Aboriginal Forestry 2003

Emerging Issues and Opportunities in Aboriginal Forestry

Proceedings of a conference and workshop held in Saskatoon, Saskatchewan, March 5-6, 2003

MODEL FOREST NETWORK

RÉSEAU DE FORÊTS MODÈLES

First Nation Forestry Program

Prince Albert Model Forest

MA MAW WECHEHETOWIN

working together/helping each other

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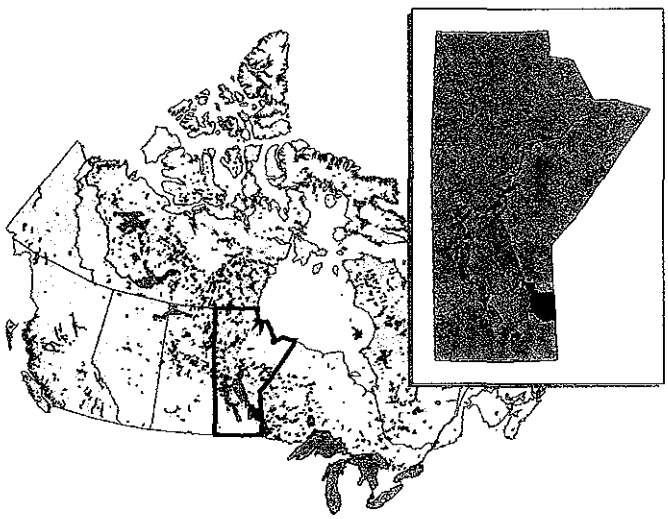
Challenges of Incorporating Traditional Knowledge

The Challenges of Balancing Indigenous Knowledge and Sustainable Forest Management

Myrle Traverse, PhD Candidate
Winnipeg, Canada



Terms

Indigenous Knowledge

- Knowledge bases that reflect a way of living and livelihood of Indigenous peoples.
- Broad scope of knowledge that encompasses environment, culture, social…

Sustainable Forest Management

- Views forests as holistic, complex, and diverse systems
- Ecological, social, economic dimensions
- Driven by demand for environmental accountability

Goal: Working Relationship

The Balancing Act

"To maintain and enhance the long term health of the forest ecosystem for the benefit of all living things both locally and globally using knowledge that has endured and to provide environmental, economic, social, and cultural opportunities for the benefit of present and future generations. "

Setting the Goals

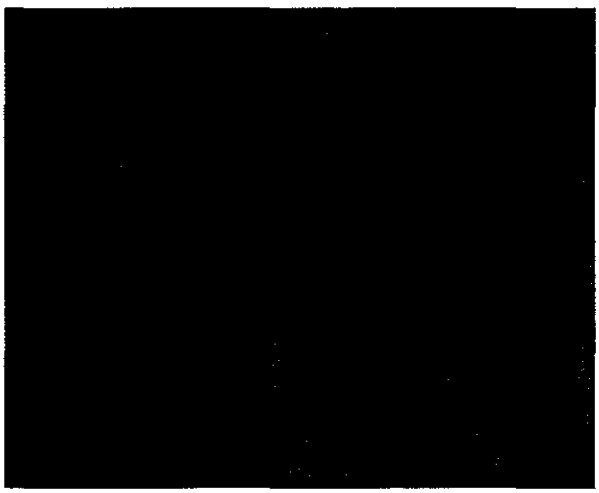
- Planning together using Indigenous knowledge and forest science at the community level to ensure Indigenous environmental ethics are maintained
- Sharing economic opportunities through a focused approach to community based capacity building

Challenges to Dialogue

- Resistance from academics and industry to the idea of indigenous knowledge
- Resistance from Aboriginal people to sharing indigenous knowledge
- Differing ethical concepts
- Leads to breakdown in dialogue
  - industry impatient to maintain dialogue
  - time is of essence
    - "time is money"
  - aboriginal people leery of dialogue
  - time is generations
    - immemorial
- Superior knowledge
  - written
  - quantitative
  - theory based
- Inferior knowledge
  - oral
  - qualitative
  - passed over generations

Challenges to Environmental Ethics

- Research requires signing agreement
- Disclosure
- Aggregates/samples
  - control/study
- Testing
- Learning part of life
- Don't exploit nature – observing is part of indigenous knowledge
- Respect – do not be wasteful
- Only take what you need
- *"Kaago nushipapinu tukiin"*
- Tagging/monitoring
  - yellow ribbon method
    ear tag, collar ID
- Mental tracking
  - know when something is missing



