department* is responsible for all heritage and natural resources under the control and administration of CTFN. This includes fish, wildlife and land resources. CTFN has established a *Land Use Team* to advise and assist the department on land and other matters. The Land Use Team consists of a representative from each of the six clans who are appointed for a 4-year term.

The Land Use Team has been mandated by the Executive Council of CTFN to be the advisory body on all land management matters within their traditional territory. This includes the development, guidance and implementation policies, laws, regulations, permits, agreements and strategic planning of land management matters related to such matters as traditional uses, heritage and culturally significant sites, business and economic development, renewable resources, oil and gas, mining and mineral exploration, forestry, protected areas, tourism and recreation, waste management, transportation, and communication. The Land Use Team is required to make these decisions in accordance with relevant policies in an equal and fair manner.

The following are priority issues:

Agricultural Land Expansion: The primary concern of the CTFN Land Use Team is the unplanned disposition and expansion of agricultural land within their traditional territory.

Timber Harvesting: The Land Use Team is concerned about the manner in which timber harvesting occurs. There is no Forest Resources Plan for this area and CTFN, with some hesitation, has signed a Terms of Reference with other first nations to proceed with a forest management plan with the Yukon Forest Management Branch.

Land Use Planning: Simply put, CTFN would like a land use plan developed for their traditional territory, and this should be done in advance of all other resource sector planning, such as forest management planning.

Unregulated Mineral Staking: The free staking of mineral claims in the traditional territory is of great concern. Aside from destroying habitats, staking creates new access trails, which are then used and upgraded for recreational purposes (snowmobiles and ORVs) and hunting, resulting in further harassment and depletion of wildlife.

Depletion of Country Foods: The depletion of country foods in its traditional territory, especially resulting from low populations of caribou, moose and fish, is of principal concern to CTFN.

Unregulated Access: The Land Use Team is very concerned about the unregulated proliferation of trails in their traditional territory. These trails create new access into pristine valleys and alpine areas for hunting and recreation with the use of ATVs and snowmobiles.

Environmental Monitoring: The Heritage and Natural Resources Department has employed game guardians to monitor hunting and other activities in their traditional territory for a number of years. However, this activity is spotty and generally focuses on hunting seasons.

Habitat Depletion: The traditional territory of the CTFN is in an area of high human settlement and use. This has resulted in the depletion of wildlife resources and habitats, and there are constant and unrelenting interests and pressures to further develop the natural resources of this area, and acquire private lands for agriculture and subdivision development.

Wildlife Act and Regulations: CTFN has been discouraging its members from hunting caribou and cow moose, and grants permission to a limited number of other Yukon Indian people to hunt for specific species in specific areas.

Kwanlin Dün First Nation

The KDFN final and self-government agreements were signed on February 19, 2005 and came into effect on April 1, 2005, when KDFN became the tenth self-governing YFN. As part of the land claim settlement, KDFN retained 1036 km² of settlement lands, including 647.5 km² of Category A Land (surface and subsurface title) 395.3 km² of Category B Land (surface title only). Of these lands, 35 km² are within the city of Whitehorse.

Fish, wildlife and land management is the responsibility of the Heritage, Lands and Resources Department, which is one of eight departments within the KDFN government. KDFN has not yet developed legislation to regulate land use and the conservation and use of fish and wildlife.

Considerable effort has been allocated to surveying all settlement lands. The Lands Section reviews all resource and land development projects being proposed within KDFN traditional territory, including timber harvesting and agricultural land development. The Lands Section provides comments to the YESAB Office whenever a planned project affects KDFN values and interests.

The Fish and Wildlife Manager participates in committees that have been set up as a result of the final agreement. The SLWCC was established in 2008 in accordance with Schedule B, Chapter 16 of the KDFN Final Agreement. The committee is not limited by overlapping claims and coordinates the management of fish and wildlife in a defined area known as the Southern Lakes Area, which includes portions on the traditional territories of KDFN, TKC, TTC, and CTFN. The committee has representation from the above first nations as well as from the federal, Yukon and British Columbia governments. The committee has a three-year timeline to prepare a wildlife assessment for the area, which will be recommended to the governments and first nation parties, after which the committee will be disbanded. The committee has completed a caribou assessment and is currently working on an assessment of moose populations. Future assessments will include large predators, sheep, access, wetlands, rare and endangered species, migratory birds, traditionally used species, animal health and diseases, land management and environmental assessments.

The Freshwater Fish Assessment and Planning Steering Committee was established in the fall of 2007 in accordance with Schedule D, Chapter 16 of the KDFN Final Agreement. The committee consists of four members, two from KDFN and two from the Yukon government, and has responsibilities for the management and use of freshwater fish stocks and waterbodies, taking into account their cultural and ecological importance. A key task of the committee is to prepare an assessment of selected freshwater fish stocks and their habitats, including current harvest levels, regulations, programs and plans. At the request of the Yukon government and KDFN, the committee will also develop management plans for these waterbodies and fish stocks. As a first step, the committee interviewed KDFN elders to collect their traditional knowledge relating to important fishing areas in the traditional territory; a report is now being drafted summarizing the results of this work.

In April 2007, Chief and Council appointed a Lands Committee to assist the department with land-related issues. To date, the committee has developed a beneficiary land policy, drafted interim guidelines for using settlement land, and provided input on some of the larger land and resource applications, such as Lewes Marsh timber harvesting and the Arkell subdivision.

KDFN's Final Agreement aims to maintain and protect important areas in the traditional territory by establishing Kusawa Park and Lewes Marsh HPA as Special Management Areas.

Kusawa Park: This natural environment park is described and established in accordance with Schedule A, Chapter 10 of the KDFN Final Agreement, and will protect important physical, biological, recreational and cultural features of the land. Kusawa Park is 3,078 km² in area and extends from the north end of Kusawa Lake to the Yukon-B.C. border, and includes portions of the Yukon-Stikine Highlands, Ruby Range and Yukon Southern Lakes ecoregions. It is within the traditional territories of KDFN, CTFN and CAFN. These first nations will have economic opportunities related to facility constructions, and park operations and maintenance; their people will be able to harvest fish and wildlife in the Park in the same way as they can in the rest of their traditional territories. A Steering Committee was established in the spring of 2009 with six members, one from each first nation and three from the Yukon government, and is responsible for drafting and recommending a park management plan to the parties in two year's time. Prior to approval, the plan is to be reviewed by the Yukon Heritage Resources Board and relevant RRCs.

Lewes Marsh Habitat Protection Area: This habitat protection area is described and established in accordance with Schedule B, Chapter 10 of the KDFN Final Agreement, and protects important migratory bird habitats, including Swan Haven. It is located at the north end of Marsh Lake and extends from M'Clintock River and surrounding area downstream to the Yukon River Bridge on the Alaska Highway. It is 20 km² in size and is within the traditional territories of KDFN, CTFN and the TKC. These first nations will have economic opportunities related to the constructions of facilities, and area operations and maintenance, and their people can harvest fish and wildlife in the area in the same way as they can in the rest of their traditional territories. A Steering Committee has been established with 6 members, 1 from each first nation and 3 from the Yukon government, and is responsible for drafting and recommending a management plan for the area to the parties in 2 years time.

Kluane First Nation

The Kluane First Nation (KFN) people primarily identify themselves as either Tlingit or Southern Tutchone. Their traditional territory is centred on the boreal forests around Kluane Lake, bounded by the Ruby and Nisling mountain ranges to the northeast and the St. Elias Mountains to the southwest. It is the Traditional Territory of the Lù'àn Mǎn Ku Dǎn, the Kluane Lake People.

On October 18, 2003, KFN (KFN) formally signed its final agreement with the Yukon and federal governments. The self-government and final agreements took effect on February 2, 2004. Under its final agreement, KFN was allocated

906 km² of settlement lands within its traditional territory. Settlement Lands include:

- A total of 647 km² Category “A” Lands (surface and sub-surface);
- A total of 259 km² Category “B” Lands (surface rights only);
- 66 site specific parcel selections totalling approximately 62 km²;
- 11 community parcel selections;

Three Special Management areas consisting of The Pickhandle Lakes Habitat Protection Area, The Asi Keyi Natural Environment Park and The Tachal Region of Kluane National Park Reserve.

The *Lands, Resources and Heritage Department* is responsible for the implementation of the KFN Land Claim Agreement and overseeing the protection and development of KFN lands, resources and heritage. The director oversees the Lands, Renewable Resources and Heritage Branches.

The stated goal of the Lands Branch is “A land that can sustain traditional and responsible uses”, and implements the following objectives:

- The creation, and subsequent administration, of KFN’s Land Act;
- Assisting in the transition from a Settlement Land Committee towards a settlement land registry system;
- Establishing regulations for access (both commercial and non-commercial) to KFN settlement lands;
- Development and maintenance of an integrated, GIS-based and regional geo-database;
- Production of maps of exceptional quality for the Lands, Heritage, and Resources Department, as well as for other KFN departments;
- Land use planning on three scales: community (in conjunction with Public Works), settlement lands, and regional (Greater Kluane region);
- Management (or co-management) of Special Management Areas, including Kluane National Park, Pickhandle Lakes Protection Area, and Asi Keyi Special Management Area; and
- Fostering relationships with other levels of government and to ensuring effective governance.

The Renewable Resources Branch is responsible for:

- Assessing environmental and social impacts on renewable resources in KFN’s traditional territory, and providing information and education to KFN members.
- Environmental management including assessing development applications in KFN traditional territory, monitoring projects in the SMA co-management areas, and serving as overall technical support to KFN in matters relating to the environment.
- Collecting information pertaining to the harvesting of wildlife within the KFN traditional territory and monitoring the overall state of wildlife.

The department initially focused on establishing goals and workplans for its lands, resources and heritage programs, and staffing positions. This was accomplished with the help of the CAFN, who had been developing their programs since 1995. This included strategic planning sessions to develop workplans. KFN, along with CAFN and Parks Canada, participated in the “Healing Broken Connections” project. The project was designed to help local FN people

reconnect to Kluane National Park & Reserve, create a database of traditional knowledge related to the park, and improve the working relationship among the three partners. Parks Canada has committed to hiring KFN and CAFN people for certain positions in the park. KFN also worked with the Kluane Park Management Board on a number of issues, including no-harvest zones and other management initiatives.

The department and the Yukon Fish and Wildlife Branch have been implementing economic measures for special sheep guiding according to Schedule A (Part II) of Chapter 22 of the KFN Final Agreement. These provisions provide revenues to KFN from the commercial outfitting of sheep hunting in the KGS for a five-year period beginning in 2006. The funds are to be used for wildlife conservation and social development.

The department has developed a GIS program as the result of 2003 funding from Natural Resources Canada's Sustainable Community Initiative, which covered the acquisition of hardware, Arcview GIS software and staff training.

The Lands Branch has yet to draft lands policies and establish a Lands Registry. The surveying of settlement land is currently underway.

Pickhandle Lake HPA and Asi Keyi Natural Environment Park are two Special Management Areas set out in the KFN Final Agreement, in addition to the Kluane National Park and Reserve. Pickhandle Lake and Asi Keyi have not yet been established and require management plans to be drafted by Steering Committees. These Steering Committees are currently being established with Terms of References, and planning will be proceeding over the next two years. Once these plans are approved, Pickhandle Lake will be formally established as a HPA under the *Yukon Wildlife Act* and Asi Keyi as a Natural Environment Park under the *Yukon Parks and Land Certainty Act*.

KFN has been operating a wildlife monitoring program for many years with contributions from Parks Canada and the Wildlife Enhancement Trust Fund of the YFWMB.

Generally there is great frustration with the past wildlife management practices of the Yukon government. The Yukon government is responsible for wildlife management and they established the KGS; this is the only area in the region where game populations are still reasonably healthy. In the remainder of the region east of the Alaska Highway, overharvesting has depleted game populations. Big game outfitters have played a role in this overharvest, particularly in the past 20 years as new owners exploit their areas to enhance profits.

The following is a list of current priorities and issues for the Lands and Renewable Resources Branches (more information in the Appendix):

Kluane Game Sanctuary (KGS): KFN is proposing the KGS be made a Habitat Protection Area (HPA) because its current status does not protect the land.

Christmas Bay Agricultural Application: A recent spot application for 350 ha of agricultural land in the Christmas Bay area was turned down due to an unacceptable development plan. If approved, this application would have disposed of all Crown lands sandwiched between two blocks of KFN and CAFN settlement lands. KFN has requested in writing that these lands be designated as a Designated Heritage Site under Specific Provisions (13.1.1.11) of its final agreement.

Ecological Land Classification and Mapping: The KFN requires detailed map-based information on the status of all fish and wildlife habitat within their traditional territory in order to effectively assess and respond to development proposals and land use applications.

Mining and Road Developments: Western Copper Corporation is looking into developing their Casino property, located in the western corner of the Selkirk First Nation traditional territory, just south of the Tr’ondek Hwech’in First Nation traditional territory and 160 km north of Burwash Landing (Figure 7). The preferred year-round road access to the site is the 187 km Onion Creek route from a point of the Alaska Highway 48 km north of Burwash Landing.

Figure 7. Location of Western Copper Corporation's Casino Mine Site.



Winter ticks: The spread of winter ticks into the KFN traditional territory is a concern because it is known that ticks can cause winter die-offs in health of moose populations, especially in cold climates like the Kluane region.

Forest Management Planning: The First Nations Forestry Program (FNFP) is hosting a workshop on forest management planning in February 2010. This Program supports the unique relationship between YFNs and forestlands. Its purpose is to improve economic conditions in first nation communities with full consideration of the principles of sustainable forest management.

Gopher Conservation: For the past two years, KFN has been involved in a gopher (arctic ground squirrel) transplant project. Gophers have been transplanted from Destruction Bay and the airport to Duke Meadows.

Sheep Winter Range Project: This project is developed along the lines of the community-based wildlife monitoring program established in Northern Tutchone Region by Mark O'Donoghue. The focus in the Kluane region is on sheep monitoring in the Ruby Range, Quill Creek, Tatamagouche, and Sheep Mountain areas, as KFN believes sheep populations in these areas have declined considerably over the past 40 years, likely due to outfitter overhunting.

Alaska Highway No-Hunting Corridor: In 1991 KFN developed a Community Conservation Strategy and recommended the Yukon government establish a one km no-hunting corridor on each side of the Alaska Highway from Congdon Creek to White River. The purpose of the corridor was to reduce hunting pressure along the highway, create a safe environment for people living and travelling along the highway, and increase wildlife viewing opportunities.

Duke River Moose: Parks Canada is preparing a State of the Park Report for Kluane National Park, which includes a section on ecological integrity. KFN is reviewing the report, which states that the Duke River moose population is at low numbers; this has been known by KFN for many years and the first nation intends to cooperate with Kluane Park staff to monitor this population.

First Nation of Na-Cho Nyak Dun

The First Nation of Na-Cho Nyak Dun (NND) represents the most northerly community of the Northern Tutchone language and culture group. In the Northern Tutchone language the Stewart River is called Na Cho Nyak, meaning Big River. The NND final agreement was signed in May 1993 and came into effect in February 1995. The NND Traditional Territory covers 162,456 km² of land; 131,599 km² in the Yukon and 30,857 km² in NWT, with 4692.5 km² of Settlement Lands.

The *Lands and Resources Department* is one of eight departments with the NND government. Its mandate arises from the final and self-government agreements, the *Lands and Resources Act* and subsequent policy development. The department has the primary responsibility for implementing the bulk of the agreement, including developing policy on tenure and management of settlement lands, determining access and right of access, co-developing policy on special management areas, carrying out land use planning and assisting in the development assessment process. The department is also responsible for the preservation and conservation of heritage values as a priority as well as water,

forest, fish and wildlife, traplines, and non-renewable and renewable resource management.

In 2000 the department developed a mission statement and principles for departmental operations, which remain in effect.

The NNDFN Lands and Resources Department, being within a self-governing First Nation, has the unique responsibility to serve as guardian of the lands, waters and resources within our traditional territory. We will work for the benefit of our present and future generations as we implement the NND Final and Self Government Agreements. The Department will be instrumental in providing citizens with access to lands and resources and will have a role in stewardship and management of these resources. We will work with other Governments and organizations to ensure sustainable development, which respects the spirit, needs and inter-dependence of all living things and supports our traditional uses, conservation and enhancement of the natural environment.

The principles of departmental operation, as stated in the *Lands and Resources Act*, are:

- Conservation of natural resources for current and NND children's futures use;
- Striving for sustainable development and use of natural resources (which means balancing social, economic and environmental factors in decisions about conservation and development);
- Integration of traditional knowledge with scientific knowledge;
- Carrying out integrated land and resources management/co-management (which means that all elements of the ecosystem: physical and biological are considered when planning and management decisions are made);
- Mutually beneficial partnerships and cooperation with other governments, organizations and stakeholders;
- Public, elder and youth participation; and
- Fairness and timely responses to NND citizens, Council of elected representatives and others.

The Department is made up of four distinct units under the direction of the Director of Lands and reports to the Council of elected representatives.

The NND FN has a primary interest in the health of big game populations on which members rely for subsistence harvest. There is a general perception that moose and caribou recruitment are compromised by heavy predation pressure by bears and wolves, and therefore the First Nation has an interest in predator control. The First Nation is also concerned about the potential impact of new road developments on the health of big game populations because of increased hunter and predator access. The traditional territory includes the range of the Bonnet Plume caribou herd, perhaps the only herd in Yukon without some road access into its range. Consequently there is an opportunity to study this herd as a control or baseline herd for comparison to the demography of other herds facing human access and development issues. Some caribou groups are of uncertain herd affiliation (e.g., Elsa group may belong to Hart River herd).

The First Nation has an interest in protecting key habitats and landscapes of particular importance to wildlife populations. Their traditional territory already includes Ddhaw Gro Habitat Protection Area. During the lands claims negotiations the First Nation identified a number of potential Habitat Protection Areas that were not finally negotiated. There is an opportunity to address these proposals again, defining their ecological boundaries and proposing them for formal designation.

Regional land use planning for the Northern Tutchone region, as mandated by the Umbrella Final Agreement through the Yukon Land Use Planning Council, is unlikely to start for another 3-5 years, or even longer. However, there is no ecosystem mapping covering the entire traditional territory, and so no baseline for comprehensive wildlife habitat mapping across the entire territory. There is an opportunity to be pro-active in developing ecosystem mapping and wildlife habitat mapping well in advance of a planning process.

The NND FN has an established GIS technician but some particular GIS training needs: (i) a short workshop for managers to become familiar with the capabilities and language of GIS and mapping, so that they understand the opportunities and constraints of this technology; (ii) training for an upgrade from ArcGIS to ArcView so that the transition is thorough and the new capabilities of ArcGIS are realized.

Selkirk First Nation

The Selkirk First Nation is one of three Northern Tutchone First Nations whose traditional territories cover central Yukon. Sharing the northern Tutchone language with their tribal neighbours, members of this First Nation occupied the dry interior of the upper Yukon drainage, and traded with Tlingit tribes to the south and Gwich'in tribes to the north. The fur-trading post of Fort Selkirk, at the confluence of the Pelly and Yukon Rivers, was the primary settlement for tribal members after contact, when most travel was oriented along the rivers. With the construction of the Klondike Highway and the end of the commercial riverboat traffic, Fort Selkirk was gradually abandoned in favour first of Minto (confluence of Lhutsaw drainage and the Yukon River) and later Pelly Crossing as the primary settlement.

The Selkirk First Nation administration is currently based in Pelly Crossing, where the Klondike Highway crosses the Pelly River between Carmacks and Dawson City. The traditional territory is elongate in shape along an east-west axis. The northern boundary approximately follows the Stewart River from near its confluence with the Yukon River, upstream to Stewart Crossing, then east on the height of land between the Stewart and MacMillan Rivers. Its eastern extent is near Fairweather Lake, and its western extent at Wellesley Lake. The southern boundary runs along the lower Nisling River, cutting east across the Dawson Range to cross the Yukon River near Tatchun Creek, then east to the Pelly River near Glenlyon Peak and east to the South MacMillan River. This territory encompasses the Ddhaw Gro Habitat Protection Area (HPA), the largest HPA in Yukon, in an area of overlap with the Nacho Nyak Dun traditional territory.

The Selkirk First Nation has been self-governing since 1997. It is governed by an elected Chief and appointed Council, reporting to a General Assembly of the approximately 500 citizens. It administers approximately 4,740 km² of settlement lands.

Government departments concerned with land and renewable resources work on a variety of topics at present including:

- Detailed reviews and monitoring of development assessment proposals, including various mineral exploration and development proposals, with the active Minto mine and proposed Casino mine being key issues at present.
- Wildlife inventory in conjunction with the Northern Tutchone regional biologist for the Yukon Department of Environment.
- Wildlife harvest reporting in conjunction with the Northern Tutchone regional biologist for the Yukon Department of Environment.
- Aquatic systems inventory and monitoring including water quantity, water quality, fish occupancy, and benthic macroinvertebrates.

Staff see the value of strategic land use planning, but are concerned that the formal process established under the UFA, through the Yukon Land Use Planning Council, will not give them enough autonomy from the Yukon territorial government in selection of Commissioners and derivation of a recommended plan. Their primary focus is on more site-specific environmental problems associated with mineral and agricultural developments. These development proposals are numerous and pressing enough to occupy most of the staff time and resources. At present the capacity of the First Nation's staff to engage in some land and resource management issues is limited by lack of some skills (especially GIS), and by inability to quickly retrieve and reference information and data stored in old technologies (e.g. PAMAP).

Little Salmon / Carmacks First Nation

The Little Salmon / Carmacks First Nation is one of three Northern Tutchone tribal groups with traditional territories in central Yukon. The central community for the First Nation is Carmacks, located where the Klondike Highway crosses the Yukon River. This was an important staging post for steamboat travel on the Yukon River, linked to overland trails, before the highway was constructed. The First Nation currently includes approximately 630 members.

The traditional territory encompasses approximately 2,590 km², with the Yukon River running from its southern edge at the north end of Lake Laberge, through to the northern boundary at Minto. The western boundary follows the crest of the Dawson Range, and the eastern edge crosses the Little Salmon drainage near the east end of Little Salmon Lake.

The Little Salmon / Carmacks First Nation became self-governing in 1997. It has an elected Chief, and a set of Councils with appointed representatives from the two clans. Its government includes a Lands and Resources Department responsible for the protection and sustained use of natural resources on settlement lands and throughout the traditional territory.



A lake in Twin Lakes Territorial Park sparkles in the evening winter light. This protected area lies in the Little Salmon / Carmacks First Nation's traditional territory (Photo: Donald Reid).

Based on an interview with Joe Bellmore, former Fish and Wildlife Manager for the First Nation, there are a number of issues of current concern. There is a general concern about new road developments. Some are likely to occur with the re-development of the Casino mine (see Kluane First Nation), and the development of the Carmacks copper mine. The First Nation has been able to negotiate agreements with industry whereby industry personnel travelling new roads are not allowed to transport firearms, but there is an underlying problem of increased access for hunters in the general public.

The First Nation is interested in establishing a new Habitat Protection Area (HPA) along the Yukon River from Tatchun Creek downstream to Minto. This would protect nesting habitat for numerous raptors, spawning habitat for chum salmon, nesting and staging habitat for waterfowl, and quite possibly important habitats for moose, mule deer and Dall's sheep. The Lands and Resources Department is still in the information gathering stage of this exercise.