Conservation methods challenge

- Ecosystem planning
  - ecosystem based management
  - adaptive resource management
- Different way of thinking
- Individual/each knows its role
  - no written law or order
  - unspoken
  - inherent
  - innate

Challenges

- Stakeholders
  - tax payers
- Resources
  - property
  - Exclusive ownership
- Rights holders
  - stewards of land
- Resources
  - not viewed as property
  - indivisible and non-exclusive
  - common property

Challenges – Impacts and Benefits

- Monopoly
  - company
- Top-down
- Hunting
- Sharing and gifting
  - community based
  - reciprocity
  - harvest

Challenges

- Obvious/apparent
- Macro
- Quantitative
- Written
- 'expert' studying subject
- '9 to 5' science
- Knowledge stops when funding stops
- Subtle
- Micro
- Qualitative
- Oral
- Passed on through generations
- On-going

Addressing the Challenge of Balancing

Key features of indigenous knowledge and sustainable forest management

- Holistic Forest Stewardship
- Community Capacity Building
- Bringing communities together
- Shared responsibility
- Important to separate politics and business
- Shared Risk
- The Company legitimizes, recognizes and modernizes First Nations role as stewards of the land
- Way to improve environmental performance – Optimizing indigenous knowledge with modern science
- First Nations and Industry working towards common goals
- Work with government

Short Term Objectives

- Full integration of Indigenous values
- Full implementation of development plan of Indigenous knowledge systems
- Establish community-based joint planning
  - working groups, committees
  - communication strategy
- Identify capacity needs

Long Term Objectives

- Equal weight/importance for Indigenous Knowledge – 'not top down approach'
- Recognition of Importance of Forest Land Base to First Nation Communities
- Establish high standards of performance in business ethics, environmental stewardship, ecosystem ethics, and social conscience
- First Nations Community Relationship and Economic Development
- Certification of Forest Management Practices/ indigenous knowledge
- Improve environmental leadership and awareness
  - enhance public and government relationships

Goals

- Maintain open dialogue
- Agree on terms
  - 'consultation'

Indigenous knowledge and sustainable forest management

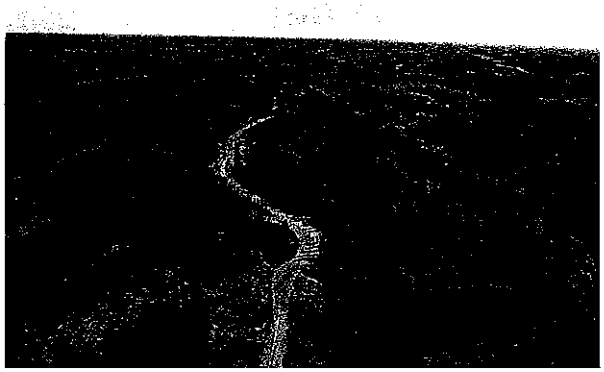
- Increase development and adoption of sustainable forest management systems and tools beyond forest boundaries
- Strengthen Indigenous forest network activities in support of Canada's sustainable forest management priorities
- Increase opportunities for local-level participation in sustainable forest management
- Disseminate the results and knowledge gained to other non-government organizations, government

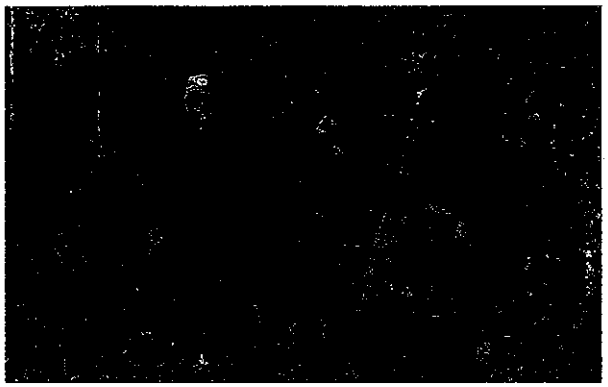
Aboriginal Input

- Determine how to incorporate indigenous knowledge into plan
- Determine method of involvement
  - community input, workshops, etc.
  - consultation protocol
- Determine local indicators and values
- Determine impact/benefits
  - economic and capacity development
  - community working relations

Sustainable Forest Management Plan

- Community involvement
- Joint Planning
- Establishment of short and long term goals
- Criteria and Values
- Inventorying/environmental audit
- Certification
- ISO 14001
- Flora/fauna (ecosystem) management





Sustainable Forest Management Objectives

- Conservation of Biological Diversity
  - ecosystem diversity
    - goal – maintain a natural landscape pattern when managing for access development, harvesting, and forest renewal activities
    - species diversity

Summary

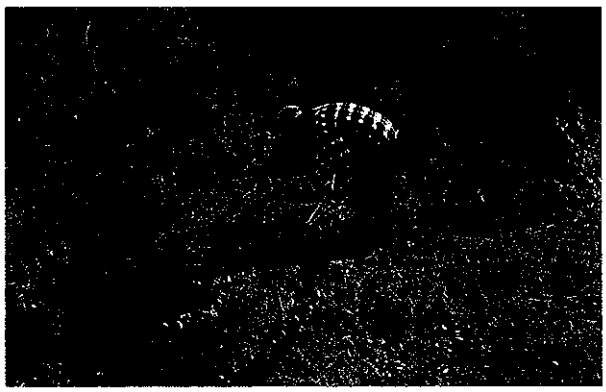
- Agree on sustainable forest management
  - definitions
  - goals, ideals
  - ecosystem ethics
- Work with both knowledge systems

Conclusion

- Establish working relationship/dialogue
- Side-by-side
- Equal weight for knowledge
- Acknowledging each other

Acknowledgements

- First Nations Limited Partnership
- Tembec
- FNFP/CFS/NRCan
- Personal Communications



A Traditional Knowledge Primer for Sustainable Forest Management Network Partners

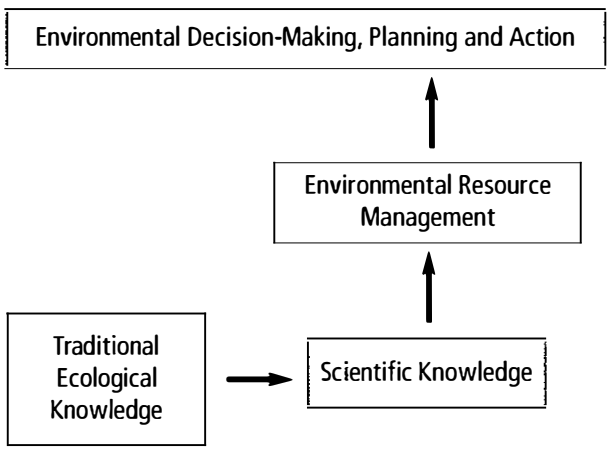
Marc G. Stevenson, PhD
Aboriginal Program Manager
Sustainable Forest Management Network

Why the Interest?

- As Aboriginal peoples increasingly assert their rights, re: natural resource allocations and developments, political concessions are made in which traditional knowledge is considered in environmental decision-making.
- There are limitations of current Western Scientific Knowledge to deal with environmental problems of increasing magnitude and complexity.
- Traditional knowledge may have actually something to contribute.

What is TK?

- Many definitions advanced – none are particularly empowering to those with this knowledge or those wanting access to it.
- Definitions tend to limit or 'pigeon-hole' the contributions of Aboriginal peoples and their knowledge to decisions required to achieve ecological, social, cultural, and economic sustainability.



The Status Quo

Some Problems with the Status Quo

- Issue or problem is identified by non-Aboriginals.
- The knowledge and answers sought must be compatible with the Western Scientific Knowledge and environmental resource management traditions.
- Elders and traditional knowledge holders interviewed with methodologies insensitive to Aboriginal narratives.
- Local interpreters are usually used to filter and translate terms and concepts originating in one culture into the language of another.
- The interview is recorded, and then transcribed, in whole or in part onto paper and/or maps.
- These data are subjected to analyses that "weed-out" specific information that can contribute to established scientific knowledge data sets and environmental resource management procedures.
- This 'information' then becomes the authoritative reference upon which decisions are made.

Points to Consider about the Status Quo

- Through its progressive sanitization, or 'dumbing-down', traditional knowledge assumes the role of 'hand-maiden' to scientific knowledge, and alternative ways of knowing, seeing, and relating to the natural world are devalued, diminished, and dismissed.
- This process not only reflects the predominant positions of SK and environmental resource management in environmental decision-making, but it strengthens the existing institutional arrangements and power relationships that support them.

- Traditional knowledge is increasingly divorced from the social/cultural context where it more properly resides, and its owners are increasingly separated from knowledge that they once owned and controlled, effectively excluding them from decision-making.

Is There a Better Way?