There is a general concern about the health status, and ecological interactions of elk and bison. These species have been re-introduced to Yukon, within the past 40 years, in areas outside but close to the Little Salmon / Carmacks traditional territory. Their populations have grown and expanded to occupy parts of the traditional territory. First Nations members have little history of hunting or dealing with these species, and are concerned that they might have negative effects on the moose populations. The elk brought winter tick to Yukon, and this parasite now might infest moose populations. The bison have the potential to change the structure and quality of the range and associated forest habitats, perhaps to the detriment of moose and caribou.

Kaska First Nations

In Yukon there are two Kaska First Nations: Ross River Dena Council (RRDC) (community of Ross River), and Liard First Nation (LFN) (community of Upper Liard). Together with the Kaska First Nations in B.C. these form the Kaska Dena Council. The traditional territories of the RRDC and LFN overlap the Northwest Territories, and are very extensive (Figures 3 and 8).

Kaska First Nations have not yet signed land claims agreements with any federal, provincial or territorial governments. They actively pursue their rights and title to their traditional territories through ongoing negotiations with the Crown and with development interests, on an issue by issue basis. The lack of settled land claims means that the Umbrella Final Agreement does not apply to Kaska lands, so the territorial government is not obliged to follow the mandate and directions of this Agreement on Kaska lands. Consequently there is no strategic land use planning exercise envisaged at present, and no co-management agencies with direct voice for the Kaska. RRDC is attempting to undertake and enforce land use planning on its territory by gathering the requisite traditional and scientific knowledge to identify key habitats and high value conservation areas before industrial activity is allowed.

The Kaska First Nations have identified a suite of Special Management Areas of high conservation value. None of these is officially set aside as a protected area, but the First Nations pursue their conservation through ongoing negotiations with government and development interests. The Kaska also entered a Forest Resources Management Planning exercise with the Yukon Government from 2004-2009. The Yukon government was keen to see a plan in place because Kaska territory covers the most productive forest lands in the territory. That Plan has been largely accepted by Kaska communities, but has not been accepted by the Yukon government.

A number of new mine developments are ongoing or proposed within Kaska traditional territory. The First Nations engage directly with the proponents and attempt to negotiate satisfactory conservation concessions. Unrestricted public access for hunting from new roads, degradation of wildlife habitat quality by road traffic, and improved access to backcountry for off-road vehicles, are key concerns.

Yukon Co-Management Agencies

The Umbrella Final Agreement and the individual First Nation land claims settlements have resulted in the establishment of numerous co-management agencies, many of which have a mandate for wildlife management or involvement in land disposition.

Yukon Fish and Wildlife Management Board (YFWMB)

The YFWMB is established pursuant to Section 16.7.0 of YFN final agreements as an instrument of public government for fish and wildlife management in the Yukon, excluding the Inuvialuit Settlement Region and the Porcupine caribou herd which are under separate agreements. The Board is comprised of 12 members consisting of 6 nominees of YFNs and six nominees of government.

The majority of members are residents of Yukon. The board selects a chairperson from among its membership, and the Yukon Minister of Environment appoints the members and the chairperson for five-year terms.

The Board can make recommendations to the affected Minister, the affected first nation, and Renewable Resource Councils (RRCs) on all matters related to fish and wildlife management, legislation, research, policies and programs. Governments and first nations are required to make available to the Board information in their possession reasonably required for the Board to carry out its functions.

The Board has focused its efforts on territorial policies, legislation and other measures to help guide management of fish and wildlife, conserve habitat, and enhance the renewable resources economy. In order to develop an understanding of issues and form recommendations, the Board has worked in partnership with federal, territorial and first nations governments as well as RRCs and other Umbrella Final Agreement boards and councils. The Board relies on its partners and the public for technical information, advice and local or traditional knowledge.

The Board's stated mission statement is:

To ensure the continued well-being of fish and wildlife populations in the Yukon for the use and enjoyment of all Yukoners and future generations while protecting First Nations special interest in wildlife. In order to achieve its mission the Board will:

- 1. Keep the Yukon public informed about fish and wildlife issues.*
- 2. Provide means for public discussion on fish and wildlife issues.*
- 3. Create a balance for traditional, local and scientific knowledge in developing decisions on wildlife.*
- 4. Provide public appreciation of the diversity of social values related to fish and wildlife management.*
- 5. Provide a fair process for consultation that incorporates all levels of society in arriving at fish and wildlife decisions.*
- 6. Provide an opportunity for every Yukoner to have effective input on fish and wildlife issues.*
- 7. Participate in national and international fish and wildlife conservation initiatives while maintaining the Yukon Territory's perspective and protecting Yukon interests.*
- 8. Provide information on relationships between fish and wildlife and their environment to enable Yukoners to make informed decisions about how they will interact with fish and wildlife.*
- 9. Explore avenues to enhance and perpetuate wildlife populations.*

Following are the primary activities of the YFWMB (More information in the Appendix):

20:20 Vision Symposium: As part of its mandate "to act in the public interest" for the benefit of Yukon fish and wildlife and their habitat, the Board, in partnership with the RRCs and the Yukon Salmon Sub-Committee, wished to provide long range strategic advice and recommendations to the responsible governments (Yukon and federal governments and first nations) on the manage-

ment of Yukon's fish and wildlife resources. From the Board's perspective the single most important aspect of this was to learn what Yukon residents think about the current state of these resources and what their vision is for the future. Over a three-month period, from November 2008 to January 2009, the Board engaged Yukoners from all cultures and all walks of life to hear their opinions and views⁶³.

Northern Mountain Caribou Management Plan: The Board has undertaken the role of outreach and communications for the Northern Mountain Woodland Caribou management planning process.

Strengthening Relationships with Renewable Resources Councils: The Board will work towards developing a stronger relationship with RRCs and strive to find ways to assist them through increased communication, training and issue coordination.

Communications: The Board will strive to enhance public awareness of Board activities and develop strong public education tools to foster a broad understanding of Yukon fish, wildlife and habitat issues.

Fortymile Caribou: The Board is committed to ensuring the expansion of the Fortymile caribou herd into its former Yukon range. At the turn of the century, the Fortymile caribou herd was estimated to have a population of almost 600,000 animals and ranged throughout central Alaska and much of the central and southern Yukon.

Off-Road Vehicle: In 2003 the Board established a working group to explore the issues surrounding the use of ORVs in the Yukon. The working group led public consultations, surveys and discussion groups to determine if and where problems exist, the extent of the problems and attempted to seek out potential avenues for managing the issue.

Trapping: Section 16.1.1.2 of YFN Final agreements mandates the Board, "to preserve and enhance the renewable resources economy." The Board therefore seeks to preserve and enhance the trapping industry.

Yukon Wildlife Act Regulation Changes: Every year, the Board provides public input to governments on legislation or regulations that affect fish and wildlife resources. The Board provides these comments based on information from public consultations and research.

Past activities of the Board have included:

1. Recommendations of moose harvest management in 2002 that were the product of a discussion paper, stakeholder workshops and public meeting over a two-year period.
2. Recommendations on captive wildlife in 2002 as part of the Yukon government's *Wildlife Act* and Regulations amendments through extensive public consultation.
3. A review of the scientific literature on the potential effects of oil and gas development in the Yukon, including four primers on specific aspects of the industry.
4. Recommendations on fish farming in 2003 that have been accepted by the Yukon government as a framework for a Yukon Aquaculture Policy.

⁶³ Yukon Fish and Wildlife Management Board. 2009. Yukon Fish and Wildlife – a 20:20 Vision: Yukon Wide Survey. Yukon Fish and Wildlife Board, Whitehorse. Available (Nov 2009) at: <http://www.yfwmb.yk.ca/assets/client/File/Reports/2020%20Yukon-Wide%20Telephone%20Survey%20Report.pdf>

5. Assisting the Yukon government in developing an Elk Management Strategy and holding public consultations in 2007.
6. A Yukon Community Stewardship Program that ran from 2003 until 2008. The goal was to increase the motivation and ability of Yukoners to engage in the conservation and stewardship of our lands, waters, and living resources.

Renewable Resources Councils

Renewable Resources Councils (RRCs) are established in each YFN traditional territory pursuant to Section 16.6.0 of their final agreements as an instrument of public government for local renewable resource management. RRCs are typically comprised of six members consisting of three nominees of the first nation and three nominees of the Minister of Environment Yukon. The members are generally residents of the traditional territory. Each RRC selects a chairperson from among its membership, and the Minister appoints the members and the chairperson for five-year terms.

RRCs can make recommendations to the affected Minister, the affected first nation, the YFWMB and the Salmon Sub-Committee on any matters related to the conservation of fish and wildlife, and on forest resources management on settlement and non-settlement lands within the relevant traditional territory. Governments and first nations are required to make available to RRCs information in their possession reasonably required for the RRC to carry out its functions. RRCs may establish bylaws under the *Yukon Wildlife Act* for the management of furbearers, and the Yukon government shall amend the *Yukon Wildlife Act* to enable these bylaws.

Two RRCs have provided more detailed information about their operation and issues, and this information is in the Appendix.

Yukon Environmental and Socio-economic Assessment Board (YESAB)

Chapter 12 of the YFNs final agreements called for the establishment by federal legislation of an assessment process that would apply on all Crown, settlement and private lands of the Yukon. After many years of combined work on drafting legislation by the CYFN and the Yukon and federal governments, including public consultations, agreement was reached on the *Yukon Environmental and Socio-economic Assessment Act*. On May 13, 2003, YESAA was given Parliamentary Royal Assent and came into effect in the Yukon, replacing the *Canadian Environmental Assessment Act*.

The Act's purposes are to:

- Provide a comprehensive, neutrally conducted assessment process applicable in Yukon.
- Require that, before projects are undertaken, their environmental and socio-economic effects are considered.
- Protect and maintain environmental quality and heritage resources.
- Protect and promote the well-being of Yukon Indian persons, their societies and Yukon residents generally, as well as the interests of other Canadians.

- Ensure that projects are undertaken in accordance with principles that foster beneficial socio-economic change without undermining the ecological and social systems on which communities, their residents, and societies in general, depend.
- Recognize and, to the extent practicable, enhance the traditional economy of Yukon Indian persons and their special relationship with the wilderness environment.
- Guarantee opportunities for the participation of Yukon Indian persons and make use of their knowledge and experience in the assessment process.
- Provide opportunities for public participation in the assessment process.
- Ensure that the assessment process is conducted in a timely, efficient and effective manner that avoids duplication.
- Provide certainty, to the extent practicable, with respect to assessment procedures, including information requirements, time limits and costs to participants.

The YESAB is an independent body established to implement YESAA and associated regulations, to administer the YESAA assessment process to assess projects and other activities that might have effects in the Yukon. YESAB is comprised of a three-member Executive Committee, one of whom is the chair of YESAB, and four other Board members. Various bodies nominate members who are formally appointed by the federal Minister of Indian Affairs and Northern Development Canada.



Ongoing and old quarries for gravel extraction are situated close to Whitehorse. The Yukon Environmental and Socio-economic Assessment process, established in 2005, now reviews proposals for such project developments. (Photo: Donald Reid).

The following are priority issues for the Board:

Baseline Condition of Land and Resources: As an independent assessment organization, it is critical for YESAB to have current information on the baseline condition of the land and how it is used by fish and wildlife. Any efforts by governments to develop a biophysical or ecological land classification and mapping system in the Yukon would greatly benefit industry in planning and developing projects, and YESAB in reviewing them. A critical ecosystem that needs to be mapped and described is wetlands. assessment purposes and to support their recommendations to protect wetlands.

Wildlife Response to Projects: Many projects assessed by YESAB are already in operation in the Yukon. In assessing new projects, YESAB would greatly benefit from knowing how fish and wildlife are responding to existing projects on the land. Key projects for study are mine sites and timber harvesting, and the impacts of new roads associated with these activities.

Assessment of Mitigation Measures: In reviewing proposals, YESAB commonly recommends measures to mitigate the impacts of these projects on fish and wildlife. It would be helpful to know, through scientific study, which measures are working and how they can be made to work better.

Cumulative Effects in Project Assessments: Cumulative effects are caused by the accumulation and interaction of multiple stressors affecting the parts and the functions of ecosystems. Of particular concern is the knowledge that ecological systems sometimes change abruptly and unexpectedly in response to apparently small incremental stresses. Numerous definitions of cumulative effects exist. While the nuances of the definitions vary, they all suggest that the assessment of cumulative effects presents some unique challenges that require a departure from conventional impact assessment methodologies.

Caribou as an Indicator of Ecosystem Health: YESAB believes that ecosystem health may be reflected in the strength and vigor of ungulate and carnivore populations and the physical condition of individual animals. Biologists have been researching and monitoring the physical condition of Porcupine caribou for over 20 year and have fine tuned the methodology to specific sampling that can be carried out by hunters. This methodology is now being used on many caribou and reindeer populations across the circumpolar north.

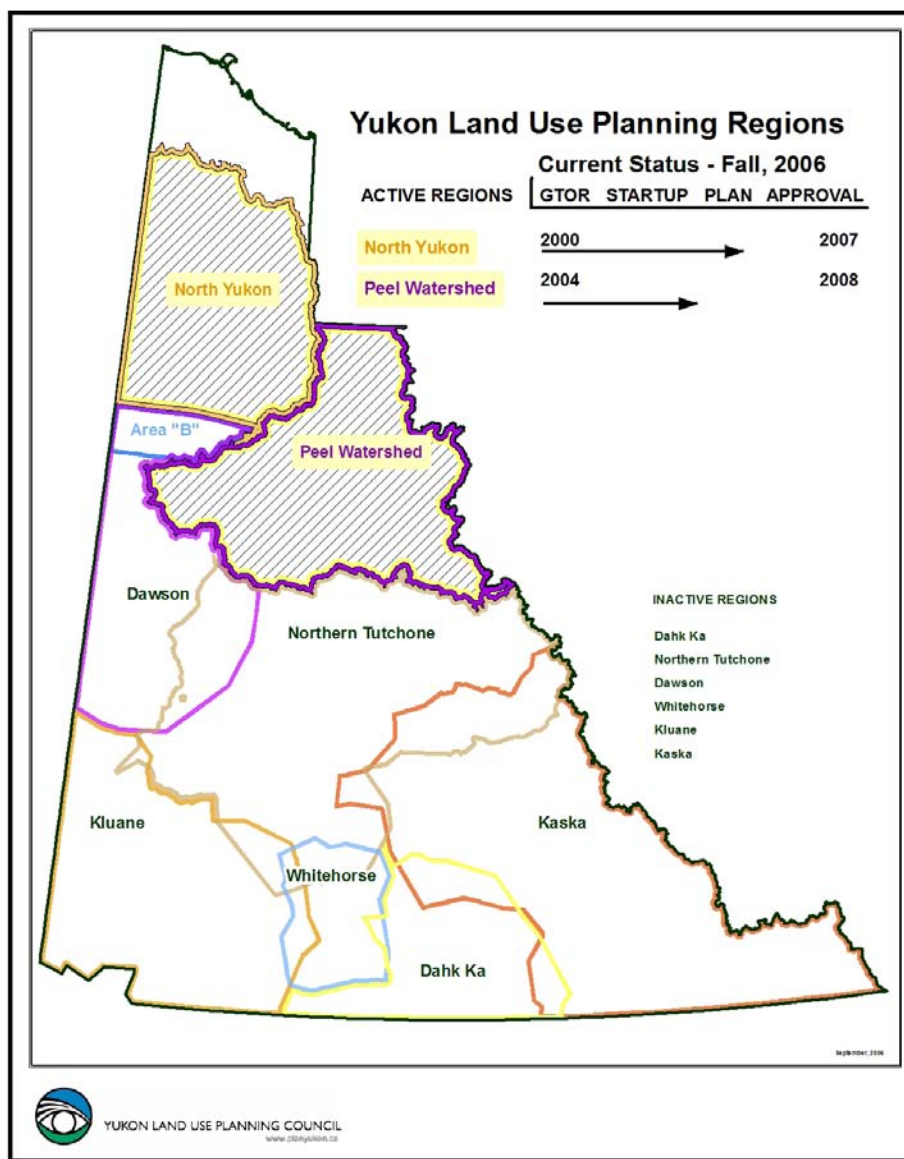
Land Use Planning: YESAB strongly believes that one of the best ways to achieve sustainable resource development and to address cumulative effect is to complete land use plans for all regions of the Yukon, consistent with Chapter 11 of YFN final agreements.

Yukon Land Use Planning Council (YLUPC)

The Yukon Land Use Planning Council exists as a result of the Umbrella Final Agreement (Chapter 11), and has a coordinating and advisory role to all governments in the designation, establishment and running of Regional Land Use Planning Commissions resulting from individual First Nation's claims. Its mission is to advocate for sustainability in cultural, ecological and economic activities by way of strategic-scale land use planning. It works with governments to define the boundaries and sequence of individual land use planning

processes. Individual Planning Commissions are comprised of 6 people, with one-third nominated by Yukon government, one-third by First Nations governments, and one-third by either government depending on the ratio of FN to non-FN individuals in the regional population. The Yukon government and each of the First Nations with traditional territory overlapping the region are considered Parties to the plan, with potential veto on approval. There are 8 planning regions currently proposed (Figure 8). The North Yukon plan has been approved by both its constituent Parties. The Peel Watershed process is currently proposing a Recommended Plan to the Parties for final review. The Dawson region is next in line for a planning process, and it lies partly within

Figure 8. The 8 Land Use Planning Regions currently proposed by the Yukon Land Use Planning Council. This map is slightly out-of-date in that the North Yukon plan is now approved, and the Peel Watershed plan is reaching final stages as of the end of 2009.



the WCS northern boreal mountains site. The Northern Tutchone or Dahk Ka regions will follow. The land use planning process is funded by the federal government (INAC Canada) as a result of land claims settlements. However Energy, Mines and Resources Yukon administers the funds, and has set itself up with special oversight role in each land use planning process by being the sole representative of the Yukon government at the Technical Working Group and at the approval body with representatives of each of the Parties. This gives it strong influence on plan outcomes.

Non-Government Organizations

Yukon Conservation Society

The Yukon Conservation Society (YCS) is a grassroots environmental non-profit organization, established in 1968. Its mandate is to pursue ecosystem well-being throughout the Yukon and beyond, recognizing that human well-being is ultimately dependent upon fully functioning healthy ecosystems. YCS works toward maintaining healthy Yukon communities based on healthy land, water and wildlife. Its work began with the Alaska Highway Pipeline in the early 1970s and continues today with the forest industry to promote local manufacturing and logging that protects key habitats, and with the placer mining industry to protect fish habitat through zoning, best practices and effective reclamation. Over the years, YCS has earned a respected position of influence on environmental policy and education in the North.

YCS advocates, educates, and conducts research on Yukon environmental issues, primarily focused on the development of public policy and legislation related to mining, forestry, energy, and protected areas. Through a broad program of conservation education and input into public policy, YCS is actively striving to ensure the wise management of the Yukon's natural resources.

The following are priority issues for YCS (More information in the Appendix):

Mining: The YCS goal is to ensure that mining in the Yukon occurs only in places where such activities are ecologically and culturally acceptable. Where mining occurs, it should be based on need for the metal, on sound economics, and done in a way that ensures that perpetual treatment is not necessary.

Free-Entry System for Mining Development: A major concern for YCS is the free-entry system in the Yukon for mineral exploration. This system results in the uncontrolled expansion of resource extraction and land disposition, and “nuisance” claims staking in areas prior to protected area and land use planning, without any consideration for the environment and the ecological and cultural values of the landscape.

Agriculture: Unplanned agriculture land depositions around Yukon communities consume the few bits of wildlife habitat that remain, and take away community options for future green space planning.

Agricultural Land Development Policies: Most agricultural land dispositions occur through the spot land application process. The Agriculture Branch is working towards planned agricultural development areas, but only two have been developed to date – Pilot Mountain and Haines Junction. YCS is currently

researching agricultural development policies, will be preparing a paper by November 2009, and would like to discuss this further with WCS Canada.

Forestry: YCS is working towards ecosystem-based forest practices and forest management planning that is fair and transparent, community-based, puts conservation first, encourages and protects local forest-based industries, and contributes to long-term economic health.

Habitat & Wildlife: YCS works to protect habitat and wildlife through reviews of land use applications through the YESAA process, and contributions to public policy on mining, forestry, energy, agriculture, and other developments. A vital problem for YCS and other organizations, such as first nations and RRCs that participate in planning for land-use, agricultural development and forest management, is the lack of map-based information on fish and wildlife habitat, and cultural and ecological values.

Protected Areas Networks: There seems to be no interest by the Yukon government in resource planning in the Whitehorse and surrounding areas, where much of the human populations reside and where much of the development pressures occur. Much of the wildlife habitat in this area has either been damaged or is under pressure by development interests, and green space is being lost.

Energy and Climate Change: YCS is working towards reducing Yukon's dependence on fossil fuels in the short term, with the goal of becoming carbon neutral.

Canadian Parks and Wilderness Society (CPAWS) – Yukon Chapter

CPAWS (Yukon) is a grassroots, environmental non-profit organization with a mission to establish a network of protected areas and conservation lands to safeguard the future of wildlife and wilderness, and to promote the sustainable use of all public natural resources. CPAWS-Yukon is primarily interested in pursuing opportunities for new protected area establishment, and has been very active in lobbying for large-scale protection of the Peel watershed. The organization promotes a conservation-oriented vision for public lands by providing advice and comments on development proposals through environmental assessment processes, by providing Yukoners with educational resources about natural resource extraction legislation, regulations, and management practices, and by sponsoring and promoting the cultural vision of wild nature and wilderness. Activities and vision are closely linked with umbrella non-government organizations such as the Canadian Boreal Initiative and the Yellowstone to Yukon Conservation Initiative, and CPAWS-Yukon works to promote the interests of both those initiatives with community-based research, education and land planning projects.

Yukon Fish and Game Association (YFGA)

The Yukon Fish and Game Association has been active since 1945 and works to ensure the sound, long-term management of fish, wildlife and outdoor recreational resources in the best interests of all residents of the Yukon. The organization promotes and encourages sustainable fishing and hunting

opportunities through education programs, anti-poaching programs, lobbying government regarding wildlife management programs and harvest allocations, and actively engaging in fish population enhancement and stocking. They work to ensure continued access to natural areas for outdoor recreationalists (principally for hunting and fishing), and they run hunter and trapper educational programs for youth and women.

Rivers Without Borders (RWB)

Rivers Without Borders is an international non-government organization concerned about the integrity of ecosystems and resources in large drainages that cross the international boundary between Canada and the United States in the Pacific Northwest. Such river systems draining parts of the northern boreal mountains site are the Taku (British Columbia) and the Tatsenshini-Alsek (Yukon). Most of their attention is focused on the Taku at present, with hopes to achieve conservation protection by way of the Atlin-Taku Regional land use planning process.

Ducks Unlimited Canada

Ducks Unlimited Canada (Prairie Western Boreal Region) is very active in the Northern Boreal Mountains, with an office in Whitehorse and three biologists. Their focus is on conservation of water-birds and wetland habitats, and their approach is similar to WCS Canada in that they gather, develop and interpret scientific data for conservation purposes, working with numerous governments (federal, territorial, provincial and First Nations) and other organizations. DUC has developed a hierarchy of wetland interests in the region, and biophysical land classification mapping for some portions of the northern boreal mountains. Biologists undertake many waterfowl inventories. Much of this work is aimed at helping First Nations justify and design appropriately scaled protected areas for high priority wetland areas (e.g., Habitat Protection Areas). The DUC staff in Whitehorse is open to discussion with WCS Canada regarding collaborative work on certain conservation issues.