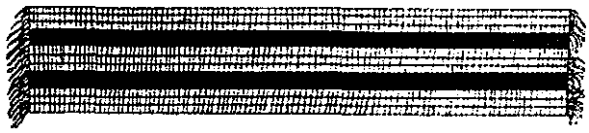
The Onkwehonweh replied, "you pronounced yourself as my Father, and with this I do not agree... We will not be like Father and Son, but like Brothers. This friendship shall be everlasting and ... the rising faces from Mother Earth will benefit by our agreement." The Whiteman said, "I understand, I confirm what you have said, that this will be everlasting as long as there is Mother Earth... Now it is understood that we shall never interfere with one another's beliefs or laws for generations to come."

Exerpted from the *Record of the Two Row Wampum Belt*, translated by Huron Millar (1980).

The two rows symbolize two paths or two vessels travelling down the same river of life together. One, a birch bark canoe, represents the Original peoples, their laws, customs, and ways. The other, a ship, is for the European peoples, their laws, their customs, and their ways. They travel down the river together, side by side, each in their own boat, neither trying to steer the other's vessel.

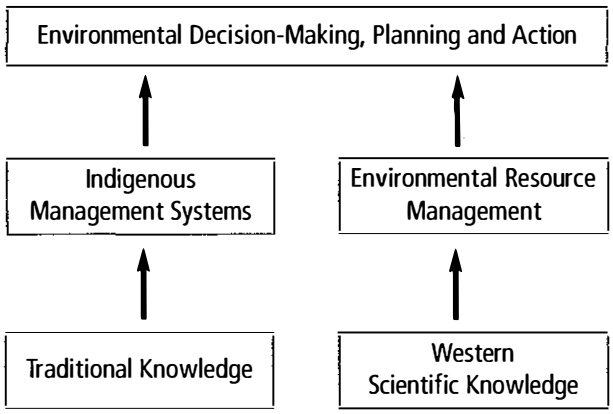
The Two Row Wampum Approach To Traditional Knowledge

- The approach acknowledges that traditional knowledge may have little to contribute to, and did not evolve to inform, Western Scientific Knowledge and Environmental Resource Management.
- Traditional knowledge evolved to inform philosophies/approaches to living arguably very different from those in which Scientific Knowledge, Environmental Resource Management, and even sustainable forest management emerge.
- Aboriginal peoples traditionally **did** not **manage** resources or even ecosystems, but they managed their **relationships** to/with resources; these they could do something about.
- Traditional knowledge may have much to contribute to understanding and developing sustainable relationships with the natural world.
- It acknowledges that we may have much to learn from each other.
- It acknowledges the disparity in power and capacity to have one's knowledge count in decision-making.

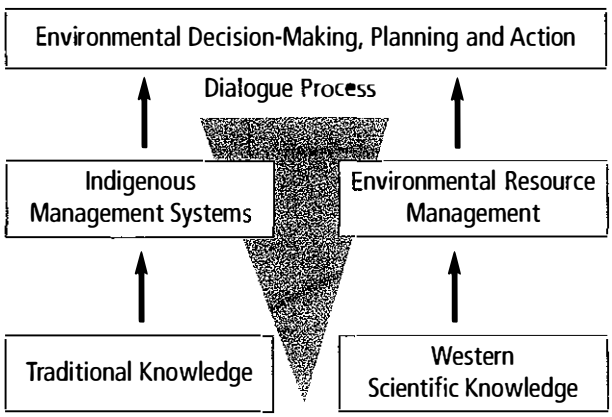


Two-row Wampum

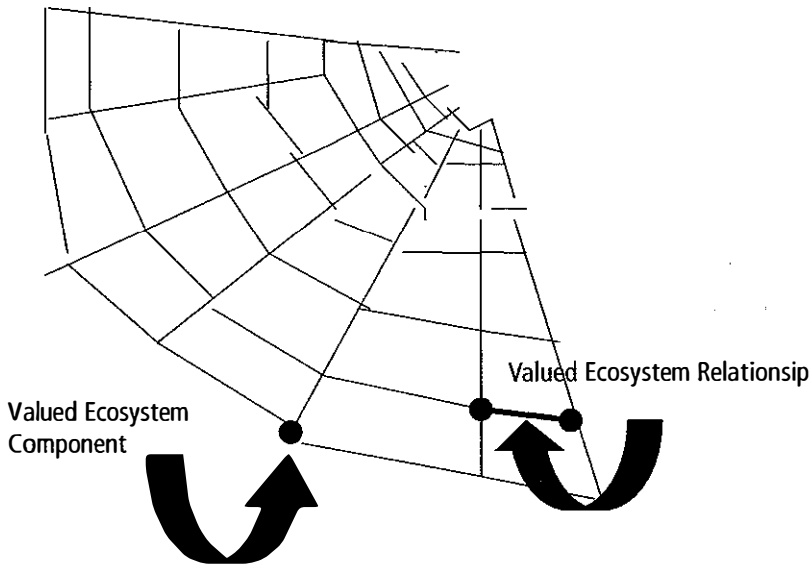
Traditional Knowledge and the Two Row Wampum



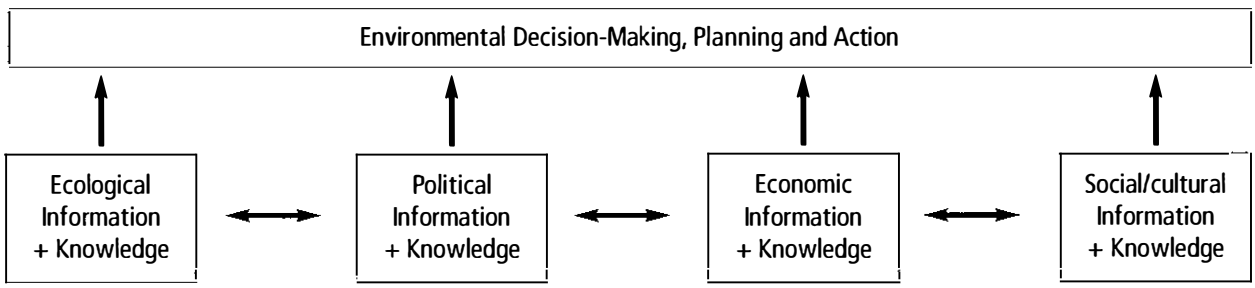
Working Together Without Climbing into Each Others' Canoes



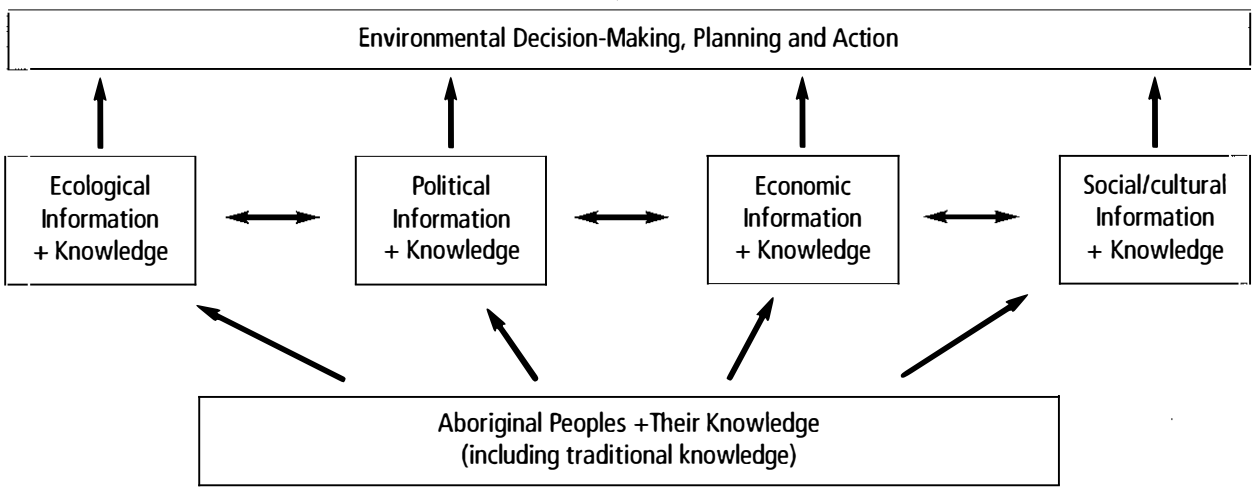
Operationalizing Management Units



REAL World Decision-Making



Contributions of Aboriginal Peoples and their TK in REAL World Decision-making



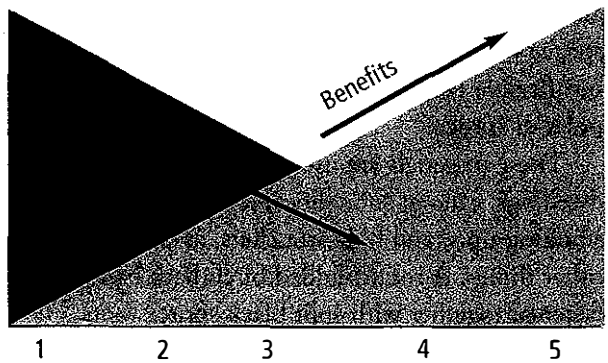
What We Can Do Together

- Acknowledge, respect, and accommodate Aboriginal and treaty rights.
- Be more critical of our own cultural biases and assumed truths.
- Create appropriate institutional structures and arrangements.
- Lobby governments for policy reform.
- Support Aboriginal efforts to:
  - assess and prioritize their uses, values, and needs of forest resources, and
  - develop management plans based on these