Academic Institutions

Whitehorse has the central campus for Yukon College, the primary post-secondary education institution in the region. The College has recently set up a joint delivery of a B.Sc. in Biology with University of Alberta. Instructors in this B.Sc. program are keen to develop joint research topics with WCS Canada, wherein students could research and analyse certain data sets or topics with potential conservation value⁶⁴.

Biologists and ecologists, with their students, from a variety of other academic institutions are active in wildlife and habitat research in the northern boreal mountains, including Drs. Kathy Parker and Scott Green (University of Northern British Columbia), Dr. Murray Humphries (McGill University), Dr. Jill Johnstone (University of Saskatchewan). WCS Canada is keen to further our existing ties with these and other researchers, so that more graduate research could address some priority conservation issues, perhaps taking advantage of the T. Garfield Weston Fellowships in Northern Conservation administered by WCS Canada.

⁶⁴ Personal communication with Dr. Fiona Schmiegelow, Yukon College and University of Alberta.

Important Bird Areas

A number of conservation NGOs (notably Nature Canada, and Bird Studies Canada) have developed a systematic approach to the identification and mapping of Important Bird Areas across Canada⁶⁵. A few of these are in the northern boreal mountains, mostly in south-central Yukon. These might figure into ongoing strategic land use planning processes.

British Columbia

Provincial Government

The wildlife populations and wildlife habitats of the Northern Boreal Mountains in British Columbia (BC) are subject to the administration and management of BC Ministries of Environment, Forests and Range, Agriculture and Lands, and Energy, Mines and Petroleum Resources.

The *Ministry of Environment* encourages environmental stewardship, engages stakeholders and actively promotes the sustainable use of British Columbia's environmental resources. The Ministry also promotes sustainable economic activity for the long-term health and benefit of the province and its citizens.

The Ministry of Environment delivers its programs and services through seven divisions. In addition, environmental assessments of proposed major projects in British Columbia are coordinated through the Environmental Assessment Office.

The *Environmental Stewardship Division* (ESD) has a mission to maintain and restore the natural diversity of provincial ecosystems and fish and wildlife species and their habitat; to provide fish and wildlife recreation services and opportunities to British Columbians and visitors; and to provide overall leadership of provincial government strategies and initiatives related to ocean resources and marine fisheries.

Key objectives of ESD include:

- Management and conservation of the province's biodiversity;
- Protection of species at risk;
- Protection and restoration of British Columbia's watersheds;
- Protection of fish and wildlife species and their habitat;
- Provision of fish and wildlife recreation.

ESD meets these objectives by using science-based information and knowledge in the development of policy, legislation and regulations, setting clear environmental standards and performance expectations, and ensuring compliance through monitoring, auditing and public reporting. ESD works with partners to meet division and ministry goals, and emphasizes shared stewardship by encouraging others to accept a greater role in environmental stewardship and facilitating community initiatives to protect and restore local environments. These environmental stewardship actions are coordinated with related ones in the ministry's other divisions – Parks and Protected Areas, Environmental Protection, Water Stewardship and Strategic Policy – and with other ministries and jurisdictions.

⁶⁵ Information available (Jan 2010) at: <http://www.ibacanada.com>

ESD's headquarters is located in Victoria with the majority of staff located in nine regional offices. The division is comprised of four branches – Ecosystems Branch, Fish and Wildlife Branch, Oceans and Marine Fisheries Branch, and Regional Operations Branch.

Ecosystems Branch is responsible for biodiversity science, standards and policy for the Ministry, and is responsible for the implementation of the province's Conservation Framework. The Branch develops legislation, regulations, standards and guidelines to protect natural diversity. It also manages the acquisition and application of science-based information and knowledge for aquatic and terrestrial habitats and species. The Branch establishes protocols and performance measures for monitoring and reporting on the state of provincial biodiversity and the effectiveness of activities being used to sustain it.

The Conservation Framework is British Columbia's new approach for maintaining the rich biodiversity of the province. Developed by the Ministry of Environment in collaboration with other scientists, conservation organizations, industry and government, the Framework provides a set of science-based tools and actions for conserving species and ecosystems in B.C. The Framework ensures that *British Columbia is a spectacular place with healthy, natural and diverse ecosystems that sustain and enrich the lives of all.*

The three goals of the Conservation Framework are:

1. Contribute to global efforts for species and ecosystem conservation
2. Prevent species and ecosystems from becoming at risk
3. Maintain the diversity of native species and ecosystems

The management of protected areas is the responsibility of BC Parks. The B.C. portions of this site already includes a substantial number of medium and large provincial parks including Spatsizi, Mt. Edziza, Atlin, Tuya Mountain, Boya Lake.

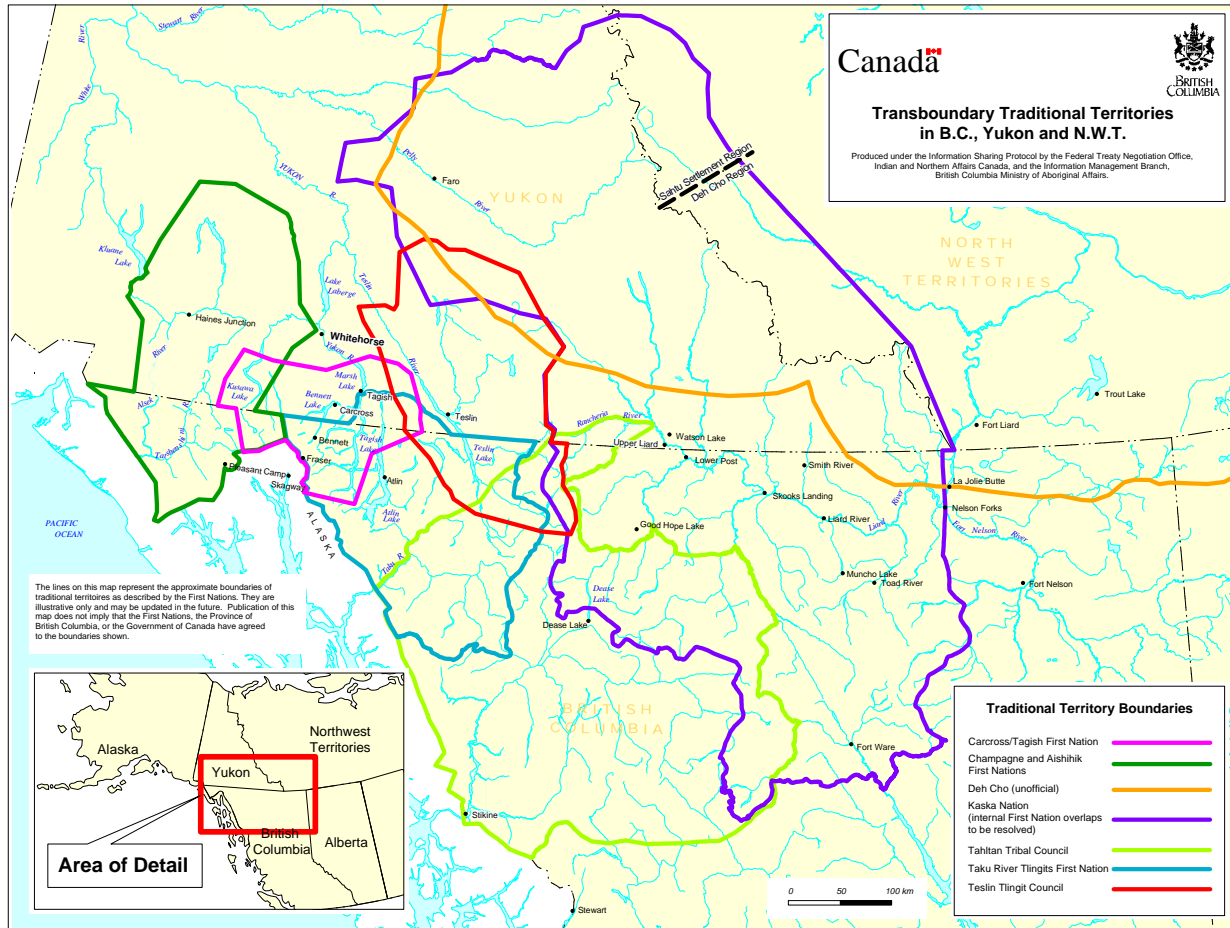
The *Ministry of Forests and Range* is responsible for forest harvest tenure allocation, and forest harvest planning. Commercial forest harvesting is currently not viable within the northern boreal mountains site.

The *Ministry of Agriculture and Lands* is responsible for strategic land use planning through the Integrated Land Management Branch. The northern boreal mountains site includes two land use planning processes currently underway (Atlin-Taku, and Dease-Liard), and an area of land not yet subject to a strategic plan, - the Jennings Lake to Teslin Lake region.

The *Ministry of Energy, Mines and Petroleum Resources* manages exploration and development for these resources. There is a great deal of mineral exploration and proposed development activity in the western portions of the site in BC. Hard rock mine developments are well advanced at Galore Creek, Red Chris and Schaft in the Iskut drainage, and Kutcho Creek in the upper Stikine drainage, and Cassiar in the Dease drainage. A large coal deposit is proposed for methane gas extraction in the Klappan valley⁶⁶.

⁶⁶ Energy, Mines and Resources 2009. Map of operating mines and selected major exploration projects in BC. Available (Nov 2009) at: <http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/OpenFiles/2009/Documents/OF2009-1.pdf>

Figure 9. The traditional territories of Yukon and British Columbia First Nations with transboundary claims.



First Nations Governments

Six First Nations claim traditional territory in BC within the northern boreal mountains site: Taku River Tlingit, Teslin Tlingit, Tahltan, Dease River, Lower Post and Kwadacha (Figure 9). The latter three are members of the Kaska First Nations, and collectively represented by the Kaska Dena Council. All have offices in B.C., except the Teslin Tlingit who are located in Teslin, Yukon. Five of these First Nations still lack any land claim settlement with the provincial and federal governments; Teslin Tlingit have completed their claim through the Yukon claims process, but this does not include any settlement of their B.C. claim. Despite the lack of finalized claims, all First Nations have a government structure, and active engagement in land and wildlife management issues, though they are handicapped compared to Yukon First Nations by the lack of financial resources from settled claims. All are actively pursuing more sustainable wildlife management and establishment of new protected areas, but there is often substantial disagreement within the First Nations as to their attitude and relationship with large-scale development interests.

Taku River Tlingit First Nation

In northwestern B.C., the watersheds of the Taku and Whiting Rivers, along with the headwaters of the Yukon River and portions of the Tagish, Teslin and Atlin Lakes drainages, comprise the traditional territory and the foundation of the culture and heritage of the Taku River Tlingit First Nation (TRT). The TRT traditional territory covers over 40,000 km² and claims areas from Teslin to Tagish in the Yukon, overlapping with the traditional territory of the TTC and the CTFN. This traditional territory is of international significance because of its wilderness characteristics, diverse wildlife populations, and the presence of wild pacific salmon. The Taku River is the largest pristine unprotected watershed on the Pacific shore of the western hemisphere.

On March 30, 1993, the TRT formally adopted a *Constitution Act* based on the clan system of government. Under this Constitution, TRT people accept responsibility for their homeland and culture, do not recognize the borders of other governments, can pass laws to protect their homeland and way of life, and will not cede or surrender aboriginal rights and titles.

The *Lands and Resources Department's* primary responsibility is to protect the TRT aboriginal rights and title. This involves working with other governments in their decision-making processes to protect the TRT lands, resources and people from irresponsible development. To protect their homeland from unwanted development, like the Tulsequah Chief Mine, and to conserve its natural pristine character for the continued existence of TRT people, the TRT engaged Round River Conservation Studies in 1999. Round River has a vision and purpose similar to that of the WCS Canada. It seeks strategic opportunities to advance the protection of natural and wild places and the viability of local communities by facilitating collaborative planning and resource management initiatives informed by conservation biology, traditional knowledge, and conservation-based economic development principles. The organization's current conservation work in Canada focuses on the Taku River, Muskwa-Kechika Conservation Area, and the Northwest Territories.

Initial efforts have included supporting the Taku River Tlingit's legal challenge of mining and road building in the Taku River watershed, the development of a conservation area design and land plan, wildlife and fisheries research, capacity building and economic development support. Recently, efforts have expanded to include social and cultural assistance programs, resource level planning, specific departmental and organization development, and formulating protective land designations.

Incorporating scientific information from the B.C. government and traditional ecological knowledge of the TRT, a conservation area design was completed and published in 2003 as the Conservation Area Design for the Traditional Territory of the Taku River Tlingit First Nation, referred to as the "Blue Book"⁶⁷. The other components of the Blue Book were a suite of focal species habitat models that are of key importance, both ecologically and socially, to the region. The Blue Book has also been used for science-based input for other conservation initiatives including TRT's land planning efforts.

⁶⁷ "The Territory of the Taku River Tlingit." Welcome to Round River. Web. October 31, 2009. <http://www.roundriver.org/TAKUCADrpt.pdf>

The most significant of these was the completion in May 2003 of *Hà t átgi hà khustìyxh sìti* – Our Land is Our Future: Vision and Management Direction for Land and Resources of the TRT homeland, referred to as the “Yellow Book”⁶⁸. This document combined the Blue Book with the social values of the Tlingit, captured through a series of community meetings, workshops and interviews and with assistance from Round River. The Yellow Book provides a vision and management direction for the Lands and Resources Department by describing how the TRT want to see their lands and natural resources used, managed and protected for the benefit of future generations. The Yellow Book also provides a foundation for sustainable economic development and capacity building for the TRT. Many B.C. first nations are considering developing a Yellow Book for their traditional territory.



Mount Minto, seen here from Little Atlin Lake, is an important cultural site for the Taku River Tlingit First Nation. (Photo: Donald Reid).

The implementation of the TRT vision will require the integration of several components including: a mix of land designations and innovative management arrangements to achieve large-scale regional conservation objectives; completion of negotiations with British Columbia over issues relating to access management and mining proposals; a financial structure that supports lasting conservation-based management; and a conservation-based economic development strategy.

At present the TRT are involved in the following initiatives (more information in the Appendix):

Taku Conservancy: The Taku Conservancy is a Society formed to protect the territory of the TRT. The purpose of the Conservancy is to ensure that this landscape remains a place where the needs of the residents are satisfied in harmony with the continued long-term viability of its native plants, fish, wildlife, and natural ecosystems.

⁶⁸ “The Territory of the Taku River Tlingit” Welcome to Round River. Web. October 31, 2009. <http://www.roundriver.org/TRTVDMSummary.pdf>.

Land Use Planning: For the past five years, the TRT and the B.C. government have been working out a process to move ahead with land use planning in the Atlin Taku Region⁶⁹. This region remains one of the only areas in the province to complete a land use plan. The purpose of this initiative is to increase certainty regarding resource conservation and use, and form the foundation for balanced solutions that meet economic, environmental, and social needs.

Northern Mountain Woodland Caribou Planning⁷⁰: The TRT has participated on the Northern Mountain Woodland Caribou Steering Committee since its formations two years ago. The Committee provides direction on the drafting of a management plan for this caribou population, which is a requirement of the federal SARA.

Southern Lakes Wildlife Coordinating Committee⁷¹: The TRT participates as a member of the SLWCC, which was established in 2008 pursuant to Schedule B, chapter 16, or the KDFN final agreement. This Committee has a three-year mandate to prepare and wildlife assessment for the Southern Lakes Area of the Yukon, which includes the Yukon portions of the TRT traditional territory.

Tahltan First Nation

The Tahltan First Nation claim traditional territories overlapping the headwaters of numerous drainages including the Dease River flowing north to the Liard (Mackenzie Drainage), and the Stikine, Iskut, Nass and Skeena, all flowing west to the Pacific. A relatively small proportion of this territory falls in Yukon. The Pacific drainages support strong stocks of salmon, and these fish have been a mainstay in Tahltan economy and subsistence for millennia. Situated between the Tlingit peoples of the Pacific coast and the Dena peoples of the interior, the Tahltans were heavily involved in the trade of fish and coastal forest products and large game such as moose and caribou. The Tahltan people were not historically a single entity, and the community of Iskut (Iskut Indian band) results from re-settlement of nomadic people more closely affiliated with the interior Dena (Carrier Sekanni and Kaska) by the federal government in the mid-1900s. These peoples were partly nomadic, following the seasonal movements of their ungulate subsistence foods.

Today, the Tahltan people comprise two independent First Nations, the Tahltan Indian Band (based in Telegraph Creek) and the Iskut First Nation (based in Iskut), with a total membership of close to 2,350 people. Both groups are involved in negotiations towards land claims. In addition, they are jointly represented on the Tahltan Central Council (TCC), based in Dease Lake, which acts as a central government agency on topics of joint concern, but outside the treaty negotiation process. Discussions between the Province of B.C. and the TCC, through a reconciliation table, have resulted in a restoration plan to deal with problems arising from a history of mining in the traditional territory⁷². There are numerous mining proposals in Tahltan territory at present including open-pit coal mine and coalbed methane extraction in the Klappan valley, the Red Chris mine on Todagin Plateau, and the Galore Creek property in the Iskut valley. Agreements between certain political entities within the Tahltan communities and the mining industries have resulted in a great deal of acrimony amongst the Tahltan, including calls for certain leaders to step-down. Tahltan

⁶⁹ "Atlin Taku Framework Agreement." B.C. Government Home – Province of British Columbia. Web. October 31, 2009. http://ilmbwww.gov.bc.ca/slrp/lrmp/smithers/atlin_taku/index.html.

⁷⁰ "Northern Mountain Caribou Management Plan." YFWMB Homepage. Web. October 31, 2009. <http://www.yfwmb.yk.ca/northernmountaincaribou/>.

⁷¹ "SLWCC Home." Yukon fish and Wildlife Co-Management. Web. October 31, 2009. www.southernlakeswildlife.ca.

⁷² British Columbia Government Aboriginal Relations and Reconciliation webpage. Available (Nov '09): http://www.gov.bc.ca/arr/firstnation/tahltan_nation/default.html

Elders called for a moratorium on mining developments in 2005⁷³, and have followed up with blockades of some resource access roads.

The Tahltan Central Council is the primary agency dealing with resource development referrals, environmental impact assessments, and land management. Lacking a Treaty settlement, and without a formal government structure, the TCC efforts are frequently based on negotiations with each development interest on a one-by-one basis. The B.C. government is frequently seen as adversarial in that it supports new development proposals, has historically established a number of protected areas infringing on Tahltan title, and has control of wildlife harvest quotas and policies.

Tahltan territory includes robust populations of moose, thimhorn sheep, caribou and mountain goats, along with many of their predators. The existing protected areas could serve as a nucleus for a National Park within the Boreal Cordillera ecozone. There are very high conservation values in this region, but it is unfortunately very far from the centre of WCS Canada activity in the site.

Kaska First Nations

Within B.C. there are three Kaska First Nations: Daylu (community of Lower Post), Dease River (community of Good Hope Lake); Kwadacha (community of Kwadacha, formerly Fort Ware). These First Nations are collectively represented by the Kaska Dena Council, specifically for negotiations with the province. The Kaska First Nations have not yet signed land claims settlements with the Crown, but actively pursue their rights and title in engagement with the province and development interests. In B.C. their traditional territories occupy about 100,000 km², or 10% of the province.

The KDC has a Lands and Resources Department with an interest in the sustainable development of resources on Kaska territory, and the conservation of natural resources. The KDC is negotiating a Strategic Engagement Agreement with the B.C. government, which will lay out the ways in which government and development interests are obliged to consult, accommodate, share revenue, and share decision-making with the Kaska.

The Kaska's Dena Kayeh Institute spearheads efforts to document, maintain, and advocate for the cultural and ecological heritage of the First Nations, through such processes as the gathering and documentation of traditional knowledge, the gathering of natural resource data, and the application of information to land use decision processes.

A considerable portion of the Kaska territory in B.C. is currently protected as part of the Muskwa-Kechika Management Area (MKMA). This includes Muncho Lake, Stone Mountain, Northern Rocky Mountains, Kwadacha Wilderness, Dall River Old Growth, Toad River Hotsprings, and Dune Za Keyih Provincial Parks. The Rocky Mountain Trench (Kechika River valley) is partly protected but is a major migratory corridor for birds, a very extensive wetland complex, and still a largely unroaded wilderness region, though it receives lots of jet-boat traffic. Nowhere in B.C. is this dominant low-elevation geographical feature, with such high concentrations of wetlands and biodiversity values, offered any large scale protection. Complete protection of the Kechika valley, is a prime conservation target. The MKMA largely falls within

⁷³ Text of the Tahltan Elders Statement. Available (Nov 2009) at: <http://www.firstnations.de/media/05-3-statement.pdf>

the Boreal Cordillera, which is an area where Parks Canada might consider the establishment of a new National Park. An amalgamation of existing protected areas (including such as Spatsizi Provincial Park, and some of those in the MKMA) connected by new protected zones, might be considered a good conservation option.

Outside the MKMA, the Kaska are currently negotiating with the B.C. government regarding a potential protected area in the Horseranch Range on the south side of the Liard Basin. This is part of finalizing the Dease-Liard Sustainable Resource Management Plan.

The Kaska traditional territory covers a wide diversity of relatively productive northern boreal forests, far removed from many settlements, and as such comprises wonderful conservation opportunities. It also includes the break in the Rocky Mountain chain through which the Liard River flows, and which is a huge dispersal barrier to the movement of organisms along the cordilleran chain. We lack a strong understanding of the implications of this break for biodiversity values, especially in the light of a changing climate that might force the northern movement of species. The Kechika valley could act to facilitate species responses to climate change because it offers a south to north movement corridor with few obstacles.



The Liard Basin, a productive landscape with relatively little relief, is a key feature of the Kaska First Nations' traditional territories. It is dotted with lakes, wetlands, and covered in extensive pine forests providing key caribou winter habitat. (Photo: Donald Reid).

Non-Government Organizations

Muskwa-Kechika Advisory Board

The Muskwa-Kechika Advisory Board is mandated to advise the BC government on management of the natural resources in the Muskwa-Kechika Management Area so as to maintain consistency with, and fulfill the management direction of the Muskwa-Kechika Management Plan which was drawn up following a strategic land use planning process. The Muskwa-Kechika Management Area is a mix of protected areas, special management areas and other public lands where there is a diverse array of resource extraction (primarily oil and gas, and forestry) and renewable resource activities (primarily guide-outfitting; recreational hunting; wilderness recreation).

Round River Conservation Studies

Round River Conservation Studies (RRCS) have been an active conservation partner with the Taku River Tlingit First Nation (TRTFN) for over a decade. They effectively act as technical advisers and analysts for the First Nations government, spearheading data acquisition and analysis on wildlife harvests, traditional knowledge and wildlife habitat mapping. Products of this work include a land use plan and a conservation area design. They are currently supporting the TRTFN in its government-to-government negotiations with the B.C. provincial government (Integrated Land Management Branch) towards a strategic-scale land use plan for the Atlin-Taku region⁷⁴.