Steps Towards Incorporating Aboriginal Peoples and their Knowledge in Sustainable Forest Management

1. Traditional Land-use Studies and attention to Native values
2. Incorporating traditional knowledge of natural and anthropogenic changes in Valued Ecosystem Components into forest planning
3. Incorporating traditional knowledge relevant to Valued Ecosystem Relationships into forest planning
4. Incorporating Aboriginal Peoples into monitoring of Valued Ecosystem Components, and monitoring/management of Valued Ecosystem Relationships
5. Incorporating Aboriginal Peoples and their entire knowledge into forest planning re: management of Valued Ecosystem Relationships

Benefits and Problems Associated with Each Step of Incorporating Aboriginal Peoples and Their Knowledge in Sustainable Forest Management



Processes and Pathways to Getting There

1. Document, assess and prioritize needs, values, and uses of forests and forest resources.
2. Develop First Nations' land-use and forestry plans, policies, and regulations.
3. Integrate with government policies and regulations through negotiation and development of new institutions.
4. Monitor and assess effectiveness of management actions.

The Whiteman said, *"What will happen if any of your people may someday want to have one foot in each of the boats we have placed parallel?"* The Onkwehonweh replied *"If this so happens that my people wish to have their feet in each of the two boats, there will be a high wind and the boats will separate and the person that has his feet in each of the boats shall fall between the boats; and there is not a living soul who will be able to bring him back to the right way given by the Creator, but only one: The Creator Himself."*

Exerpted from the
Record of the Two Row Wampum Belt,
translated by Huron Millar (1980).

Forest Plant Use by Cree People in the Churchill River Area in Eastern Saskatchewan

Anne Leighton

In the past, plants formed a part of every aspect of daily life including what people ate, how they stayed healthy, how they took care of children, and where they lived. It is difficult to realize how integrated all aspects of the environment are in the native culture when discussions such as this begin by separating things into categories such as uses. While we must continue to do so for comparative and descriptive purposes, it should be kept in mind that this does not necessarily reflect the native view.

Plants have been valued in several ways by the native community: as part of traditional culture, many elements of which co-exist today with modern lifestyles; and also as an important contribution to the household economy, as income-in-kind. This presentation will review some of the uses of plants in traditional culture based on a survey I undertook in the La Ronge and Pelican Narrows areas in the late 1970s. Brief mention will be made of the income-in-kind contribution based on a study in the early 1980s.

Traditional Uses

The Cree people living in the boreal forest have traditionally gathered plants for many uses, such as food, herbal remedies, building materials, and a large number of household uses such as child care, food preparation, fire starter, tobacco, and hide tanning. A number of these uses are still current.

Foods

By far the most important plant source of traditional foods is berries. Berries are not only very numerous, they are also varied, in terms of flavour, abundance, season of collection and nutritional qualities. Some of them are easy to preserve by drying; others are preserved by keeping cold or frozen. Some of the more important berries in the northern boreal forest are blueberries, dry-ground cranberries, and bearberries. A number of berries are commonly eaten with fish, either cooked up and served with fish or cooked with the fish or parts of fish. Fish livers, eggs, and fat are cooked with dry-ground cranberries, and raspberries are eaten with fish pemikan. Bearberries are cooked in grease, crushed, and mixed with raw fish eggs. Chokecherries are prepared in a similar fashion.

Although berries make the largest contribution to the diet, many other kinds of plant foods are eaten including aspen cambium, birch sap, hazelnuts, rock tripe lichen, and a variety of roots. Each of these is collected at a certain season and most are eaten fresh although a few can be dried for later consumption.

Building materials

The use of plants as building materials is extensive and although the number of species used is relatively small and includes mostly trees and some shrubs, the materials themselves are extremely varied: waterproof sheets of birch bark; spruce roots and willow bark as fasteners; straight-grained white spruce wood; durable, workable birch wood; tough but flexible tamarack wood; and strong, straight poles of spruce.

These materials are used to make baskets, dwellings, canoes, snowshoes, toboggans, utensils, smoking tipis, and hide stretchers, as well as many other things. A round-lidded birch bark basket is fastened together with split black spruce roots,

reinforced with red-osier dogwood stems and with an edging of almost paper thin strips of white spruce wood. Birch bark is usually fastened with split spruce roots and framed with carefully shaped white spruce wood. Similar techniques are used for making birch bark canoes.

Herbal remedies

Unlike plants used for building materials, the number of plant species used for herbal remedies is large. In the past, plants were used to treat everything from minor cuts to systemic illness with or without known cause. A knowledge of herbal remedies was especially important before the 1940s when residents of the north had to be self reliant in terms of health care.

Herbal remedies kept on hand for household use would include a number of clean, dry roots, which were typically grated to make decoctions or poultices. Such a collection of roots represents a lot of work. The plants must be located and collected at the right season, the useable parts cleaned and then dried for preservation. Many other plant parts were used as well as roots: whole plants or parts of plants, bark, leaves and pitch.

Household uses

The last category of plant use is an amorphous one and is as varied as life itself. Some examples are infant care (sphagnum moss diapers and baby powder from rotten wood), tinder (bracket fungi with the special quality of igniting on contact with a spark from a flint and steel), fire starter (old man's beard moss and birch bark), tobacco (inner bark of red-osier dogwood and the leaves of bearberry), hide tanning (rotten wood, often mixed with conifer cones was used to smoke tan hides), toys (rose hip pipe, pin and cup game, and pitcher plant leaf kettle that children could prepare for their own amusement).

Income-in-kind contribution of wild foods

Although people have been supporting themselves for generations on the resources of the forest and some information is available on the plant species used by them, there is little in the way of documentation to show the magnitude of the harvest in the past or the dependence on these resources in the present.

One exception is a report by Terry Tobias concerning a study commissioned by the community at Pinehouse Lake. The study, done in the early 1980s, attempted to evaluate the extent of the local peoples' utilization of the natural resources around them. It focussed on the importance of the "income-in-kind" sectors of the northern economy, which can be defined as economic resources not converted into cash but added directly to the household, such as meat, fish and berries. Because these resources are not bought and sold, they are generally ignored as legitimate income and their economic contribution to the household often unaccounted for.

The quantity of the income-in-kind contributions of fish and meat are very high. The contribution of berries, while less than meat and fish, is still impressive. According to Tobias' study, Pinehouse residents harvested the equivalent of 6,687 edible pounds of berries between April 1983 and March 1984 for local consumption.

In summary, wild plants native to the boreal forest have been an integral part of the traditional lifestyles of people who have lived in the north for generations. Plants also form an important contribution to many a household as income-in-kind.

Recognition, Protection, and Respect: Issues Affecting the Exploitation of Traditional Knowledge for Profit

Grand Chief Francis Flett
Manitoba Keewatinowi Okimakanak, Inc.

The growing worldwide interest in the commercialization of non-timber forest products holds profound implications for the world's indigenous and First Nations peoples – including the First Nations of northern Manitoba. Non-timber forest products are viewed by many governments, researchers, and corporations as the last untapped and unregulated 'frontier' in the natural resources sector. Like any potential commercial resource that is thought to be 'untapped and unregulated', the so-called 'non-timber forest products' are at risk of a 'gold rush' mentality and non-sustainable exploitation. In most cases, the legal, treaty, and intellectual property rights of indigenous peoples related to the harvest of these natural resources have not been effectively considered.

Particularly for the tropical forests, international commitments to protecting global biodiversity and the protection of the world's remaining rain forests have led to the study of the commercial potential of various non-timber forest products, including eco-tourism. Some of these studies have examined opportunities for indigenous peoples and local populations to either reduce the harvesting of rain forest trees or to provide some form of economic equity where globalized forest companies dominate the harvesting of forest resources.

In Canada, on one hand, the commercializing of some non-timber products such as berries and mushrooms are viewed as being able to augment local economies, particularly those communities impacted by large-scale industrial forestry.

Estimates of the value of non-timber forest products vary widely, depending on what is included as an 'non-timber forest product', but some estimates place the total commercial value of non-timber forest products across Canada at about $240 million, while others suggest $200 million comes from the British Columbia region alone. Clearly, substantial values exist.