RRCS has also been involved in the Muskwa-Kechika region of northern B.C., which overlaps the eastern end of the northern boreal mountains site. Here they have produced a Conservation Area Design for the Muskwa-Kechika Management Area, and a GIS toolkit to provide managers with quick access to resource management data for implementing the provisions of the Land and Resource Management Plan for the region. Much of this work involves collaboration with the Muskwa-Kechika Advisory Board, and Nature Conservancy of Canada.

Nature Conservancy of Canada

Nature Conservancy of Canada (NCC) is active in regions bordering the WCS Canada Northern Boreal Mountains site (e.g., the Central Interior of B.C., and the Taiga Plains ecozone), where they undertake eco-regional planning. They are not currently very active in the Boreal Cordillera ecozone. In the past they have teamed up with others (notably Round River Conservation Studies) to produce the Conservation Area Design for the Muskwa-Kechika Management Area⁷⁵.

⁷⁴ Round River Conservation Studies webpage: http://www.roundriver.org/trt_conservation_main.html

⁷⁵ Heinemeyer, K., R. Tingey, K. Ciruna, T. Lind, J. Pollock, B. Butterfield, J. Griggs, P. Iachetti, C. Bode, T. Olenicki, E. Parkinson, C. Rumsey and D. Sizemore. 2004. Conservation Area Design for the Muskwa-Kechika Management Area. Report for the B.C. Ministry of Sustainable Resource Management. Available (Jan 2010) at: http://science.natureconservancy.ca/resources/resources_w.php?Key=muskwa+kechika

SUMMARY: THE WAY FORWARD

As with most of Canada, the Northern Boreal Mountains site is full of conservation challenges and opportunities. We will have to pick and choose carefully from among them as we do new science and interpret existing scientific information in our pursuit of improved conservation. We must choose work that combines one or more of the following characteristics: (i) precedent-setting, in terms of bringing a novel view of the world through analysis or synthesis; (ii) empowering, in terms of being a useful tool for agencies with the power to make decisions; (iii) large-scale, in terms of addressing a large piece of geography or a conservation issue that is widespread through the site. From all the information we have gathered, and all our conversations, a few key themes emerge.

Land Use Disposition

The current rather piece-meal approach to land use disposition, based largely on a first-come, first-serve basis through the free entry staking and agricultural land application processes, does not serve wildlife conservation well at all. It does not serve any natural resource management well, because there is no clear mechanism to ensure a sustainable flow of ecosystem services from any natural resource (e.g., timber from forests; produce from farmland; wildlife harvest from wild habitats) under such an *ad hoc* regime. Fortunately there are various strategic land and resource planning processes envisaged for contentious lands, and therefore contentious wildlife habitats, in the future.

WCS Canada can serve conservation and natural resource management well by providing decision-making processes and agencies with wildlife habitat mapping and connectivity mapping at pertinent scales. These conservation tools are generally derived from mapping of ecological land classes, or vegetation communities. Such ecological mapping is far from complete but is gradually emerging, sponsored by various government agencies. WCS Canada does not want to duplicate efforts of governments, but seeks to catalyse and assist the development of ecological land classification and subsequent habitat interpretations, until government agencies have taken the full responsibility. Our role would be to encourage a more strategic approach to conservation and land use zonation, and a more explicit consideration of wildlife values. This would

ideally be complemented with carrying capacity estimates for certain species on certain ranges. At present there is still a large void in the provision of these kinds of information by any government, yet a clear recognition by many that such information is required.

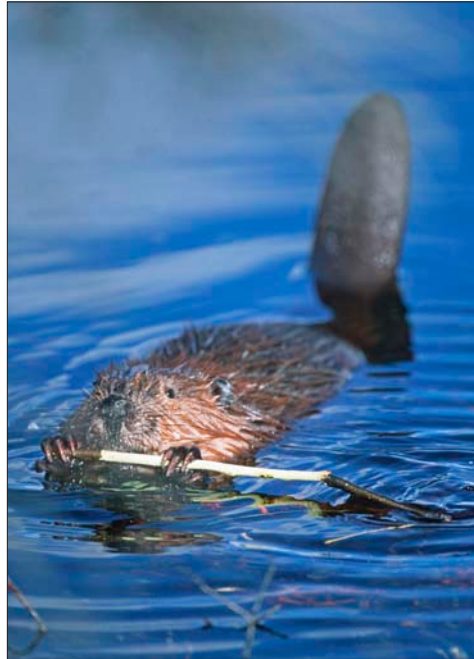
Species: Questions of land use disposition need to be addressed at various scales, but some species are well suited because they cut across scales, with large ranges at a population level and different seasonal ranges. Ungulates (caribou and moose), and large carnivores (notably grizzly bears) are suitable focal species for strategic land use planning. Resource specific land use plans, such as those for forest management, benefit from a focus on species that are particularly at risk when the coarse filter is compromised by resource extraction. For example, timber harvesting often changes the spatial and temporal dynamics of stand sizes and ages. Key effects are reduction in the extent and quality of mature and old growth timber stands (focal species: caribou (winter range), marten and cavity-nesting birds), shift away from the optimum patch size in forest succession (focal species: snowshoe hare and lynx). At smaller scales, land use disposition needs to address site-specific habitats or habitats with limited spatial extent but high value (focal species: nesting raptors; rare species with limited habitat choice). Cutting across all scales, the integrity of a set of landscape-scale ecosystems is well monitored by a species that depends on a complete and productive food web, notably the wolverine.

Valley Bottoms, Riparian Areas and Wetlands

We have repeatedly heard that wildlife faces its biggest threats in the loss of valley bottom, riparian and wetland habitats. This is the land base most desired by people for agriculture, timber, settlement, and access corridors. We can address this need by focusing much of our wildlife habitat mapping on species and seasons for which the conflicts with human land uses will be most clear and acute. However, there is still a large void of good science on how best to manage valley bottom, riparian and wetland habitats in boreal montane regions. We need to do novel science on the frequency and dynamics of disturbance regimes in creating and maintaining wildlife habitats. We need to do novel science regarding how wildlife use and rely on valley bottom and riparian habitats, and consequently how much habitat and in what temporal and spatial scales is sufficient. Our aim should be to produce best management practices for these habitats, and we will need to build strong academic and government partnerships to develop sound and implementable practices.

Species: Valley bottoms, riparian areas and wetlands support the highest levels of biodiversity regionally, and also a wide variety of habitats. The potential number of focal species is huge. Caribou often have a very particular relationship with their low elevation, mature forest, winter ranges in valley bottoms, and this species deserves attention for this reason alone. Riparian and wetland complexes support the most biodiversity, and focal species need to address the spatial and temporal scales of these communities. Key questions are: (i) for species that depend on wetlands, how much adjacent riparian and upland habitat is required? (focal species: moose; cavity nesting ducks); (ii) for species that rely

on wetlands, how large is the interconnected set of waterways and wetlands to support a viable population? (focal species: river otters; beavers); (iii) for riparian habitat types that go through successional change, what is the temporal scale of that change, what are the patterns of change, and what food webs are affected? (focal species: beaver; lesser yellowlegs).



A beaver (*Castor canadensis*) nibbles bark while preparing to give a warning slap of its tail. The ability of this animal to create habitat for so many others, and influence patterns of water flow, make it a key focal species in the boreal mountains. (Photo: Fritz Mueller).

Access Management

Access routes, especially new roads and backcountry trails, into wild habitats are extremely detrimental to wildlife populations and the integrity of wildlife habitats. This is generally acknowledged but management agencies need a lot more specific information on the risks to specific species and their use of specific habitats. There is a clear opportunity to do novel, and perhaps site-specific, research on road siting, alignment, traffic control, and traveler behaviour. Some of this will include mapping the knowledge of local people regarding the geography of wildlife habitat use. However, there is a broader question of how to control use of the roads by people; we need to employ management regimes that will limit public access and traffic volume, perhaps in an adaptive management framework.

Species: Access is detrimental to wildlife primarily because it allows easier harvesting, and frequently local overharvesting, and because it disturbs wildlife thereby alienating certain habitats. The key focal species are the primary harvested species (moose, caribou, thimblehorn sheep, lake char, grayling), and those that are most clearly disturbed and displaced (thimblehorn sheep, mountain goat, wolverine, grizzly bear, wolf).

Climate Change

The risk of climate change to conservation actions will pervade all our activities. It may become a topic of research itself, especially to the extent that we need to better understand the relative risk of a changing climate in different ecoregions, and the climate changes that are actually most influential on wildlife population viability and habitat stability. We will consider it as a dominant factor in our decisions about what and where we choose to work. This may include deciding not to pursue the conservation of a certain species in a certain region because of particularly high risk in the face of a changing climate, or deciding to engage in a risky situation because of the possibility of a valuable management intervention.

Species: Focal species to address climate change will vary with the climate trend that is viewed as threatening. One ongoing trend is the increased frequency of wild fire. Species that depend on older forest types for some of their annual requirements may be most at risk (focal species: caribou, marten). Another trend is increasing winter precipitation in some areas, which might affect the suitability of winter ranges (focal species: caribou; thimblehorn sheep). Another trend is the increasing evapo-transpiration and reduced late summer run-off that is reducing the habitat quality of many streams and wetlands (focal species: salmon, beaver). Another trend is the increasing frequency of thaw and ground flooding during winter warm spells (focal species: arctic ground squirrels; jumping mice). Often with climate change the question is to choose a useful focal species and investigate how close the affected parameters (e.g., snow depth; stream flow; forage vigour) are to a threshold at which the species may suffer life history and population viability consequences.

Institutional Engagement

WCS Canada will work with numerous partners in the pursuit of new science, and in the interpretation and presentation of existing science and knowledge for improved conservation outcomes. To do the new science, we can pursue partnerships with committed natural resource managers in all governments, industry, and non-government organizations. To bring scientific information and interpretations to decision-making bodies, it will probably be politically easier for WCS Canada to engage with First Nations governments who face capacity issues and a relative dearth of accessible, interpreted science. These governments have the interest to pursue sustainable resource conservation, and a strong cultural link to wildlife. However, we should aim to make our analyses and results accessible to all agencies, in the best interests of improved conservation.

Species: First Nations partners frequently are interested in species of subsistence and/or cultural value (focal species: caribou, moose, thimblehorn sheep, arctic ground squirrels, hoary marmots, salmon, lake char, grayling, whitefish), or species that are perceived to be detrimental to these harvested species (focal species: bison, elk, wolf). Government has an obligation and interest in rare and threatened species (focal species: bison, peregrine falcon, short-eared owl).

Regional Diversity

Within this large site there are far too many things for WCS Canada to engage in at the same time. We need to look for themes or topics that can be actively researched or pursued in different parts of the site for common purpose, and partners who could help the work. For example, to assess access management regimes we would need to find study sites in various far-flung sites and develop working arrangements with partners who could help gather information. We need to focus on particular regions where issues are most acute or institutional processes provide current opportunities. For example, land use planning and forest resources management planning provide very important strategic-scale opportunities to illustrate and assess wildlife habitat needs in relation to other land uses, and should be a high priority especially when governments cannot provide the appropriate information. As we develop capacity we will have to be very wary of spreading ourselves too thin on the ground and among partners. There are many questions that we can help in addressing in conjunction with other partners, such as academics, government scientists, and First Nations knowledge holders.

Species: WCS will have to choose from among the quite large array of focal species it might address, and, depending on the conservation issue at hand and the role of partners, deal with just a few. It is fairly clear that caribou will be a key species, because of its high vulnerability to a number of the current threats, because it is highly valued by many collaborators, and because it is iconic of the north.

In summary, the conservation challenges in the Northern Boreal Mountains are diverse, urgent and growing in number and intensity. At the same time the opportunities for WCS Canada to engage and make a difference, by going beyond what any other agency can do, are clearly numerous and urgent. There is a potential powerful role for WCS Canada to play in this region with its amazing array of wildlands and wildlife.



A magical rainbow arches over Spatsizi Provincial Park, British Columbia producing a transient moment of wilderness beauty. (Photo: Donald Reid).

APPENDIX: ADDITIONAL INFORMATION REGARDING INSTITUTIONS

Yukon Department of Environment

The primary responsibilities of Environment Yukon, as stated in its current departmental plan, include:

- Maintaining and enhancing the quality of the Yukon's environment for present and future generations through ecosystem-based management, conservation of resources and protection and maintenance of biodiversity;
- Ensuring that Yukon people have the opportunity to be involved in the development and review of departmental programs, policies, legislation and regulations through open and meaningful communication and participatory processes;
- Managing natural resources in a manner that promotes integration with other sectors including economic development, so that optimum benefits can be derived for all Yukon people;
- Undertaking resource management activities that meet the Yukon Government's obligations and respect the rights of aboriginal people and relationships established through land claims and self-government agreements;
- Providing sustainable fish and wildlife harvesting and viewing opportunities for cultural, recreational and economic purposes;
- Facilitate participation in land-based activities (e.g., hunting, fishing, trapping) to sustain a unique Yukon lifestyle;
- Establishing and managing a system of wilderness preserves, natural environment parks and ecological reserves, Canadian Heritage Rivers, campgrounds and recreation sites; and to provide information and interpretive services for Yukon residents and visitors;
- Providing regional delivery of departmental services in the areas of licensing, wildlife-human conflict, education and enforcement;
- Developing and implementing management programs to maintain biological diversity and to ensure the conservation and sustainable use of fish, wildlife, habitat and water resources;

- Developing and providing management and protection of Yukon's environment through education, regulation development, monitoring and inspections including management of water resources, assessment and mitigation of resource developments, and pollution prevention programs;
 - Coordinating the Yukon Government's activities as they relate to climate change impacts and adaptations;
 - Managing the Department's financial, human and information resources in an efficient, effective and economical manner by providing administrative support services to departmental personnel; and
 - Gather and share information on the status of ecosystems.
1. Ecological land classification and mapping.
 - Ultimately, an ecological and landscape classification system and map is needed for the entire Yukon. Opportunities to work with First Nations in the Southern Lakes area are developing, and would support the need for land planning in this area. Some examples include:
 - Mapping and habitat modeling to support recommendations of the Southern Lakes Wildlife Coordinating Committee;
 - Mapping to support Special Management Area planning processes (e.g., Agay Mene Park, Kusawa Park, Lewes Marsh Habitat Protection Area, Tagish River Habitat Protection Area).
 - Agay Mene Natural Environment Park by a joint First Nations/ Yukon government steering committee.
 - Lewes Marsh Habitat Protection Area (Planning is on hold pending engagement by TKC, CTFN and KDFN.)
 - Tagish River Habitat Protection Area (A Steering Committee has been established with three members from CTFN, two from EY and one from EC.)
 - Forest Management Planning (A Terms of Reference for a Strategic Forest Resources Plan has been signed by the Yukon government and Kwanlin Dün First Nation and Ta'an Kwäch'än Council)
 - Regional and sub-regional land use planning.
 - Pickhandle Lakes Habitat Protection Area

As well, the Southern Lakes area is under significant pressure for agricultural and rural subdivision development. The Habitat Programs section could collaborate with the WCS Canada on this activity.

The Habitat and Biodiversity Programs sections would benefit from collaboration with WCS Canada on the following activities:

1. **Identification of critical habitats for protecting species listed under the federal Species at Risk Act.**

For the Yukon government this would include:

- **Northern Mountain Population of Woodland Caribou** – The Northern Mountain population is the caribou of the Boreal Cordillera ecoregion, and includes all woodland herds in the Yukon and northern B.C. A management plan has been drafted and Environment Canada is proceeding with consultations required under the federal Species at Risk Act and First Nation Final Agreements. It is anticipated that the federal Minister of Environment will approve the plan in 2011. The plan calls for the

identification and assessment of the quantity, quality and distribution of habitats for the caribou population. This is a significant multi-year task that would benefit all government agencies, First Nations and wildlife management boards and councils that are involved in the management of these herds. This work has application beyond caribou conservation, as it would also inform land-use planning, forest management planning, YESAA/CEAA assessments and cumulative effects considerations, both in Yukon and northern B.C. Specific herds and areas would need to be prioritized by development pressures and other anthropogenic threats to caribou.

- **Wood Bison** – Wood Bison were reintroduced in the Yukon in the 1980s as part of Yukon’s contribution to Canada’s Wood Bison Recovery. This contribution follows recommendations by the Canadian Wood Bison Recovery Team as well as precedents set by several provinces to establish free-roaming, disease-free herds of about 500 head on their past ranges. The Yukon introduction has been the most successful with an estimated population of 1500 bison that now supports an open hunting season. Two objectives of the plan are “to develop habitat management strategies that will ensure the maintenance of the Wood bison range in its pristine condition, and to implement mitigative measures to reduce the impact of bison on other ecosystem components.” This would require studies to define and delineate wood bison habitat and assessing the threats to this landscape, as well as evaluating programs in other jurisdictions on this subject.
- **Western toad** – The Western toad was listed as a species of special concern in 2002 requiring the drafting and approval of a management plan. This species has suffered population declines and population extirpations, at least one of which is well documented. It is relatively intolerant of urban expansion and the conversion of habitat for agricultural use. Dependent upon oligotrophic and fishless ponds and small lakes for breeding, it is also sensitive to habitat deterioration, introduced exotic predators and competitors, and disease. This species remains widespread and locally abundant throughout most of its historic range in Canada despite its known vulnerabilities to urban expansion, conversion of habitat for agriculture, habitat deterioration, introduced exotic predators and competitors, and disease, all of which have severely reduced its abundance and range further south. A draft management plan is in progress and identifies the need to better understand habitat use patterns, to characterize and map habitats, and recommends protection of important habitats.
- **Baikal sedge** – The Baikal sedge was listed as a threatened species in 2005 requiring a recovery and action plan including habitat protection measures. This is a geographically restricted species of three sand dune areas that serve as habitat for five populations. The species has been impacted by declines in population numbers, size, area, quality of its habitat and on-going impacts from the recreational use of all-terrain vehicles at Carcross and Bennett Lake. If the Alsek River is dammed again by the advance of the Lowell Glacier, as has occurred in recent

past, the large population at the confluence of the Dezadeash and Kaskawulsh Rivers could be at risk. A proposed recovery plan will be posted for public consultation in 2010. Identification of critical habitat for this species is outstanding.

2. Standardized guidelines around habitat mapping and supply modeling.

This is a critical and developing activity among organizations responsible for wildlife, habitat and land-use planning in the Yukon. However, some of the approaches and products that are currently in use for land use planning are based upon tenuous and developing methodologies.

Habitat Programs staff are currently contacting other jurisdictions for advice and information on suitable types of habitat mapping and modeling, way and means and methods of undertaking this work, and costs and benefits for various approaches. Their aim is to incorporate this advice and update existing habitat guidelines that were developed in the 1990s.

However, given resources and competing priorities, this initiative will take many years to complete. If WCS Canada can provide technical advice on this initiative, especially with experience and studies from other jurisdictions and countries, Yukon organizations could benefit from their collaboration.

3. Protection of key habitats in established Habitat Protection Area.

A number of Habitat Protection Areas (HPA) has been established in the Yukon. Each area has an approved management plan identifying the protection of key habitats. There is now a requirement to inventory and map these habitats, and to apply standardized protocols for their ongoing monitoring. HPAs that require this work, in order of priority, are:

- **Old Crow Flats Habitat Protection Area** – This HPA is part of a Special Management Area established in 2006 and which includes Vuntut National Park and settlement lands of the Vuntut Gwitchin First Nation. The Yukon government is required to manage this HPA with a priority to protecting the ecological integrity and diversity of fish and wildlife populations and habitats from activities that could reduce the land's capacity. Portions of this HPA, in what is known as the core area of the Old Crow flats wetlands, have been permanently withdrawn from industrial activities while areas outside of the core area have been withdrawn for a 20-year period. A management plan has been approved and the Yukon government is required to develop habitat protection regulations prior to the expiration of withdrawals. This will require studies to identify and map key habitats and establish monitoring protocols.
- **Lutsaw Wetland Habitat Protected Area** – This HPA was established in 2006 according the Special Management Area provisions of the Selkirk First Nation Final Agreement. It is located along the east side of the North Klondike Highway 8 km south of Pelly Crossing and includes a string of lakes from Long Lake in the north to Duck Lake in the south. A management plan has been approved and the Yukon government is required to ensure the conservation of fish and wildlife habitats and to

protect the full diversity of habitats from activities that could reduce the area's ability to support wildlife. The plan calls for studies of habitat condition and the need for habitat enhancement.

- **Horseshoe Slough Habitat Protected Area** – Horseshoe Slough is an oxbow lake 70 km upstream of Mayo. The HPA was established in 20__ according to the Special Management Area provisions of the First Nation of Nacho Nyak Dun Final Agreement. The HPA is 87.7 km² in size and includes lower portions of Nogah Creek and the south bank of the Stewart River, and some Nacho Nyak Dun settlement lands. The area contains numerous ponds and wetlands with an abundance of water draining from the hillside. It provides nesting and moulting habitats for Trumpeter Swans, Canada Geese, Red-necked and Horned Grebes, Pacific Loon, American Coot and 12 species of ducks. A management plan has been approved and the Yukon government is required to conserve wildlife habitats and protect the full diversity of habitats from activities that could reduce the land's capability to support wildlife.
 - **Ddhaw Ghro Habitat Protection Area** – Ddhaw Ghro HPA is an isolated mountain block of about 1,600 km² lying between the Pelly and Stewart Rivers in the central Yukon. The area is home to fanning sheep, the Ethel Lake woodland caribou herd, and habitats critical to moose, waterfowl breeding, and nesting for peregrine falcons, gyrfalcons and golden eagles. Bears, wolves, marmots, pike and host of other animals and plants make their homes in a wide variety of habitats from wetlands and riparian forests in the lowland areas to alpine tundra and ridges. A management plan has been drafted and is under review by the Yukon government, Nacho Nyak Dun and Selkirk First Nations. Once approved, Ddhaw Ghro will be formally established as an HPA. Under the plan, the Yukon government is required to provide the management and protection for the area, to protect important fish and wildlife habitats, and to protect the full diversity of habitats from activities that could reduce the area's capacity for support wildlife.
4. **Collaboration on delivering habitat commitments in cooperative fish and wildlife management plans with First Nations.**

First Nations and the Yukon government have jointly developed a number of regional, community-based fish and wildlife management plans in First Nation traditional territories of the Yukon. These plans coordinate management priorities (e.g., identification and management of important habitats) and propose solutions to address these priorities.

The Habitat Programs section could collaborate with the WCS Canada on delivering selected habitat actions in these plans. A review and listing of the habitat actions in these plans has been completed, and discussions with WCS Canada would be needed to select activities suitable for WCS Canada to undertake. This work comes from approved plans and would be of great benefit to First Nations, Renewable Resources Councils, and local communities.

The Environmental Affairs (EA) Section of Yukon Environment Department has a role in the review process under the Yukon Environmental and Socio-economic Assessment Act (YESAA). This role in YESAA reviews relates to

activities that may be subject to an assessment according to Schedule 1 of the 'Assessable Activities Regulations' under YESAA and include:

- Wildlife, Wildlife Areas and Birds (PART 5 WILDLIFE)
- Contaminated Soils & Sites (PART 8 CONTAMINANTS AND WASTE)
- Special Waste & Solid Waste (PART 8 CONTAMINANTS AND WASTE)
- Water Use and Deposit of Waste (PART 9 WATER)
- Fisheries (PART 10 FISHERIES)
- Air Pollutants (PART 11 AIR EMISSIONS)
- Fuel Storage (PART 13 MISCELLANEOUS)
- Protected Areas (PART 13 MISCELLANEOUS)
- Wilderness Tourism (PART 13 MISCELLANEOUS)
- Pesticides (PART 13 MISCELLANEOUS)

The EA Section administers the following steps for YESAA and non-YESAA review:

1. The proponent submits the project application to the YESAA Assessor or Resource Manager.
2. The assessor/manager distributes the application/project description to the identified parties on their notification list.
3. When Yukon Government is involved in the project review, the delegated Decision Body (dDB) or Resource Manager refers the application/project description to affected and interested YG departments for their comments via the DART website or other notification process. For YESAA reviews this is the time when the Environmental Affairs Section would declare their role as a Technical Expert.
4. The EA Section receives information notifications and the submitted material and distributes the information through an internal referral. Depending on the nature of the project and its location, the Regional Biologist, Parks, Conservation Officers and other Branches will receive copies on a case-by-case basis (e.g. if the project site is near or crosses water then Fisheries and Water Resources would be included in the review; if the site is near sheep habitat then the Sheep Biologist would be included; and in some instances the advice of the region's Conservation Officer is required).
5. The EA Section receives comments and feedback from their referrals and then consolidates them with their own research and inspection results. Information may also include recommendations that the project proponent be required to provide additional details with regards to specific authorizations related to Environment's programs (e.g. Standards and Approvals may advise of Solid Waste, Special Waste and/or Air Emission Permit requirements; Water Resources may advise that a water license be required).
6. The EA Section then forwards the departmental response to the appropriate body(ies) by posting it as a comment attachment on the DART website for that project or by other approved notification means. If additional information or clarifications are required on the information

sent during a YESAA review, the assessors contact the originator of the comments directly while keeping the Section informed of all correspondence.

7. The YESAA Assessor/Resource Manager reviews the comments of all advisors, interest groups and members of the public while conducting the assessment and will issue a recommendation/decision.
8. YESAA reviews the assessor's recommendation is sent to the YG delegated Decision Body for a (collaborative YG) decision in the form of a Decision Document allowing the project to proceed, proceed with terms and conditions or to not proceed.

Yukon First Nations Governments

The following is some additional information regarding the Umbrella Final Agreement (UFA), and the powers available to Yukon First Nations on their own Settlement Lands.

On May 29, 1993 CYI and the federal and Yukon governments signed the UFA. Key provisions of the UFA include:

- Title to 41,439 square kilometers of land divided into Category A Settlement Land which has both surface and subsurface rights and Category B Settlement Land which has surface rights only, but which includes the right to specified substance materials such as sand and gravel;
- \$246,600,000 in financial compensation payments (1989 dollars);
- Payment of individual YFN shares over 15 years, beginning when each final agreement is reached;
- \$6,500,000 (1998 dollars) Yukon Indian People Training Trust;
- \$3,245,736 (1992 dollars) Fish and Wildlife Management Trust;
- Up to \$1,500,000 (1992 dollars) for the Yukon River drainage basin for a salmon harvest study;
- A total of \$4,000,000 (1990 dollars) as initial capital for the establishment of the Yukon First Nations Implementation Fund;
- Payment of \$26,570,000 (1992 dollars) in exchange for the Indian Act Section 87 tax rights, beginning on the third anniversary of the effective date of the UFA;
- Rental revenues from surface leases and royalties from the development of non-renewable resources that take place on settlement land;
- Rights to harvest wildlife for subsistence purposes throughout the traditional territory;
- Preferential harvesting of some species and exclusive harvesting on Category A settlement land;
- Approximately 70 percent of the traplines allocated in each traditional territory;
- Guaranteed one-third First Nation membership on the Yukon Water Board, the Dispute Resolution Board and the Yukon Land-Use Planning Council, and up to two-thirds representation on regional land use planning commissions;

- Guaranteed 50 percent representation on the Development Assessment Board (now known as the Yukon Environmental and Socio-economic Assessment Board or YESAB), Yukon Surface Rights Board, Yukon Fish and Wildlife Management Board, and the traditional territory regional Renewable Resource Councils (RRCs);
- Provisions for promoting and preserving the culture and heritage of YFNs and their people; and
- Provisions for the ownership and management of heritage resources and designated heritage sites.

The 11 self-governing YFNs have negotiated and signed a Program Service and Transfer Agreement with the federal and Yukon governments respecting mines and minerals administration, and forest and lands management, on Settlement Lands. This agreement transfers the following responsibilities to YFNs:

Mines and Minerals Administration - The preparation, approval and implementation of resource legislation, regulations and policies, issuance and administration of rights, interests and authorities, maintenance of registries, inspections, monitoring and enforcement of compliance, levying fees and royalties and collecting revenues; in respect of Category A Settlement Land Minerals other than oil and gas, and in respect of Category B Settlement Land Specified Substances.

Forest Management - The preparation, approval and implementation of resource legislation, regulations and policies, and inventory and management of forests, forest management planning, forest renewal (silviculture), timber allocation, issuance and administration of rights and authorizations, maintenance of registries, inspections, monitoring and enforcement of compliance, levying fees and royalties and collecting revenues; in respect of Settlement Land Forest Resources.

Land Management - The preparation, approval and implementation of land-use and environmental protection legislation, insurance and administration of rights, interests and authorizations, maintenance of registries, development of environmental protection strategies, inspection, monitoring and enforcement of compliance, levying fees and rents and collecting revenues; in respect of the Settlement Lands.

Ta'an Kwäch'än Council

In 1956, the Department of Indian Affairs amalgamated Yukon Indian people living between Marsh Lake and Lake Laberge into the Whitehorse Indian Band. Previously the Marsh Lake and Lake Laberge people were separate. On 14 February 1987, the Ta'an Kwäch'än was re-established as a distinct first nation. The CYI (now the CYFN)) recognized the TKC in 1987, followed by the federal and Yukon governments in 1998. The TKC signed its final and self-government agreements on 13 January 2002 and became a self-governing first nation on 1 April 2002.

The Government of the TKC, in accordance with its Constitution, is comprised of the General Assembly, the Board of Directors, the Elders Council, the Youth Council and the Judicial Council. Ta'an Kwäch'än citizens elect a

Chief and Deputy Chief every three years. The TKC government encompasses six departments including the Department of Heritage, Lands and Renewable Resources. This Department has introduced Bill C-1, the *Lands and Resource Act*, which recognizes the fundamental importance of protecting and enhancing cultural identity, traditional values and lifestyle; and balancing the protection of natural resources and the socio-economic interests of citizens making use of settlement lands. The Bill applies to all settlement lands, including any resources thereon or therein, retained by the TKC under its final agreement. Settlement land would be held in trust by the TKC for the use and benefit of present and future generations of citizens, and managed responsibly and developed sustainably. Bill C-1 received first reading in August 2007 and, in February 2009, was returned to the Board of Directors for further review.

Teslin Tlingit Council

The Self-Government Agreement enables the Teslin Tlingit Council (TTC) to establish the legal and political framework for its government relations with Canada and Yukon. The TTC is entitled to enact its own laws from a set of predefined terms set out in the agreement, including:

- The use, management and good government of its Settlement Lands and the people living on these lands;
- The administration, operation and internal management of the TTC's affairs, including the rights and benefits realized pursuant to its Final Agreement;
- The legislative powers that apply to TTC citizens wherever they may reside in the Yukon.

Following are details on the high priority wildlife management issues facing the TTC Lands and Resources Department.

Moose Populations and Inventory: Between one-quarter and one-third of the traditional territory has been surveyed for moose at least once. There are approximately 5,500 to 5,600 moose in total and their status varies in different regions of the traditional territory. The primary moose management area for the TTC is the Nisutlin River (GMSZ 10-21, 10-22 & 10-23). Traditional information indicates that there are fewer moose now in the Nisutlin Delta than there were in the past. The Yukon government conducts a census of this population every 8-9 years in addition to ongoing surveys during the post-rut period to track calf survival, population composition and trends, and a community-based (and ground-based) monitoring program similar to the one operating in the Mayo area is being considered. The Yukon Fish and Wildlife Branch surveyed this area in 1986, 1994 and 2003. TTC would like more current and regular moose inventory data for this area so they can move ahead with plans to promote a sustainable harvest by the citizens.

TTC would be interested in engaging WCS Canada to assist them in conducting a census of this population during the intervals between the Yukon government censuses. This would provide TTC with its own population data and would put them on a more even footing with the Yukon government. This would greatly improve relations, which are frequently hampered by issues of trust when one party owns all the information.

TTC would like to update moose management units in their traditional territory based on the community's knowledge about hunting patterns and access. Currently, moose management units are amalgamations of GMSZs with boundaries that are not a good fit for moose. In the Nisutlin River area, TTC would like to see the GMSZ subdivided to fine-tune moose management, but the Yukon government is not supportive of this approach. TTC will continue to work with the Yukon government to adjust some GMSZ boundaries, but this is a complicated process requiring regulatory changes and results have been disappointing to date.

First Nation Harvest Reporting and Regulation: Many challenges are created for the department due to limited education of first nations on the rights and responsibilities granted under the final agreements, and how those are to be administered by the first nation government. TTC is developing ways and means to inform and educate Yukon Indian people about the provisions of their final agreement.

A major constraint for TTC is their limited enforcement and justice capability, although TTC has a Wildlife Act, and is in the process of developing a Justice Act. TTC and the Yukon Conservation Officers work collaboratively, including joint patrolling of the TTC traditional territory. TTC staff are eligible for Yukon Conservation Officers programs but much of the advanced enforcement training such as arrest and control procedures are currently not relevant for TTC staff. Training on the use of field equipment such as boat and ATV safety courses have been valuable.

The Lands and Resources staff are looking at scenarios of low wildlife populations, particularly moose, and the harvest management options that they would consider, including the regulation of subsistence harvesting under Chapter 16 of the TTC Final Agreement. This discussion will be further developed during a proposed moose management planning exercise, and will involve large amounts of community involvement.

TTC has been monitoring the subsistence harvest in their traditional territory for about 10 years but the surveys have been somewhat sporadic and they do not have much confidence in the data. However, since 2007, the harvest monitoring has been rigorous through household survey methods and TTC has more confidence in these numbers. They have found the harvest of moose to be greater than anticipated and will continue to monitor this harvest rigorously, especially in the Nisutlin River area.

With respect to licensed harvesting, TTC has a large block of Settlement Land along the east side of the Nisutlin River below the North Canol Road, and does not currently grant permission to licensed hunters who reside outside of the Traditional Territory to hunt on these lands.

TTC does have harvest sharing agreements with neighboring first nations, that are mediated by means of Access permits which may contain limitations, and are decided on a yearly basis. TTC requires citizens to obtain access permits for the purposes of providing proof of enrollment while hunting, and to streamline the collection of harvest data. Access permit records are used to help guide targeted interviews; to date, household surveys have been the main method of harvest data collection.

On-the-Land Monitoring: TTC employs game guardians seasonally who monitor hunting activities and wildlife on the land. However, employees lack proper training in how to interview and deal with people and data recording procedures to ensure information is collected in a consistent and technically sound way.

Moose Distribution and Movements: TTC is cooperating on a study of moose habitat selection in the Nisutlin River area using radio telemetry and traditional knowledge. The study is being conducted by graduate student Alice McCulley from the University of Northern British Columbia, under the supervision of Katherine Parker. Moose density in the area is relatively high compared to most of Yukon, and populations are thought to be stable or slowly decreasing. Habitat selection will be quantified for both males and females throughout the year. Short-term telemetry data and long-term local and traditional ecological knowledge will be used to quantify harvest vulnerability. Field studies will be completed in 2009. Providing information about moose habitat use and selection, and identifying limiting or critical habitat components will contribute towards effective future land use planning and impact assessment processes in south-central Yukon.

Access and ORV monitoring and control: TTC is concerned about the potential expansion of trails and the increasing recreational use of off-road-vehicles (ORVs) in their traditional territory. They recognize that most of their traditional territory is relatively remote and the problem is not critical compared to areas around Whitehorse, but would like to deal with this issue in a proactive manner so as to lessen the potential problem. They are mapping existing trails opportunistically, and looking for ways to monitor the use of trails by ORVs that are noninvasive and do not threaten peoples' privacy, and ways to assess trail expansion in relation to managing harvests and protecting habitats.

TTC has a large body of GIS data but lacks the technical capacity to organize, analyze and retrieve data in an efficient and effective fashion. TTC would be interested in engaging WCS Canada in assessing the existing GIS data, developing a database to store and access this information, and train staff in its use and maintenance. This database would be used by TTC to analyze access issues and to better assess development proposals in their traditional territory. This activity would require further internal discussion.

Of immediate concern to TTC is the impact of upgrading the access road into the Red Mountain mine site. Tintina Mines Ltd. (Tintina) proposes to carry out a geotechnical testing program along a proposed access route to its Red Mountain deposit. The most important issue for this proposal relates to the potential for improved access into the Red Mountain Area. The establishment of new or improved access into remote areas of Yukon always leads to concerns about increased hunting pressure and the potential detrimental effects on wildlife. TTC has recommended avoiding the establishment of new access until a decision is made to proceed with advanced exploration. See Appendix B for TTC report to YESAA, a map of the proposed access route, Teslin Renewable Resources Council correspondence to Yukon Environment Minister Fentie and his response. Further information can be obtained from the YESAB Online Registry for Project # 2006-0239.⁷⁶

⁷⁶ "YESAB Online Registry." YESAB - Yukon Environmental and Socio-economic Board. Web. October 31, 2009. <http://www.yesab.tzo.com/wfm/launch/YESAB>

Land use reviews for environmental assessment: TTC receives land use proposals within their traditional territory for review and comment to the YESAB District Office. Comments are based upon an independent review reflecting TTC interests, and with little or no contact or input from territorial or federal fish and wildlife agencies. There is no geographically referenced, biophysical database of current technical information in their traditional territory to use as a reference and to assist in their analyses, and the Wildlife Key Areas database provided by the Yukon government is inadequate and does not include many of the known important areas for wildlife. TTC believes that a comprehensive database would be a powerful tool for land use assessment purposes and would like to work with other parties, including territorial and federal agencies, to create such a database. Further, TTC would incorporate their heritage and harvest information into this database.

TTC is aware of interest in the Yukon and federal governments, and also in some first nations, to develop a biophysical land classification for the Yukon and for some traditional territories. If these efforts were to move forward, TTC would be interested in participating.

There are currently no consistent technical guidelines for land use and environmental reviews, and essentially no communications among the agencies on input to the YESAA Offices. As a consequence, TTC and the other agencies are independently reviewing development proposals without the benefit of each other's information and interests. TTC would be interested in developing better coordination and communications among federal, territorial and first nation government environmental agencies on land use and environmental reviews.

Public information and education: TTC needs to provide information and education to its citizens and to other Indian people on the provisions of their Final Agreement. This is needed, in particular, to advance publicly acceptable fish and wildlife conservation and management programs, including first nation harvest monitoring.

First Nations' Northern Mountain Caribou Management Workshop: TTC has partnered with Carcross/Tagish First Nation (CTFN) and TKC to host a first nations' workshop on harvest data management. This group may be approaching WCS Canada after the workshop to help with the development on a technical document to serve as guidelines, or management alternatives for first nations.

Library support services: TTC Land and Resources Department has a very limited collection of literature on natural resource science and management. Staff often feel inadequately prepared and knowledgeable when dealing with issues and decisions around the conservation and management of lands and resources. At a minimum, it would be extremely helpful if TTC staff had access to departmental library services in Yukon Environment and Yukon Energy, Mines and Resources. Access to other relevant library resources would also help.

Champagne and Aishihik First Nations

The Champagne and Aishihik First Nations (CAFN) have taken the initiative to enact a number of pieces of legislation pertaining to their Settlement lands.

CAFN enacted its *Fish and Wildlife Act* on September 17, 1998. The stated purposes of this Act are:

- To ensure conservation in the management of fish and wildlife and their habitat;
- To preserve and enhance the renewable resource economy of Champagne and Aishihik people;
- To preserve and enhance the culture, identity and values of Champagne and Aishihik People;
- To integrate all aspects of renewable resource use and management;
- To develop responsibility for renewable resource management by Champagne and Aishihik People;
- To honor fish and wildlife harvesting customs of Champagne and Aishihik People; and,
- To provide for the ongoing fish and wildlife needs of Champagne and Aishihik People.

This Act enables CAFN to make hunting regulations with respect to Settlement Lands, CAFN beneficiaries, other Yukon Indian people hunting within the CAFN traditional territory, and for Category 1 traplines. The following restrictions apply under this Act:

- A CAFN citizen cannot hunt without proof of enrolment, except a person enrolled under the CAFN Final Agreement who was 55 years of age or older on February 14, 1995. Other Yukon Indian people cannot hunt without proof of consent from CAFN.
- No person can enter and stay upon Category A Settlement Land, developed Category B Settlement Land or fee simple Settlement Land for the purposes of hunting, except as authorized by a license issued under this Act.
- No outfitter shall enter and stay upon Settlement Land for the purposes of, or in connection with, hunting on Settlement Land, except as authorized by a licence issued under this Act.
- Except as provided in the final agreement, no person shall enter and stay upon Settlement Land for the purposes of fishing, except as authorized by a license issued under this Act.

In 2001, CAFN enacted its *Lands Act* that established a Lands Committee for the purpose of encouraging responsible and respectful land use and management. Under the direction of CAFN, the Committee makes recommendations to the CAFN Council on all applications for dispositions and provides advice on any other matters relating to land use and management.

CAFN enacted its *Tradition Activities Protection Act* on September 17, 1998. The stated purposes of the act are:

- To ensure the wise management of Settlement Land and resources of Champagne and Aishihik people on behalf of present and future generations;

- To ensure comprehensive and integrated decision making respecting the use and management of Settlement Land and resources, including the full consideration of environmental, cultural, historic and socio- economic factors in that decision making; and
- To protect the culture, traditions, health and lifestyle of Champagne and Aishihik people and to ensure that information pertaining to these things is used respectfully and wisely in decisions made by the Champagne and Aishihik First Nations.

This Act provides CAFN with the legislative powers to manage their settlement lands and resources, and covers development permitting, access controls, protection of heritage resources, collection and recording of traditional knowledge, fire protection, withdrawal of lands from use and occupancy for protection purposes, cooperative management of lands with other first nations, creation of regulations, enforcement, and offences and penalties.

The Heritage, Lands and Resources Department has participated in a number of planning initiatives for the management of fish, wildlife and forest resources within their traditional territory, and participates in implementing these plans. Plans include:

Alsek Moose⁷⁷: This plan was drafted and delivered in the late 1990s to deal with moose management issues in the CAFN traditional territory in the Haines Junction area and south, and primarily along the Haines Highway. This area had been experiencing declining moose numbers since the early 1980s. When wolf control began in the Aishihik area in 1992 to rebuild caribou and moose populations, licensed hunting was suspended and aboriginal hunters shifted hunting to the Alsek area, putting greater pressure of the moose population. This plan was in effect from 1997 to 2000 and addressed population, harvest, habitat and non-consumptive issues and actions.

Aishihik Caribou⁷⁸: This plan was drafted in 1992 in order to proceed with a wolf control program in the Aishihik area to recover caribou and moose populations. Caribou numbers in the Aishihik area had declined by 50% since 1981, and overhunting and predation were believed to be the primary causes. In response to these concerns and before initiating a new wolf control program in the Yukon, the Yukon government developed, with broad public participation, a Yukon Wolf Conservation and Management Plan in 1992. Follow this, and again with broad participation from academic ecologists, biologists, first nations, and members of the public, an Aishihik caribou recovery plan was drafted in 1992. Between 1993 and 1997, the Yukon government reduced the wolf population to about one-fifth its previous size using aerial culling, local trapping and experimental fertility control. The Aishihik herd quickly recovered to its 1981 populations, with numbers of about 1500 animals.

Aishihik Integrated Wildlife Management Plan⁷⁹: This plan was drafted after the completion of the Aishihik wolf control program to restore managed hunting to the Aishihik area, and was in effect for the period 1999 to 2004. The plan covers much of the Champagne and Aishihik traditional territory north of the Alaska Highway. The parties to the plan were the Champagne/Aishihik and Kluane First Nations, the ARRC and the Yukon government. The plan includes issues and actions for population, habitat and harvest management.

⁷⁷ “Management Plans.” Yukon Co-operative Fish and Wildlife Management. YFWMB. Web. October 31, 2009. <<http://www.yfwcm.ca/mgmtplans/mooseplan/index.php>>

⁷⁸ A copy of this plan is available from the Yukon Fish and Wildlife Branch or the Champagne and Aishihik First Nation.

⁷⁹ “Management Plans.” Yukon Co-operative Fish and Wildlife Management. YFWMB. Web. October 31, 2009. <http://www.yfwcm.ca/mgmtplans/aishihiki-wmp/index.php>

Dezadeash Lake: A draft Dezadeash Lake Management Plan was completed in 2002 to address local concerns about fish populations in the lake. In 2009, the CAFN passed a resolution at their General Assembly requesting that “the CAFN Government undertake steps to help ensure the protection of the Lake Trout populations in Dezadeash Lake including seeking a moratorium on fishing and use of critical habitat areas during July and August and to work with other governments and stakeholders to undertake the development and implementation of a management plan for Dezadeash Lake and increase an enforcement presence in the area.” In 2009, the Yukon government received a request from the CAFN and the Alsek RRC to revisit and review the draft management plan for Dezadeash Lake. There is concern about the large numbers of suckers that have been noted in the Lake. To move forward the parties need to review the draft plan, update wording and info as necessary, look into any creel information and catch effort that may have been gathered since, and review recommendations and make sure that they are still relevant. If approved, the recommendations from it can be put forward for the 2009 or 2010 regulation change cycle.

Community-Based Fish and Wildlife Management Plan for the Champagne/Aishihik First Nations Traditional Territory⁸⁰: This plan is not yet approved by the parties but is used operationally to coordinate fish and wildlife management by the Yukon government and Champagne and Aishihik First Nations, and the Alsek Renewable Resources Council. It addresses issues and actions for the period 2008-2112, including big game, fish, bird game, trapping, animal health and habitats. A copy of the plan is available from the CAFN and the Yukon Fish and Wildlife Branch, and will be posted on the Yukon Fish and Wildlife Co-management website once approved.

Wood Bison Management⁸¹: The Yukon government is participating in the national effort to bring about recovery of this endangered species by establishing a free roaming herd of viable size. Between 1988 and 1992, 170 bison were set free in the Carmacks/Little Salmon First Nations traditional territory and over the years their range has expanded southward into the Aishihik, Selkumun and Hutshi Lakes’ watersheds, an area of about 4,000 km². The herd has grown at a rate of 10 to 20% per year and is now estimated at close to 1500 animals. The CAFN participates as a government party in bison management as a member of the Wood Bison Steering Committee and the Wood Bison Technical Team. The Steering Committee oversees the work of the Technical Team and determines annual harvests including an allocation to CAFN. Since release, bison have been managed under two Wood Bison management plans: The first plan expired in 1994 and the second in 2003. The objectives of the second plan were:

- To establish a viable, free-roaming herd of Wood bison of about 500 in the area currently occupied by them
- To maintain the genetic purity of the Yukon’s Wood bison and, if possible, enhance their genetic environment
- To maintain the disease-free status of the Yukon’s Wood bison
- To develop habitat management strategies that will ensure the maintenance of the Wood bison range in its pristine condition

⁸⁰ A copy of this plan is available from the Yukon Fish and Wildlife Branch or the Champagne and Aishihik First Nation.

⁸¹ “Management Plans.” *Yukon Co-operative Fish and Wildlife Management*. YFWMB. Web. October 31, 2009. <http://www.yfwcm.ca/mgmtplans/bisonplan/index.php>

- To optimize opportunities for hunting as well as non-consumptive uses of the Wood bison resource for the benefit of all Yukoners and visitors
- To implement mitigative measures to reduce the impact of bison on other ecosystem components.

Southern Lakes Wildlife Coordinating Committee⁸²: The CAFN participates as a government member of the SLWCC according to the terms of Schedule B, Chapter 16 of the KDFN final agreement. The SLWCC is charged with preparing a wildlife assessment for the Southern Lakes area, which includes the CAFN traditional territory east of Kusawa Lake, and with coordinating wildlife management in this area among the government parties. The SLWCC make recommendations to the first nations and government parties, and has completed caribou recommendations and is currently preparing recommendations for moose management. Future recommendations will include predators, access, wetlands, rare and endangered species, traditionally used species, migratory birds, sheep, animal health and disease, land management and environmental assessment.

Strategic Forest Management Plan for the Champagne and Aishihik Traditional Territory⁸³: The CAFN traditional territory has been experiencing the largest Spruce Bark Beetle outbreak ever recorded in Canada. The outbreak has been actively growing since the late 1980s and continues today, covering an area close to 400,000 hectares. In response to this outbreak, in December 2004 the Yukon government, the Alsek RRC and the CAFN developed and approved this plan. The purpose of this Plan is to provide direction for sustainable forest management while mitigating the effects of the beetle, to provide a clear framework and practical guidelines for forest managers and planners and assist them in working with others, especially local people who live and work in the area, and to ensure that healthy forests are maintained and support a broad range of social, economic and cultural values and uses. The plan identifies the strategic direction and the goals and objectives for forest management, and the forest planning areas.

Integrated Landscape Plan for the Champagne and Aishihik Traditional Territory: The purpose of the Integrated Landscape Plan is to provide guidelines for sustainable timber harvest planning for the forested lands within the Strategic Forest Management Plan. It is the first step to defining specific zones within which forest-based projects can be undertaken. This plan is intended to contribute to achieving a forest based economy, a key component of regional economic stability, while protecting and integrating ecological, traditional, resource, heritage and other community values. It is also intended to provide clear practical guidelines for forest managers and planners. This document builds on the Strategic Forest Management Plan that established the issues and concerns, values and interests to be addressed as forest development planning moves forward within the Champagne and Aishihik Traditional Territory.

Blanchard River Salmon Stocks: Dwindling salmon stocks in the Blanchard River are a serious concern for CAFN. The CAFN people have historically fished Pacific salmon as a primary winter food source. In 2009 the CAFN General Assembly passed a resolution requesting that the CAFN government engage other governments and stakeholders for the purpose of developing and implementing a management plan for the Blanchard River. The goals of the

⁸² "Southern Lakes Wildlife Coordinating Committee." YFWMB. Web. October 31, 2009. <http://www.yfwcm.ca/slwcc/>.

⁸³ "Strategic Forest Planning." *Government of Yukon*. Web. October 31, 2009. http://www.emr.gov.yk.ca/forestry/planning_strategic.html.

plan should be to protect and revitalize the salmon populations, to address recreational uses of the river, to preserve traditional uses by CAFN citizens, and to protect critical salmon habitat.

The current priorities and issues for the department are:

Sheep Management: The department believes the current sheep management regime needs to be examined, starting with harvest management and regulations including outfitter quotas. Problem sheep ranges need to be identified by looking back at the distribution of ranges historically used, and studying impacts on sheep and sheep habitat, including trail development for motorized vehicles access to the alpine tundra. In 2009, two trails were cut for ORV access to sheep in the Sifton Range. As sheep populations decline in areas like Pilot Mtn., hunters are looking for new open season areas to hunt and are moving west into the Sifton range. As well, bison are now encroaching on sheep range. The primary purpose of this work would be to understand long-term changes in sheep distributions and the factors likely influencing these changes.

Access Management: Access to previous backcountry and wildlife ranges is increasingly becoming a problem with many facets. Industrial activities such as timber harvesting and mineral exploration create access that becomes available for hunters and recreational ORV use. Development of rural and agricultural subdivisions creates a large footprint with radiating impacts as residents and their pets make use of the surrounding areas. As well, these developments expand over time as the Yukon government promotes future land applications into these areas. Unregulated trail cutting, by ATV owners in particular, into pristine valleys for hunting and other backcountry recreational activities is ever increasing. Unplanned developments such as spot agricultural land applications exacerbate the problem. There is currently no comprehensive oversight and management of access development by the Yukon government. Independent research on the effects of access on focal ecosystems and fish and wildlife habitats is urgently needed, and this could be an excellent project for the WCS Canada. As much of the CAFN traditional territory is above tree line, all vegetated ecosystems are considered important and essential, but wetlands, riparian forests and alpine tundra are under the greatest pressure. This research would be especially helpful to first nations and Yukon government agencies that manage settlement and Crown lands and resources, to the understanding of the effects of cumulative developments for environmental assessment purposes under YESAA, and to future land use planning. It is important that this research be carried out by an independent organization to have credibility with government and first nations management agencies.

Habitat Mapping: Comprehensive habitat assessments should be done for the CAFN traditional territory, including the classification and mapping of key habitats for focal species together with animal movement corridors and migration routes that connect these habitats. Focal species would consist of all traditionally used species – big game, game birds, furbearers, fish and ground squirrels. The department has initiated studies to identify traditional ground squirrel habitats and to understand why ground squirrel populations are declining. This is a priority as ground squirrels have traditionally been a stable food source for CAFN People. If the KDFN, TKC and the Yukon government are moving ahead

with an ecological land classification system for the Whitehorse and Southern Lakes area, the CAFN may consider participating by expanding this initiative to include their traditional territory. This information will support planning for settlement lands and compatible planning and use of adjacent Crown lands. There are requirements in Final agreements to ensure compatible land uses on adjacent settlement and Crown lands. An example would be settlement land planning that gives priority for habitat protection that would have to be taken into consideration when planning for adjacent Crown land, and vice versa.

Aboriginal Traditional Knowledge: A priority for the department is to advance the use of aboriginal traditional knowledge in decision-making in order to give it equitable standing with scientific knowledge. This is an objective of their Final Agreement that specifically directs the parties “to integrate with the relevant knowledge and experience of both Yukon Indian people and that of the scientific communities in order to achieve conservation” (Clause 16.1.17). Similar clauses that recognize the important role of oral history and knowledge of CAFN people may be found in Chapter 17 for Forest Resources, Chapter 11 for Land Use Planning, Chapter 12 for Development Assessment Process, and Chapter 13 for Heritage Resources. The CAFN has a responsibility to gather and manage aboriginal traditional knowledge, and to make it available for decision-making. However, the department lacks capacity and expertise in gathering and managing aboriginal traditional knowledge. This is an area where WCS Canada could be able to provide advice and assistance.

Salmon Habitat Protection: Protection of salmon habitat is a concern in the CAFN traditional territory as salmon management and conservation are almost entirely focused on sustainable harvesting with little attention on habitat. Salmon stocks are declining and the factors causing this decline need to be researched and acted upon. The CAFN People see salmon smolts leaving for the ocean, but few big fish returning, and are frustrated in their effort in influence direction of salmon management and research. Focusing management solely on sustainable harvesting of dwindling salmon stocks is not a sensible strategy for a critical food supply for aboriginal people. Research on the causes of salmon mortality would be helpful in steering management effort towards bringing back the stocks.

Carcross/Tagish First Nation

The Carcross/Tagish First Nation (CTFN) adopted a constitution in 1997 that formally established the CTFN government. Its Mission Statement is:

The Carcross/Tagish First Nation is mandated to protect the environment, health and wellness, education and aboriginal rights of our citizens; to continue to preserve and protect our culture and traditions; to protect and develop our natural resources and strengthen our economy and the government of the Carcross/Tagish First Nation for our future generations.

This constitution addresses citizenship and citizen rights, governance and jurisdiction of CTFN, including the Clan system and the powers of the government bodies. Government bodies include the Elders Council, the Assembly, the Council, and the Justice Council.

One of the 12 objectives of the CTFN Constitution is to “provide law and policy for the use, management, administration, regulation and development of the land and resources of the Carcross/Tagish First Nation”. To deliver this objective, CTFN has established a Heritage and Natural Resources Department, and is preparing a Wildlife Act and associated regulations.

The CTFN Land Use Team advises Executive Council regarding dialogue and decision making with Yukon and B.C. governments to establish natural resource priorities and maintain consultation requirements of the various boards and committees that will fall under Final Agreement implementation obligations. Some of these include:

- Southern Lakes Regional Land Use Planning Commission
- Carcross Local Area Land Use Planning Committee
- Tagish Local Area Land Use Planning Committee
- Carcross/Tagish Settlement Lands Committee
- Carcross/Tagish Renewable Resources Council
- Southern Lakes Wildlife Coordinating Committee
- Kusawa Park Steering Committee
- Agae Mene Natural Environment Park Steering Committee
- Tagish River HPA Steering Committee
- Lewes/Marsh HPA Steering Committee
- Yukon River Watershed Management Working Group
- Yukon Land Use Planning Council
- Yukon Environmental and Socio-economic Assessment Board
- Yukon Water Board
- Fish and Wildlife Management Board, including the Salmon Sub Committee
- Dispute Resolution Board
- Surface Rights Board

The following are priority issues for CTFN:

Agricultural Land Expansion: The primary concern of the CTFN Land Use Team is the unplanned disposition and expansion of agricultural land within their traditional territory. This practice by the Yukon government is incrementally consuming valuable wildlife habitat, especially in productive riparian and lowland areas. CTFN has voiced their concerns repeatedly to the Yukon government and through land use reviews administered by the Yukon Environment and Socio-economic Assessment Board and Offices with limited results.

Timber Harvesting: The Land Use Team is concerned about the manner in which timber harvesting occurs. There is no Forest Resources Plan for this area and CTFN, with some hesitation, has signed a Terms of Reference with other first nations to proceed with a forest management plan with the Yukon Forest Management Branch. They are hesitant because a forest management plan will not take into account forest values other than timber, and will tie up most of the area leaving little room for land use planning. Their preference would be to undertake a land use plan that addresses all land values.

Timber harvesting permits seem to be given out more for the short-term economic needs of a few local operators, mostly firewood cutters, than for forest management purposes. The Land Use Team strongly objects to the cutting of green timber to supply firewood. An immediate concern is the interest in green timber harvesting for firewood on the northern boundary of Settlement Lands R-13A. This site contains pine-lichen forests important for caribou winter habitat and timber harvesting would increase access to this area. Angeline Gough, a UBC graduate student, will be conducting a lichen regrowth study in this area over the next two years. This site is currently the subject of internal positioning of Yukon government departments over whether this area should be included in a proposed community plan.

Land Use Planning: Simply put, CTFN would like a land use plan developed for their traditional territory, and this should be done in advance of all other resource sector planning, such as forest management planning.

Unregulated Mineral Staking: The free staking of mineral claims in the traditional territory is of great concern. Aside from destroying habitats, staking creates new access trails, which are then used and upgraded for recreational purposes (snowmobiles and ORVs) and hunting, resulting in further harassment and depletion of wildlife. Of immediate concern are the placer leases along the western boundary of Settlement Lands R-22A and the northwestern boundary of Agay Mene Natural Environment Park. A string of placer leases connect the primary placer site to the Alaska Highway, which CTFN believes to be solely for the purpose of access development and to avoid environmental reviews.

Depletion of Country Foods: The depletion of country foods in its traditional territory, especially resulting from low populations of caribou, moose and fish, is of principal concern to CTFN. Carcross Tagish people used to traditionally fish salmon in the Yukon and M'Clintock Rivers, but this fishery was destroyed with the construction of the Whitehorse power dam that blocked fish migrations. The Carcross and surrounding area, originally named Caribou Crossing, was once home to a large woodland herd that likely numbered over 25,000 animals, but was depleted by overhunting during the Klondike gold rush and now consists of a few remnant bands numbering less than 2,000 animals. Moose, once abundant in the 1950s, have declined in numbers due to mismanagement and unregulated access and hunting. CTFN has been addressing these concerns for many years through direct work with the Yukon Fish and Wildlife Branch and participation on the Southern Lakes Caribou Coordinating Committee, now supplanted by the Southern Lakes Wildlife Coordinating Committee. CTFN members have had to shift their harvesting to sheep and deer, to travel to other traditional territories where permission is required to hunt and fish, or to hunt and fish as a licensed hunter/angler.

Unregulated Access: The Land Use Team is very concerned about the unregulated proliferation of trails in their traditional territory. These trails create new access into pristine valleys and alpine areas for hunting and recreation with the use of ATVs and snowmobiles. The result is further overharvesting and harassment of wildlife, and habitat destruction. Trails are inevitably upgraded to bush roads for vehicle use and result in the expansion of human activities and land uses. The Land Use Team would welcome and participate in any discourse and

activities that would address the control and regulation of trail development and off-road vehicles on Crown lands and will be pursuing such activities on their Settlement lands in the near future.

Environmental Monitoring: The Heritage and Natural Resources Department has employed game guardians to monitor hunting and other activities in their traditional territory for a number of years. However, this activity is spotty and generally focuses on hunting seasons. Once the CTFN *Wildlife Act* is in effect, the requirement for monitoring will increase, and the Land Use Team would welcome advice on how to best pursue such activities, especially the collection and analyses of useful data.

Habitat Depletion: The traditional territory of the CTFN is in an area of high human settlement and use. This has resulted in the depletion of wildlife resources and habitats, and there are constant and unrelenting interests and pressures to further develop the natural resources of this area, and acquire private lands for agriculture and subdivision development. The Land Use Team would be interested in mapping and describing the remaining key habitat for important species that provide country foods. This could build on the information already collected by the Yukon government and incorporate knowledge of the Carcross Tagish people. In addition, the Land Use Team would benefit from strategies and plans to protect these remaining habitats.

Wildlife Act and Regulations: CTFN has been discouraging its members from hunting caribou and cow moose, and grants permission to a limited number of other Yukon Indian people to hunt for specific species in specific areas. In 2009, a permit draw was held in the CTFN traditional territory to limit hunters further. Once the CTFN *Wildlife Act* is in effect, the Land Use Team will consider regulating such hunting and fishing practices as:

- Limiting hunting and fishing, if needed for conservation purposes, including closing (resting) areas to hunting on a 5-10 year timeline (such as the highly accessible Wheaton Valley);
- Enforcing consent for non-CTFN hunters to hunt within CTFN traditional territory; and
- Setting moose hunting seasons for the fall only when moose are in the best condition.

Kwanlin Dün First Nation

The Government of KDFN, in accordance with its Constitution, is comprised of a General Assembly, a Chief and Council, an Elders Council, a Youth Council and a Judicial Council. KDFN citizens elect a Chief and seven councillors every three years.

The Ibx Renewable Resources Council has not been established and, when established, will have limited powers. In fact, many planning and management functions related to Special Management Areas, heritage, fish and wildlife, forest resources, and economic measures are suspended where claims overlap. Pursuant to Schedule B, Chapter 2 of the KDFN Final Agreement, KDFN is currently in discussion with first nations with overlapping claims to reach agreement on 'administrative boundaries' and 'alternative arrangements' for the areas of overlap. Some arrangement, such as boundary changes, will require approval of the Yukon and federal governments.

Kluane First Nation

The Lù'àn Män Ku Dän were primarily nomadic people; they traveled, traded and intermarried with other groups and followed fish and wildlife through the seasons. In the past 150 years the Kluane people have had increasing contact with Europeans and were brought closer together by the fur trade, gold rushes, roads and then the opening of the Alaska Highway in 1942. In the early 1900's, Louis and Gene Jacquot, two brothers from France, established the first trading post in the area. Soon after this, some families began to settle the area on a more permanent basis.

During the construction of the Alaska Highway, many military and highway personnel were granted hunting licenses and big game populations accessible along the highway route were quickly overhunted. In response the Yukon Government imposed a ban on hunting with the establishment of the Kluane Game Sanctuary (KGS) in 1943, but the effects of this overhunting are still evident today.

The Burwash Indian Band was established in the 1950's when the federal government began to organize native communities into Indian Bands with elected Chief and Councils. A few years later the Burwash and White River Indian Bands were joined and were renamed the Kluane Indian Band, existing as one Band until 1990 when the two separated into two distinct first nations.

The following is a list of current priorities and issues for the Lands and Renewable Resources Branches (more information in the Appendix):

Kluane Game Sanctuary: KFN is proposing the KGS be made a Habitat Protection Area (HPA) because its current status does not protect the land. The KGS is designated under the Wildlife Sanctuary Regulations of the *Yukon Wildlife Act*, which is a legal description of the location of the KGS only. The only prohibitions in effect in the KGS are in Section 37(1) of the Act, which states, "A person shall not hunt or trap wildlife in a wildlife sanctuary". There is no other protection, including no protection for habitats. All other land use activities are permitted, as in areas outside of the KGS, including road development, mining, timber harvesting and the disposition of Crown lands. This became an issue when a land application was approved near Destruction Bay in the KGS. KFN has since written the Yukon Environment Minister requesting the KGS be designated as HPA. The Minister responded with a 20-page guidelines document on how to establish HPAs. However, the current practice of the Yukon government is not to establish any further HPAs until all HPAs identified in Chapter 10 (Special Management Areas) of Final Agreements are planned and established. This will take many years. As an interim measure, KFN could request an amendment to the Wildlife Sanctuary Regulations to provide protection for habitats in the KGS until a KGS HPA can be established. Regulations are amended annually. Habitat Protection Areas are designated under Section 187 of the *Yukon Wildlife Act*, including provisions to make regulations for any prohibitions required to manage the areas, protect habitats and implement management plans. To date there have been no HPA regulations developed in the Yukon. The Yukon government is moving ahead with plans to allow the hunting of bison in the KGS as part of their program to limit the bison populations to its core range in the Aishihik Lake area. KFN opposes this move, as it

will allow licensed hunters in the KGS and they worry that other animals will be taken.

Christmas Bay Agricultural Application: A recent spot application for 350 ha of agricultural land in the Christmas Bay area was turned down due to an unacceptable development plan. If approved, this application would have disposed of all Crown lands sandwiched between two blocks of KFN and CAFN settlement lands. KFN has requested in writing that these lands be designated as a Designated Heritage Site under Specific Provisions (13.1.1.11) of its final agreement. These provisions state that the “Government shall consider protection within existing Legislation, for a period of time, of a Heritage Site on Non-Settlement Land within the Traditional Territory of Kluane First Nation which is directly related to the culture and heritage of Kluane People, pending a decision by the Minister whether to designate the Heritage Site as a Designated Heritage Site.” Objectives of Chapter 13 (Heritage) include “to identify and mitigate the impact of development upon Heritage Resources through integrated resource management including land use planning and development assessment processes, and to recognize that oral history is a valid and relevant form of research for establishing the historical significance of Heritage Sites and Moveable Heritage Resources directly related to the history of Yukon Indian People”. The Yukon Heritage Resources Board, established under Chapter 13, may make recommendations to the Minister and to YFNs on the designation of Heritage Sites as Designated Heritage Sites, and on any other matters related to Heritage Resources of the Yukon. KFN is awaiting the Minister’s response.

Ecological Land Classification and Mapping: The KFN requires detailed map-based information on the status of all fish and wildlife habitat within their traditional territory in order to effectively assess and respond to development proposals and land use applications. Moreover, this information would form the basis for future resource planning for fish and wildlife, forest resources and land use. KFN would greatly appreciate the assistance and services of WCS Canada to classify and map all lands in their traditional territory on an ecological basis, to create a GIS tool to store and access this information, and to train staff to use and update this information as needed.

Mining and Road Developments: Western Copper Corporation is looking into developing their Casino property, located in the western corner of the Selkirk First Nation traditional territory, just south of the Tr’ondek Hwech’in First Nation traditional territory and 160 km north of Burwash Landing (Figure 7). Pacific Sentinel Gold Corporation, who completed a scoping study in 1995, initially discovered the copper-gold-molybdenum ore body in 1992. In 2006 Western Copper Corporation acquired the property, which is currently only accessible by air. The preferred year-round road access to the site is the 187 km Onion Creek route from a point of the Alaska Highway 48 km north of Burwash Landing. As well, there are plans to extend the Casino Road into the Casino Hill mine site, which will create access into the northern portions of the KFN traditional territory for mineral exploitation. There is already a trail from the Alaska Highway north of Burwash Landing and around the north end of Kluane Lake into the Gladstone River area with a 60-meter right-of-way connector to the Casino Road area.

Specific Provisions in Chapter 10 (Land Use Planning; 11.10.4) in the KFN Final Agreement states that “Government shall not construct the Casino Road in the Traditional Territory of Kluane First Nation for a period of 10 years from the Effective Date of this Agreement or until a regional, subregional or district land use plan is prepared in accordance with this chapter, whichever is earlier”. It is unlikely that a land use plan will be developed when the 10-year time period expires in 2013. KFN is concerned that, once the Casino Road is extended, the connector road to Burwash Landing will soon follow opening up the entire northern portions of its traditional territory. KFN will either express its case for land use planning to be completed prior to 2013, or request an extension of the 2013 timeline. KFN would benefit from pre-development studies on the status and condition of fish and wildlife populations and their habitats in this area in order to have effective input into upcoming development proposals, and to obtain baseline information on environmental conditions to better document the impacts of these developments. All mine site and road developments will require YESAB assessments where KFN can register its concerns.

Winter ticks: The spread of winter ticks into the KFN traditional territory is a concern because it is known that ticks can cause winter die-offs in health of moose populations, especially in cold climates like the Kluane region. Moose are already at low numbers in their traditional territory. Winter ticks are prevalent in the elk populations east of Aishihik Lake where the Yukon government is spending considerable time and money to limit the infestation.

Forest Management Planning: The First Nations Forestry Program (FNNP) is hosting a workshop on forest management planning in February 2010. This Program supports the unique relationship between YFNs and forestlands. Its purpose is to improve economic conditions in first nation communities with full consideration of the principles of sustainable forest management. The programs objectives are to:

- Enhance the capacity of first nations to sustainably manage their forest lands;
- Enhance the capacity of first nations to operate and participate in forest-based development opportunities and their benefits;
- Advance the knowledge of first nations in sustainable forest management and forest-based development; and
- Enhance the institutional capacity of first nations at the provincial and territorial level to support their participation in the forest-based economy.

The program is coordinated by Ann Marie Swan (First Nation Forestry Program Coordinator; Council of YFNs; Phone 393-9236) under the direction of a Management Committee chaired by Rose Kushniruk (Community Lands Officer, CAFN; phone 634-4233). The Canadian Forest Service of Natural Resources Canada is funding this workshop, and Eric Schroff of Yukon Forest Operations has been engaged. The purpose of the workshop is to prepare first nations for forest management planning by building on the experiences from the Teslin and Champagne and Aishihik forest management plans. First nations are looking for a partner to help them structure the workshop and to work with them on defining and addressing forest management issues. KFN is requesting that WCS Canada consider this partnership, beginning with the February work-

shop, and continuing through the development of future forest management planning in their traditional territory. Other first nations may wish to engage WCS Canada based on the outcomes of this workshop.

Gopher Conservation: For the past two years, KFN has been involved in a gopher (arctic ground squirrel) transplant project. Gophers have been transplanted from Destruction Bay and the airport to Duke Meadows. Researchers from the Kluane Research Station of the Arctic Institute of North America and Liz Hofer have been cooperating on this project with funding from the Northern Research Institute at Yukon College. Plans are to continue with live trapping and relocating gophers in spring 2010.

Sheep Winter Range Project: This project is developed along the lines of the community-based wildlife monitoring program established in Northern Tutchone Region by Mark O'Donoghue. The focus in the Kluane region is on sheep monitoring in the Ruby Range, Quill Creek, Tatamagouche, and Sheep Mountain areas, as KFN believes sheep populations in these areas have declined considerably over the past 40 years, likely due to outfitter overhunting. The work will be done this winter with help from Environment's Kluane Regional staff, the Kluane Research Station (Liz Hofer) and Manfred Hoefs. A meeting is set for November 24-25 to discuss the details of the work. This issue was to be addressed in the 1990s through the *ad hoc* Ruby Range Sheep Steering Committee. Members of the Steering Committee included the KFN, CAFN, Parks Canada, Indian and Northern Affairs Canada, the Alsek RRC, the YFWMB, the Yukon Conservation Society, the Yukon Parks and Wilderness Society, the Yukon Fish and Wildlife Branch, and local big game outfitters. The Steering Committee's mandate was to prepare a management strategy for sheep in the Ruby Range area but could only agree on the fact that sheep populations had declined and are not using some of their former ranges. Much of the time was spent debating the question of knowledge and, in the end, the *status quo* sheep management regime remains in the area. The only positive outcome of the recommendations presented by the Steering Committee were the limitations placed the use of trails by ORVs, which only limited them to existing trails. The acceptance of the recommendations was unsatisfactory to KFN and they continue to deal this sheep conservation issue. On May 4, 2009 and at the request of the KFN under Clause 16.6.1.14 of their Final Agreement, the Dan Keyi Renewable Resources Council (DKRRC) submitted a recommendation to the Yukon Minister of Environment requesting that the Ruby Range portion of Outfitting Area 12 be placed on sheep quotas based on the 2007 sheep count. The Minister set aside the recommendation noting that the Ruby Range comprises a small portion of Outfitting Area 12 and the quota would actually increase the sheep harvest in the area. The Minister has suggested follow-up discussions between the Dan Keyi Renewable Resources Council, KFN and Yukon Environment staff. Any efforts to study and explain the decline of sheep populations in the Ruby Range area by the WCS Canada would be appreciated by KFN. A copy of the Steering Committee report and recommendations can be obtained from KFN.

Alaska Highway No-Hunting Corridor: In 1991 KFN developed a Community Conservation Strategy and recommended the Yukon government establish a one km no-hunting corridor on each side of the Alaska Highway from Congdon

Creek to White River. The purpose of the corridor was to reduce hunting pressure along the highway, create a safe environment for people living and travelling along the highway, and increase wildlife viewing opportunities. From 1993 to 1998, the Shikwak Highway Reconstruction Project brought 500 workers into the immediate area. The corridor was established in August 1994 and extends 263 km from the Slims River to the Alaska border, to be respected by all hunters. In 1995, three household surveys were conducted; one in Burwash Landing west to White River, one in Destruction Bay and Silver City, and one in Beaver Creek. In November 2007, the Dan Keyi RRC recommended to the Yukon Environment Minister that the no-hunting corridor be removed, stating that it had served its purpose and that first nation compliance was near zero. KFN would like further discussion on this corridor before any decisions are made. In June 2008, KFN met with Environment officials and concluded that, before KFN could take a stand on the corridor, community consultation would be necessary. Environment officials stated that, if the corridor remains, it would have to be consistent with other corridors in the Yukon and be reduced to 500 meters on each side of the highway. KFN wrote the Environment Minister in October 2008 stating that Chief and Council and the Elders Council oppose the removal of the corridor, and asked Yukon Environment to consult with residents in the area.

Duke River Moose: Parks Canada is preparing a State of the Park Report for Kluane National Park, which includes a section on ecological integrity. KFN is reviewing the report, which states that the Duke River moose population is at low numbers; this has been known by KFN for many years and the first nation intends to cooperate with Kluane Park staff to monitor this population.

First Nation of Na-Cho Nyak Dun

The NND has enacted its *Lands and Resources Act*. The purpose of this Act is to build into NND law such standards, processes and means as will honor and confirm its traditional principles of conservation, preservation and enhancement of the natural environment, as applied to the use, occupation, management and economic development of Settlement Land, and any other lands or resources over which it has authority, ownership, control, jurisdiction, co-management or custodial powers or responsibilities.

The Act states that the Lands and Resources Department will operate for the benefit of all citizens, in a manner designed to further the purpose of this Act and to achieve the following objectives:

- To preserve and enhance all of the resources found on Settlement Land or any land for which the NND has authority, ownership, control, jurisdiction, co-management or custodial powers or responsibilities;
- To integrate the management of all resources owned, controlled or co-managed by the NND;
- To preserve and enhance those aspects of our culture, identity and values that are related to land and Resources;
- To promote and manage economic activity related to or based on resources found on Settlement Land;

- To honor our harvesting and management customs, taking into account the knowledge and experience of NND citizens;
- To deal fairly with all persons who are authorized to use resources, where the activities of these persons impact on resources or Settlement Land;
- To protect and preserve those sites, of whatever nature and wherever located, which have spiritual or cultural significance to NND; and
- To protect, preserve, monitor and manage all waters flowing or found within, through, on, or adjacent to Settlement Land to such standards of quantity, quality and rate of flow as NND requires for their purposes and for the enhancement of all water-related aspects of the ecosystem.

The Land and Resources Department shall be responsible for administering NND laws respecting:

- The management or protection of land and resources found within NND traditional territory;
- The use, occupation or exercise of rights by any persons on Settlement Land;
- The activities of citizens on Non-Settlement Land where such activities affect land or resources;
- The harvesting activities of Yukon Indian people within NND traditional territory;
- Such other activities, as may be directed by the Council, related to the management of land and resources.

Without restricting the generality of Section 13 of the *Lands and Resources Act*, the department is authorized to:

- Participate with Governing Bodies in the development and implementation of regulations, policies, programs and land use plans for the effective administration of our Laws respecting land, Resources and any activities related to such land or Resources;
- Under the direction of the Council, create and maintain the Register of Settlement Land;
- Recommend that the Council issue, give, or agree to the issuing or giving of any licence, permit, consent or decision document related to land or Resources;
- Under the direction of the Council, enforce this Act and its regulations;
- Collect fees or penalties set or levied by the Council;
- Conduct research and monitoring programs;
- Maintain a record of harvesting or other information, all under the direction of the Council;
- Recommend to the Council that the NND participate in a regulatory or other process which may affect land or Resources in their Traditional Territory; and
- Do such other things as may be directed by the Council from time to time.

Yukon Co-Management Agencies

Yukon Fish and Wildlife Management Board

The Yukon Fish and Wildlife Management Board (YFWMB) works within its mandate towards achieving the fish and wildlife objectives of the YFN final agreement established in Section 16.1.0. These general objectives, relating to the management of fish and wildlife in Yukon, provide the broad policy context for the Board. Specifically the Board may exercise the following powers and responsibilities assigned to it in Section 16.7.0 of the final agreements:

1. Make recommendations to the appropriate Minister, YFNs, and Renewable Resource Councils on all matters related to Fish and Wildlife management, legislation, research, policies and programs (16.7.11);
2. Make recommendations to the appropriate Minister on policies for the management of Fish and Wildlife and their habitats (16.7.12.1);
3. Make recommendations to the appropriate Minister on the need for and the content and timing of all Yukon Fish and Wildlife Management Plans for species included in international agreements, threatened species or populations, species or populations declared by the Minister as being of territorial, national or international interest, and transplanted populations and exotic species (16.7.12.2);
4. Review and make recommendations to the appropriate Minister and to YFNs on the management plans recommended by Renewable Resource Councils, specifically with respect to population goals and management options (16.7.12.3);
5. Where required by species or population management plans, recommend to the appropriate Minister a Total Allowable Harvest (16.7.12.4);
6. Review and recommend to the appropriate Minister adjustments to Basic Needs Levels (16.7.12.5);
7. Make recommendations to the appropriate Minister on the need for, and for positions on, inter-jurisdictional agreements that affect the conservation and use of Fish and Wildlife in the Yukon (16.7.12.6);
8. After consultation with affected Renewable Resource Councils, recommend to the appropriate Minister restrictions on methods and practices of harvest for reasons of conservation, public health, public safety and protection of the renewable resources economy associated with the use of Fish and Wildlife (16.7.12.7);
9. At the request of a Renewable Resources Council, assist it with its duties (16.7.12.8);
10. With the approval of the Minister, delegate the performance of its responsibilities to a Renewable Resources Council (16.7.12.9);
11. In consultation with Renewable Resources Councils, identify new opportunities and recommend to the appropriate Minister management measures for commercial uses of Fish and Wildlife (16.7.12.10);
12. Participate in the public proceedings of any agency, board or commission dealing with matters that affect the management and conservation of Fish and Wildlife and their habitat in the Yukon (16.7.13);

13. Prior to the amendment or introduction of legislation for Fish and Wildlife in the Yukon, advise the Minister on the matters to be addressed in that legislation (16.7.16); and
14. Make recommendations prior to the Minister declaring a species or population to be of territorial, national or international interest (16.7.19).

The Board is required to make provisions for public involvement in the development of its decisions and recommendations. The Yukon Director of Fish and Wildlife serves as an advisor to the Board and ensures that technical support is provided. The Board is granted status as an interested party to participate in public proceedings of any agency, board or commission on matters that affect the management and conservation of fish, wildlife and habitats within the affected traditional territory. The Board is required to communicate its recommendations and decisions to the Renewable Resource Councils (RRCs) within a reasonable time, and to meet with the chairpersons of the RRCs at least once each year. Government ministers are required to consult with the Board prior to introducing or amending legislation for fish and wildlife.

Following are the primary activities of the YFWMB :

20:20 Vision Symposium: As part of its mandate “to act in the public interest” for the benefit of Yukon fish and wildlife and their habitat, the Board, in partnership with the RRCs and the Yukon Salmon Sub-Committee, wished to provide long range strategic advice and recommendations to the responsible governments (Yukon and federal governments and first nations) on the management of Yukon’s fish and wildlife resources. From the Board’s perspective the single most important aspect of this was to learn what Yukon residents think about the current state of these resources and what their vision is for the future. Over a three-month period, from November 2008 to January 2009, the Board engaged Yukoners from all cultures and all walks of life to hear their opinions and views⁸⁴.

Northern Mountain Caribou Management Plan: The Board has undertaken the role of outreach and communications for the Northern Mountain Woodland Caribou management planning process.

Strengthening Relationships with Renewable Resources Councils: The Board will work towards developing a stronger relationship with RRCs and strive to find ways to assist them through increased communication, training and issue coordination. The Board hosts an annual RRCs Chairpersons’ Meeting, which allows the RRCs a chance to update the Board on current activities and initiatives, and assists in organizing the annual RRCs workshop.

Communications: The Board will strive to enhance public awareness of Board activities and develop strong public education tools to foster a broad understanding of Yukon fish, wildlife and habitat issues. The Board has developed a general communications strategy and uses radio ads, posters, pamphlets, and annual reports as primary communications tools. Additionally, the Board produces a calendar each year with the aim of generating interest in and support for good conservation and stewardship of fish, wildlife and habitat.

⁸⁴ Yukon Fish and Wildlife Management Board. 2009. Yukon Fish and Wildlife – a 20:20 Vision: Yukon Wide Survey. Yukon Fish and Wildlife Board, Whitehorse. Available (Nov 2009) at: <http://www.yfwmb.yk.ca/assets/client/File/Reports/2020%20Yukon-Wide%20Telephone%20Survey%20Report.pdf>

Fortymile Caribou: The Board is committed to ensuring the expansion of the Fortymile caribou herd into its former Yukon range. At the turn of the century, the Fortymile caribou herd was estimated to have a population of almost 600,000 animals and ranged throughout central Alaska and much of the central and southern Yukon. By the 1970s, overharvest, poor weather and predation had reduced the herd to about 5,000 animals. Between 1970 and 1990 the herd recovered to about 20,000 animals, but the herd growth stalled despite the fact that other herds were increasing and growing conditions were excellent. A planning team comprised of Alaskan and Yukon representatives – including the Board – was established in 1995 to come up with possible ways of increasing the herd’s size. The team developed a recovery plan, which the Board presented to the Alaska Board of Game. Regulations were implemented in Alaska to enable the recovery program. The herd has been steadily increasing in size and in 2003 it achieved one of the major goals of the recovery program by crossing the Yukon River. The Board submitted its recommendations in July 2008 on the completed management plan for the Yukon portion of the range. This management plan deals specifically with habitat; a harvest management plan should be forthcoming.

Off-Road Vehicle: In 2003 the Board established a working group to explore the issues surrounding the use of ORVs in the Yukon. The working group led public consultations, surveys and discussion groups to determine if and where problems exist, the extent of the problems and attempted to seek out potential avenues for managing the issue. Individuals as well as many organizations and first nations raised concerns about the use and management of off road vehicles throughout the Yukon. The Working Group on ORVs determined that there was a need to address these concerns while taking into account the comments that were made during the public consultation. The Board agreed that the Working Group should continue to look at this issue. The publication “Down the Road: the Effects of Roads and Trails on Wildlife” was produced in 2003. Also published was Rob Yeomans’ graduate thesis entitled “Utilizing the Elaboration Likelihood Model to Generate Persuasive Communication for Off-Road Vehicle Management in the Yukon Territory” in 2006.

Trapping: Section 16.1.1.2 of YFN Final agreements mandates the Board, “to preserve and enhance the renewable resources economy.” The Board therefore seeks to preserve and enhance the trapping industry. Trapping is a significant component of life for many Yukoners. In 1996, the Yukon government conducted a trapping survey to try to understand the current status of the industry. They found:

- 40% of trappers consider themselves full-time;
- 50% of trappers see it as a way of life;
- 20% of trappers make over half of their winter income from trapping;
- Trapping is seen as an important economic generator during the slow winter season; and
- Furs also play an important part in the Yukon’s crafts and growing fashion industry.

The Board’s Trapping Working Group is comprised of Renewable Resource Councils, the Yukon Trappers Association, the Yukon Government’s Department of Environment, the Yukon Arts and Design Association, and the Board. The

group meets several times a year to plan and develop projects that will enhance the industry. In March 2005 the group developed phase one of a Comprehensive Fur Strategy for the Yukon fur industry. The group is currently attempting to secure funding to complete phase two and three of the strategy.

Yukon Wildlife Act Regulation Changes: Every year, the Board provides public input to governments on legislation or regulations that affect fish and wildlife resources. The Board provides these comments based on information from public consultations and research.

Past activities of the Board have included:

1. Recommendations of moose harvest management in 2002 that were the product of a discussion paper, stakeholder workshops and public meeting over a two-year period.
2. Recommendations on captive wildlife in 2002 as part of the Yukon government's *Wildlife Act* and Regulations amendments through extensive public consultation. The Regulations covered such activities as wildlife viewing facilities; fur farms; falconry; wildlife as pets; sick, injured, or orphaned wildlife; and imports and exports of wildlife. The proposed wildlife in captivity regulations did not include game farming of elk, bison or muskox, which already operate under its own set of regulations.
3. A review of the scientific literature on the potential effects of oil and gas development in the Yukon, including four primers on specific aspects of the industry. These documents are available free of charge from the Board. The Board will continue to work with communities and governments to ensure the development of a fair, open and informed public process for determining how and where oil and gas development will occur in the Yukon.
4. Recommendations on fish farming in 2003 that have been accepted by the Yukon government as a framework for a Yukon Aquaculture Policy. A working group developed these recommendations over a two-year period with representation from government agencies, first nations, boards and councils, and user organizations.
5. Assisting the Yukon government in developing an Elk Management Strategy and holding public consultations in 2007.
6. A Yukon Community Stewardship Program that ran from 2003 until 2008. The goal was to increase the motivation and ability of Yukoners to engage in the conservation and stewardship of our lands, waters, and living resources.

Renewable Resources Councils

RRCs are required to make provisions for public involvement in the development of its decisions and recommendations. RRCs are required to cooperate with each other and with first nations on matters of common concern and to explore means of coordinating their activities. RRCs are granted status as an interested party to participate in public proceedings of any agency, board or commission on matters that affect the management and conservation of fish, wildlife and habitats within the affected traditional territory. With the consent of the affected minister and first nations, RRCs may merge to establish a region-

al RRC. If a RRC does not carry out one of its responsibilities, the affected minister, after giving notice to the RRC, may undertake to fulfill that RRC's responsibilities directly or delegate the responsibilities to the YFWMB.

Specifically, RRCs can make recommendations:

1) To the affected minister of fish and wildlife on:

- a) The need for and the content and timing of freshwater fish and wildlife management plans, including harvesting plan and total allowable harvests.
- b) The management of furbearers.
- c) The use of traplines and the reassignment of all new, vacant and under-utilized traplines.
- d) Priorities and policies related to the enforcement of legislation and alternatives to penal sanctions with respect to fish and wildlife.
- e) The allocation and terms and conditions for the commercial use of fish and wildlife other than salmon.
- f) Applications for research permits granted by government for fish and wildlife management-related research activities within the affected traditional territory. Governments shall provide Councils with the results of this research.
- g) Alternative measures that could be considered in the place of implementing the basic need level provisions, where the minister proposes to implement a total allowable harvest requiring the implementation of basic need level provisions.

2) To the affected minister of forest management on:

- a) The coordination of forest resources management throughout the Yukon and in the relevant traditional territory.
- b) The need for and the content and timing of forest inventories and management plans
- c) Proposals for forest resources research.
- d) Forest fire suppression plans.
- e) The allocation and use of forest resources for commercial purposes.
- f) Employment opportunities and training requirements in forest resource management and harvesting.
- g) Measures for the control of forest pests and diseases.

3) To the relevant first nation on:

- a) The management of furbearers.
- b) The use of traplines and the reassignment of all new, vacant and under-utilized traplines.
- c) The management of wildlife on settlement lands.

4) To the YFWMB on:

- a) Local management concerns for species or populations that have been declared threatened species or populations, species or populations declared by the minister as being of a territorial, national or international interest, and transplanted populations and exotic species. To date, the minister has not declared any species or populations as being of a territorial, national or international interest.
- b) Harvest requirements within the adjusted basic needs level.

- 5) To the Salmon Sub-Committee on:
 - a) The allocation of commercial and other uses of salmon and on other matters related to the recommending powers of the Salmon Sub-Committee.
 - b) The need for and the content and timing of salmon management plans.

The work of the **Laberge Renewable Resources Council (LRRC)** is impeded by the extensive overlap of traditional territories, primarily between the TKC and the KDFN. Pursuant to Schedule B of Chapter 2 of first nation final agreements, the provisions of RRCs do not apply in areas where traditional territories overlap. The TKC is required to make best efforts to reach agreement with each overlapping YFN on a contiguous boundary. Further, government agencies are reluctant to work with the LRRC (and the KDFN and TKC) on land use, forest, fish and wildlife planning and management due to the overlap situation. The only completed planning in the traditional territory are the Ibex Valley and Tahkini Community Plans, but these plans seem to have limited authority as they are constantly amended to accommodate development interests, to the detriment of green space and wildlife habitat.

The primary interests of the LRRC relate to land management and the conservation of fish and wildlife habitats within the TKC traditional territory. The TKC traditional territory is centred on the capital city area where 90% of the Yukon population resides, and where development pressures related to human activities are the most severe in the Yukon. Fish and wildlife habitats have been significantly damaged here and the few that remain require strong protection if fish and wildlife populations are to remain in this area. A further complication is the limited capacity of LRRC to respond to land use reviews, as it has essentially no repository or database of information or reference material to use as a basis for assessment and response. As a result, responses are generally based upon the personal knowledge that each member brings to the issue, and some limited consultation with community members.

The focal species for the LRRC are moose, salmon and whitefish as these are the primary country food species for the local people. The ecosystems that are most at risk are river valleys and riparian habitats as much of the human development and activities occurs there. The LRRC generally does not trust the Yukon government's information on wildlife populations, especially caribou in the M'Clintock River and Mt. Byng area (GMS 8-12, 8-14 and 8-15), and sheep in the Pilot Mountain area (GMS 5-50). The LRRC support the TKC initiative to establish a land and resource information database for the traditional territory, and would like to ensure that community and traditional knowledge is included.

The LRRC is particularly concerned about (listed in order of priority):

1. The lack of final agreement resource planning (land use, forest, fish and wildlife) in the TKC traditional territory, and the belief that this area should be the highest priority for resource planning in Yukon, given the extent of human development and activity.
2. The disposal of Crown lands for private use along the road corridors north of Whitehorse, which has accelerated since the federal devolu-

tion of the administration of Crown lands in 2002. Many of these lands were traditional hunting areas for the TKC people.

3. The lack of communications with and support from Yukon government biologists.
4. The damage to McIntyre Creek and adjacent riparian habitats due to human development and activities, especially plans for a new road, and the resultant destruction of wildlife habitats and movement corridors. This area is a major corridor for wildlife movements between Fish and Swan Lakes. Swan Lake is a key calving and wintering area for moose.
5. Agricultural land and residential subdivision expansion.
6. YESAB does not seem to be adequately addressing the impacts of development proposals and land use activities on fish and wildlife populations and their habitats.
7. The uncontrolled and prolific expansion of motorized trails that is causing the displacement wildlife populations from important ranges.
8. The lack of policies and regulations to control and manage access, especially of motorized vehicles, on Crown and Settlement Lands. The YFWMB and the Yukon government have done studies but there has been no follow-up on recommendations.
9. The lack of current survey data on moose in the Miners Range area (GMS 5-50).
10. The impacts of elk on moose populations.
11. The protection of the Swan Lake area as a primary moose calving area.
12. The upgrading of Pump House dam and facilities in a manner that does not cause the release of rainbow trout into the Yukon River system.
13. Unregulated subsistence hunting of moose, especially cow moose, by non-beneficiaries of TKC, who feel it is their aboriginal or treaty right.

The work of the **Dan Keyi Renewable Resources Council (DKRRC)** is somewhat impeded by the overlap of traditional territories, primarily between the KFN and the WRFN. Overlap with the CAFN is minimal. Pursuant to Schedule B of Chapter 2 of first nation final agreements, the provisions of RRCs do not apply in areas where traditional territories overlap. The KFN is required to make best efforts to reach agreement with each overlapping YFN on a contiguous boundary.

The primary interests of the DKRRC relate to habitat protection, the conservation of fish and wildlife populations, mining, and plans for hydro development. Furthermore, there has been no land use or resource planning in the KFN traditional territory. Planning priorities for the DKRRC would be a community-based fish and wildlife plan to deal with habitat protection and population management issues, and to prepare the community for future land use and forest management planning. The DKRRC will be contacting the Yukon Fish and Wildlife Branch to pursue fish and wildlife planning. The DKRRC will also be working with the KFN in support of land use planning in the Kluane region. Specific priorities and concerns for the DKRRC include (listed in order of priority):

1. The need for ecological land classifications and mapping for the entire KFN traditional territory or, at least, a comprehensive inventory and mapping of key fish and wildlife habitats. This information would have

to be readily accessible for the DKRRC for use in reviews and comments on development projects and land use applications. This information would also be used for future land use and resource planning in the area.

2. Plans to dam and change the hydrology and water flows on Gladstone River in order to supply water to the Aishihik Hydro Power facility. The Gladstone River is an important wildlife area for local residents.
3. Continue the recovery of the Kluane caribou herd. Caribou numbers in this herd were increased as part of the Aishihik Wolf Control Program between 1993 and 1997. Local residents see more caribou in the area and would like to see this herd continue to grow.
4. Mining for gold in Burwash Creek and Uplands, and the Gladstone and 4th of July Creek areas is a concern. These are placer mining operations which scour the landscape with no clean-up. Also, the potential for platinum mining in the Quill Creek area is a concern.
5. The conservation of sheep has been a long-standing concern in the community. Efforts to resolve this issue in the 1990s through the *ad hoc* Ruby Range Sheep Steering Committee were not satisfactory to the community. Members of the Steering Committee included the KFN, CAFN, Parks Canada, Indian and Northern Affairs Canada, the Alsek Renewable Resources Council, the YFWMB, the Yukon Conservation Society, the Yukon Parks and Wilderness Society, the Yukon Fish and Wildlife Branch, and local big game outfitters. The Steering Committee's mandate was to prepare a management strategy for sheep in the Ruby Range area but members could only agree on the fact that sheep populations had declined and are not using some of their former ranges. Much of the time was spent debating the question of knowledge and, in the end, the *status quo* sheep management regime remains in the area. This issue also remains a concern for the KFN and CAFN.
6. The freshwater fishery on Kluane Lake is a concern because the DKRRC has no information or understanding on the status of this fishery, why slot limits and catch and release regulations are in place, and why the commercial fishery was stopped in the early 1990s.

Yukon Environmental and Socio-economic Assessment Board (YESAB)

The YESAB is an independent body established to implement YESAA and associated regulations, to administer the YESAA assessment process to assess projects and other activities that might have effects in the Yukon.

Implementation of YESAA has resulted in a number of improvements and changes to the assessment process in the Yukon, including:

- An assessment process that will apply to all projects throughout the Yukon, and to the federal, territorial and first nation governments;
- A neutral process done at arms' length from governments;
- A high level of transparency – decisions and actions will include written reasons and will be made available in the public registry;
- Broader consideration of socio-economic factors;
- Guaranteed provisions for public participation;

- Guaranteed opportunities for first nation participation;
- Traditional and local knowledge are listed as factors to be considered;
- Increased certainty regarding information and coordination requirements, as well as mandatory time lines for both assessment and decision-making stages; and
- Both positive and negative effects of development projects will be considered.

YESAB has 29 full-time and three part-time staff, and consists of a head office in Whitehorse and six District Offices (DOs) located in Dawson city, Haines Junction, Mayo, Teslin, Watson Lake and Whitehorse. The majority of the project assessments are carried out by the DOs, which are independently responsible to carry out evaluations and make recommendations for a variety of projects. Larger projects are screened by the Executive Committee. For example, in the 2008/09 fiscal year, 267 projects were submitted to the DOs and 2 projects to the Executive Committee. A panel of the Board may be established to review projects that have potentially significant adverse effects, are likely to cause significant public concern, or involve the use of controversial technology.

YESAB maintains a website that provides up-to-date information about the assessment process, resources that describe how assessments are conducted, and instructions and guidebooks about how to develop project proposals. The website also links to the YESAB Online Registry, which is the electronic registry and document management system used to track assessments. The Online Registry is a tool to be used by project proponents, decision bodies, first nations, and members of the public to participate in the assessment process. The two main functions of the Online Registry are to provide public access to assessment related documents, and to help people submit comments and information into the assessment process. Here the public can become aware of new projects and contract them throughout the assessment process.

A five-year review of YESAA is underway by the CYFN, Yukon and federal governments. SENES Consulting has been hired to conduct the review. Phase 1 of the review (information gathering and issue scoping) has been completed. The information is currently being analyzed in preparation for reporting and recommendations to the parties.

The following are priority issues for the Board:

Baseline Condition of Land and Resources: As an independent assessment organization, it is critical for YESAB to have current information on the baseline condition of the land and how it is used by fish and wildlife. Any efforts by governments to develop a biophysical or ecological land classification and mapping system in the Yukon would greatly benefit industry in planning and developing projects, and YESAB in reviewing them. A critical ecosystem that needs to be mapped and described is wetlands. This system should provide information on the value of the wetlands ecosystem and their importance as habitat for fish and wildlife, and be readily available to the public. Project proponents urgently need this information in order to develop proposals with better consideration of wetlands and their values. YESAB would use this information for assessment purposes and to support their recommendations to protect wetlands.

Wildlife Response to Projects: Many projects assessed by YESAB are already in operation in the Yukon. In assessing new projects, YESAB would greatly benefit from knowing how fish and wildlife are responding to existing projects on the land. Key projects for study are mine sites and timber harvesting, and the impacts of new roads associated with these activities.

Assessment of Mitigation Measures: In reviewing proposals, YESAB commonly recommends measures to mitigate the impacts of these projects on fish and wildlife. It would be helpful to know, through scientific study, which measures are working and how they can be made to work better. As an example, fencing is commonly recommended for agricultural projects to separate wild and domestic stock to limit disease transmission. In some cases double fencing is being considered at great cost to the proponent. Does this work: is it effective in limiting the transmission of disease? There are studies describing the transmission of some diseases over a distance of 1 km involving big horn sheep, and agricultural setbacks of many kilometers for sheep and goat farms are under discussion to eliminate disease transmission in Alberta. These studies raise questions about what mitigative measures should be recommended to eliminate disease transmission in the Yukon and, specifically, what should be done with a proposal to expand an elk or bison farm.

Cumulative Effects in Project Assessments: Cumulative effects are caused by the accumulation and interaction of multiple stressors affecting the parts and the functions of ecosystems. Of particular concern is the knowledge that ecological systems sometimes change abruptly and unexpectedly in response to apparently small incremental stresses. Numerous definitions of cumulative effects exist. While the nuances of the definitions vary, they all suggest that the assessment of cumulative effects presents some unique challenges that require a departure from conventional impact assessment methodologies. Cumulative effects are generally defined as the changes to the environment caused by an activity in combination with other past, present, and reasonably foreseeable human activities. Additionally, cumulative effects are additive or interactive (synergistic) in nature; are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who has taken the actions; rarely correspond to political or administrative boundaries; should be assessed in terms of the capacity of the affected resource, ecosystem, and/or human community to accommodate additional effects; and may last for many years beyond the life of the project that caused the effects.

Incorporating cumulative effects in project assessments is a common practice for YESAB, but it has achieved only modest results. For example, some agricultural projects in the Haines Junction area have been declined based on cumulative effects. Within land use planning regions, such as the North Yukon Land Use Plan, cumulative effects indicators and thresholds have been adopted. However, there is no agreement on a process, or accountability, for the collection of the data relevant to these indicators. However in the rest of the Yukon, without an agreed-upon framework or criteria, the application of cumulative effects is tenuous and unconvincing to some parties. YESAB assessors require robust, scientifically sound and accepted tools and procedures to apply cumu-

lative effects when assessing projects throughout the Yukon. These tools and procedures will need to take into account baseline conditions (noted above), changes in natural systems (climate and forest fires) and the regard for reasonable foreseeable projects. In the absence of land use planning, the application of cumulative effects assessments needs to evolve from a project approval activity to a regional environmental sustainability application.

With tools and procedures in place, such as in the North Yukon Land Use Plan, the challenge becomes the collective monitoring, reporting and compliance functions necessary to implement the goals and requirements of the plan. These functions will require resourcing and expertise.

Caribou as an Indicator of Ecosystem Health: YESAB believes that ecosystem health may be reflected in the strength and vigor of ungulate and carnivore populations and the physical condition of individual animals. Biologists have been researching and monitoring the physical condition of Porcupine caribou for over 20 years and have fine tuned the methodology to specific sampling that can be carried out by hunters. This methodology is now being used on many caribou and reindeer populations across the circumpolar north. The Southern Lakes region is a good candidate area for monitoring ecosystem health through caribou studies, as this area is under intense development pressure and caribou here are being intensively monitored for conservation and range protection purposes. Research on ecosystem health using caribou as an indicator species could be built upon the studies in progress, and in cooperation with the Yukon government and local first nations. Further, the Kwanlin Dün, TKC and Yukon government may be moving ahead with ecosystem land classifications and mapping in this region, which would provide information on land use and condition for such research.

Land Use Planning: YESAB strongly believes that one of the best ways to achieve sustainable resource development and to address cumulative effect is to complete land use plans for all regions of the Yukon, consistent with Chapter 11 of YFN final agreements.

Yukon Non-Government Organizations

Yukon Conservation Society

The following are priority issues for YCS:

Mining: The YCS goal is to ensure that mining in the Yukon occurs only in places where such activities are ecologically and culturally acceptable. Where mining occurs, it should be based on need for the metal, on sound economics, and done in a way that ensures that perpetual treatment is not necessary. Abandoned mine sites should be cleaned up. Implementation of the Yukon's new placer mining regulatory regime should include effective monitoring and adaptive management to ensure it lives up to its potential to protect fish and fish habitat. To achieve this goal, YCS is working to:

- Participate in the implementation of the Yukon's new Placer Regime to ensure effective monitoring and adaptive management.
- Ensure that new mines in the Yukon do not have toxic environmental impacts and minimize impacts from other issues like access and social issues.

- Support first nations and communities faced with mining developments and their efforts to protect the environment, traditional uses, and their communities.
- Replace the Yukon's Free Entry system for mining exploration with a system that protects first nations rights, sensitive environments, and other economic interests.

The Placer Mining Regulatory Regime was implemented in 2009, involving extensive annual monitoring of disturbed and undisturbed sites to assess the effectiveness of the new rules. The purpose of the monitoring is to ensure that the disturbed sites are maintained within identified parameters compared with the undisturbed (control) sites. YCS may be the only private organization functioning as a watchdog to ensure that the new regime is achieving its purpose, through annually reviews the data provided, but is having difficulty keeping pace with this highly technical activity. A further complicating factor is that responsibilities for water monitoring have shifted within the Yukon government from Water Resources (Department of Environment) to Energy, Mines and Resources. For this reason, some first nations are attempting to undertake their own water monitoring to confirm results, but many lack resources and technical capabilities. In the longer term, the assessment of mine reclamation will ultimately determine the effectiveness on the new placer mining regime.

According to YCS, Carmacks Copper and Yukon Zinc's Wolverine Mine present major challenges for environmental impacts, especially impacts on water quality and fish populations. If Carmacks Copper goes ahead, YCS takes the position that it will likely be a long term-toxic legacy since nowhere in the world has this kind of sulfuric acid heap leach ever been detoxified. YCS anticipated that the Wolverine mine may cause major environmental damage to Wolverine Lake and surrounding waterways, because the company does not seem able to deal with unexpectedly high groundwater flows.

Free-Entry System for Mining Development: A major concern for YCS is the free-entry system in the Yukon for mineral exploration. This system results in the uncontrolled expansion of resource extraction and land disposition, and "nuisance" claims staking in areas prior to protected area and land use planning, without any consideration for the environment and the ecological and cultural values of the landscape. There needs to be public dialogue on this issue involving Yukon and first nation governments and industry, in order to develop a more modern and publicly acceptable approach to resource development, including updating legislation as was done in Ontario for the mining industry. In Ontario private landowners can now refuse access for mining and consultation with first nations has been improved.

Agriculture: Unplanned agriculture land dispositions around Yukon communities consume the few bits of wildlife habitat that remain, and take away community options for future green space planning.

Agricultural Land Development Policies: Most agricultural land dispositions occur through the spot land application process. The Agriculture Branch is working towards planned agricultural development areas, but only two have been developed to date – Pilot Mountain and Haines Junction. YCS is currently researching agricultural development policies, will be preparing a paper by November 2009, and would like to discuss this further with WCS Canada.

Forestry: YCS is working towards ecosystem-based forest practices and forest management planning that is fair and transparent, community-based, puts conservation first, encourages and protects local forest-based industries, and contributes to long-term economic health. During the development of the *Yukon Forest Resources Act*, YCS participated in a focus group to ensure that the new act would protect all forest values and entrench first nation's treaty rights. However, the final draft of the Act does not include wildlife and wildlife habitat in the definition of Forest Resources, and gives powers to government to unilaterally change or cancel community-based forest management plans. Furthermore, the Act puts no ceiling on large forestry licenses for regular timber or biofuels, and it is silent on raw log exports. The act is "enabling" legislation, with the details about how the forest will be managed left to the regulations and forest management standards. Draft forest regulations are currently out for public review until October 31, 2009, after which forest management standards will be developed.

Further, there appears to be no planning for the "working forest". Planning is done at the broad-scale regional level, and site and timber harvesting plans are done for timber extraction purposes, but there is no consideration and planning for the "working forest" that take into consideration other values, such as wildlife habitat. As an example, the draft forestry plan for the southeast Yukon does not provide details about how the "working forest" of the Kaska Traditional Territory will be managed, although it recommends protecting 35% of the 110,000 km² from logging. To protect the ecological and cultural health of this forest, the draft plan needs to include connected networks of protected areas at all scales, and logging of a type and scale that protects ecosystems. YCS is continuing to provide input and expertise to help ensure that the final plan does this, and hopes that the Yukon government will restore funding for this planning process.

Habitat & Wildlife: YCS works to protect habitat and wildlife through reviews of land use applications through the YESAA process, and contributions to public policy on mining, forestry, energy, agriculture, and other developments. YCS is currently working with the Canadian Parks and Wilderness Society - Yukon chapter to attain major protection in the pristine Peel River Watershed and supports local organizations like Friends of McIntyre Creek and Friends of McLean Lake in their efforts to protect the ecosystems they enjoy in their neighborhoods.

A vital problem for YCS and other organizations, such as first nations and RRCs that participate in planning for land-use, agricultural development and forest management, is the lack of map-based information on fish and wildlife habitat, and cultural and ecological values. As such, these organizations sometimes lack critical independent information for land conservation and management purposes, and frequently have to rely on the information and the goodwill of government agencies and industry.

Protected Areas Networks: There seems to be no interest by the Yukon government in resource planning in the Whitehorse and surrounding areas, where much of the human populations reside and where much of the development pressures occur. Much of the wildlife habitat in this area has either been dam-

aged or is under pressure by development interests, and green space is being lost. The remaining habitat needs to have strong protective measures if wildlife populations are to remain in these areas, and to keep the green space character of Whitehorse.

In other regions under intensive resource extraction planning, such as forest and mineral resources in the Watson Lake area, connected networks of protected areas are needed to maintain the ecological and cultural integrity of the landscape.

Energy and Climate Change: YCS is working towards reducing Yukon's dependence on fossil fuels in the short term, with the goal of becoming carbon neutral. To achieve this goal, YCS is actively working towards:

- The enactment of building codes for new buildings to be built to R-2000 or better standards and support for the retrofitting of older buildings to similar standards.
- The promotion of local production of goods and services to reduce and eventually replace fossil fuel intensive imports.
- The efficient use of fossil fuels, through urban design and transportation.
- The reduction and eventually elimination of the generation of electricity using diesel.
- Encouragement, development and use of renewable energy and reduction of reliance on fossil fuels.
- Encouragement and implementation of carbon neutral travel.
- A moratorium on oil, gas and uranium exploration and development in the Yukon.
- The creation of a program whereby individuals and/or businesses can voluntarily offset their carbon footprint by contributing to investment in Yukon projects that mitigate climate change by sequestering atmospheric carbon, reducing Yukon greenhouse gas emissions, and reducing Yukon's dependence on fossil fuels and imported products. YCS commissioned the report on the feasibility of a Yukon carbon offset fund, which analyses the possibility of such an initiative.

B.C. First Nations Governments

Taku River Tlingit First Nation

Treaty negotiations between the Taku River Tlingit First Nation (TRT) and the B.C. government have been discontinuous since the mid-1990s. The TRT, along with the TTC and the CAFN and the CTFN comprised the B.C. Northern Regional Negotiations table. These first nations, along with the Kaska, are transboundary with the Yukon (Figure 6). Negotiations were stalled in 1999 following an exercise in which Canada and B.C. outlined their preliminary positions with respect to land, cash and other provisions that would be included in a comprehensive treaty. Over the following years, meetings have been infrequent and, in the spring of 2003, the table was shut down pending a reassessment by B.C. of its mandate for transboundary negotiations. During this period the TRT focused its attention on land use planning and protection.

Over the past year the B.C. Treaty Commission has been in discussions with the TRT about re-engaging in tripartite negotiations separate from the other first nations of the Northern Regional Table. The TRT has met with its membership and recently received a mandate to re-engage in the B.C. treaty process, and the parties are currently working to getting the process reestablished and appointing their Chief Negotiators.

The TRT increasingly has used legal means and the Common Law (Royal Proclamation of 1763, honor of the Crown) to protect their interests. As an example, since 1994, Redfern Resources Ltd. has sought permission from the B. C. government to re-open the old Tulsequah Chief Mine site. The TRT, through the *Canadian Environmental Assessment Act* process, objected to the company's plan to build a road through a portion of their traditional territory. When B.C. granted the Project Approval Certificate in 1998, the TRT brought a petition to quash the decision on grounds based on administrative law and on its Aboriginal rights and title. The chambers judge concluded that the decision makers had not been sufficiently careful during the final months of the environmental assessment process to ensure that they had effectively addressed the substance of the TRT's concerns, and set aside the Project Approval Certificate. The majority of the Court of Appeal upheld the decision, finding that B.C. had failed to meet its duty to consult with and accommodate the TRT. B.C. appealed the decision to the Supreme Court of Canada and, in November 2004, the judge concluded that the consultation and accommodation engaged in by B.C. prior to issuing the Project Approval Certificate for the Tulsequah Chief Mine were adequate to satisfy the honor of the Crown. In the wake of this Supreme Court decision, Redfern Resources Ltd. has not yet reopened the mine site and TRT has been unable to negotiate an Impacts and Benefit Agreement with the company. Further, the TRT is currently working with B.C. to establish a more meaningful negotiation process regarding this project, including an accommodation agreement.

At present the TRT are involved in the following initiatives:

Taku Conservancy: The Taku Conservancy is a society formed to protect the territory of the TRT. The purpose of the Conservancy is to ensure that this landscape remains a place where the needs of the residents are satisfied in harmony with the continued long-term viability of its native plants, fish, wildlife, and natural ecosystems.

The objectives of the Conservancy are to develop, fund, facilitate, promote and carry out activities and programs which will preserve the plants, fish, wildlife and natural communities that represent the diversity of life within the territory of the TRT according to the direction provided by the TRT Blue Book and Yellow Book.

The goals of the Conservancy are to:

- Protect, preserve, and manage plants and animals that represent the diversity of life within the territory of the Taku River Tlingit First Nation by protecting the lands and waters they need to survive, and areas of environmental, historical, and first nations cultural value;

- Provide opportunities for training in conservation management, and to provide sustainable employment for under-employed or unemployed individuals residing within the traditional territory of the Taku River Tlingit First Nation for whom such job opportunities do not currently exist;
- Acquire property to further the purposes of the Society, such as licenses, leases, tenures, easements, and conservation covenants over lands within the traditional territory of the Taku River Tlingit First Nation.

Land Use Planning: For the past five years, the TRT and the B.C. government have been working out a process to move ahead with land use planning in the Atlin Taku Region⁸⁵. This region remains one of the only areas in the province to complete a land use plan. The purpose of this initiative is to increase certainty regarding resource conservation and use, and form the foundation for balanced solutions that meet economic, environmental, and social needs. On March 26, 2007, the parties signed a draft Framework Agreement for Shared Decision-Making Respecting Land Use and Wildlife Management. After consultation with the community of Atlin and other stakeholders, a strategy for community and stakeholder involvement in the land use planning process was developed. B.C. and the TRT formally signed the Framework Agreement on March 26, 2008, triggering the official commencement of land use planning in the Atlin Taku region. The Framework Agreement provides a mandate, purpose, scope and process for B.C. and TRT regarding land use planning and the management of freshwater fish and wildlife. Planning will be conducted by a B.C.-TRT Joint Land Forum to implement mechanisms for shared decision-making.

The proposed planning area covers the western portions of the TRT traditional territory, and includes traditional territories of the Tahltan, Carcross Tagish, and Teslin Tlingit First Nations. The Framework Agreement acknowledges that these first nations have interests in the planning area, and that the BC government recognizes the claims of other first nations to aboriginal rights and title within the planning area. The TRT and B.C. will, jointly or individually, initiate discussions regarding land use with first nations that have interests in the planning area. These discussions will seek to identify mutually acceptable solutions to land use and wildlife management issues, and will be conducted in a manner that respects the relationships between and among the B.C. government and first nations.

Northern Mountain Woodland Caribou Planning⁸⁶: The TRT has participated on the Northern Mountain Woodland Caribou Steering Committee since its formations two years ago. The Committee provides direction on the drafting of a management plan for this caribou population, which is a requirement of the federal SARA. This population was listed as a species of special concern in 2005. The management plan has been drafted and over the next few months Environment Canada will be proceeding with consultations required under SARA and aboriginal treaties, and posting the plan on the federal SARA Registry for public input.

⁸⁵ "Atlin Taku Framework Agreement." B.C. Government Home – Province of British Columbia. Web. October 31, 2009. http://ilmbwww.gov.bc.ca/slrp/lrmp/smithers/atlin_taku/index.html.

⁸⁶ "Northern Mountain Caribou Management Plan." YFWMB Homepage. Web. October 31, 2009. <http://www.yfwmb.yk.ca/northernmountaincaribou/>.

Southern Lakes Wildlife Coordinating Committee⁸⁷: The TRT participates as a member of the SLWCC, which was established in 2008 pursuant to Schedule B, chapter 16, or the KDFN final agreement. This Committee has a three-year mandate to prepare and wildlife assessment for the Southern Lakes Area of the Yukon, which includes the Yukon portions of the TRT traditional territory. Other committee members include five southwest YFNs, as well as the federal, Yukon and B.C. governments. The committee has completed a caribou assessment and is currently working on an assessment for moose. Future assessments will include large predators, sheep, access, wetlands, rare and endangered species, migratory birds, traditionally used species, animal health and diseases, land management and environmental assessments.

⁸⁷ “SLWCC Home.”
Yukon fish and Wildlife
Co-Management. Web.
October 31, 2009. www.southernlakeswildlife.ca

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A grizzly bear (*Ursus arctos*) patrols a northern stream-side in search of spawning salmon. (Photo: Fritz Mueller)

The Northern Boreal Mountains of Yukon and British Columbia include large areas of wilderness with robust wildlife populations. This region is quickly being developed to supply resources to the global economy. Working with various partners, Wildlife Conservation Society Canada proposes new science and conservation action to ensure a future for wildlife and wild places.

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