On the other hand, there is the interest in the new medicinal products to be 'discovered' in the world's forests. As of 1981 in Canada, wild sources accounted for 78% of the active ingredients within the 15,871 existing drug products. Unlike the relatively modest economic returns from food and other non-timber forest products, the potential global value of medicines, pharmaceuticals, and health products that are derived from undiscovered wild sources is in the billions of dollars.

The Manitoba Keewatinowi Okimatakanak (MKO) First Nations have experienced first-hand the effects of the commercialization of the 'untapped' natural resources 'discovered' within our traditional lands. First, was the fur trade; next came the mining industry; then came industrial forestry, followed by hydroelectric development. There has been comparatively little sharing of the benefits of these developments.

Wild medicinal products capable of producing pharmaceuticals are perhaps the modern beaver pelts of this last natural resource frontier.

The waters, lands, and resources of northern Manitoba represent the foundation of the First Nations traditional economy: through fishing, trapping, hunting, wild rice harvesting, berry picking, agriculture, the harvesting of trees, and tourism. The combined traditional territories of the 27 Manitoba Keewatinowi Okimakanak First

Nations cover almost three quarters of the present-day province of Manitoba. Today, this vast, resource-rich area is home to some 60,000 Treaty First Nations people.

The terms of our Treaties established a solemn promise that the lands within our traditional territories would be shared forever between our First Nation and the settlers entering our territory.

The oral histories of our forefathers and our elders also say that the Treaty provides that the use and management of the lands, waters, and natural resources within our traditional territory would continue to be subject to the inherent rights and jurisdiction of our First Nations.

For decades following the signing of the several numbered Treaties affecting the MKO region, our families continued to live undisturbed in the same lands as we had for thousands of years, guided by our beliefs and our traditional knowledge.

In 1930, the federal government violated our Treaties through the unilateral transfer of control over our lands and resources to the provincial government. By the late 1930s, the provincial government was providing new settlers with allocations of fur resources, trapping areas, timber, and large tracts of land for homesteading. As a result, the lands, waters, and natural resources of our traditional and Treaty territories have been, and continue to be, exploited for the benefit of government and private interests without the consent of, or authorization by, the MKO First Nations. There is a risk that this pattern will be repeated through the commercialization of non-timber forest products, particularly plants with medicinal and nutritional benefits.

The record shows that the First Nations of northern Manitoba have been excluded from any meaningful shate of the wealth generated by the developments and activities carried out within our traditional territories by these new settlers and their governments. The record also shows that the Traditional Knowledge of First Nations people was central to the development of the fur trade, the mining industry, guiding and outfitting, and now, the growing commercialization of traditional plants.

With respect to employment and business opportunities, the record also clearly shows that First Nations peoples have been systematically excluded from the training, employment, contracting and equity investment opportunities afforded by major resource developments taking place within our traditional lands.

The exclusion of First Nations from the benefits of economic developments within our traditional lands must not be repeated through the commercialization of non-timber forest products and through the appropriation of commercially-valuable traditional knowledge. 'Bioprospecting' can too easily become 'Biopiracy' if First Nations continue to permit the exchange and publication of traditional knowledge without first ensuring informed consent and the protection of any economic or other values associated with the traditional knowledge.

Intellectual Property considerations must now be added to the values associated with the commercialization of non-timber forest products, particularly for medicinal, pharmaceutical, and nutritional products.

It is the Traditional Knowledge of indigenous harvesters and healers that has lead medical researchers and pharmaceutical companies to many of the known plants and organisms with medicinal and nutritional properties.

MKO recognizes the Traditional Knowledge of our members as Intellectual Property. MKO also recognizes that the wealth of knowledge of the MKO membership is largely unprotected in a legal sense and – as early as 1990 – has developed policies and principles affecting the documentation and use of Traditional Knowledge.

The MKO First Nations recognize that the difference between poverty and prosperity will be determined by the extent to which the MKO First Nations directly control, participate in, and benefit from the use and development of natural resources within our traditional lands.

The MKO First Nations are creating wealth from new and non-traditional sources, such as through investments in existing businesses and the

development of new businesses, including non-timber forest products. First Nations-owned and operated businesses, Tribal Council Development Corporations, Aboriginal Capital Corporations, and First Nations-controlled banking institutions are developing new businesses, employment opportunities and corporate capacity.

MKO recommends that a new First Nations entity or enterprise be established specifically to address the issues and opportunities arising from the commercialization of non-timber forest products, including the recognition and protection of the Traditional Knowledge of the MKO membership. MKO proposes that this enterprise be supported by specialists with a detailed knowledge of international intellectual property laws and the means to effectively protect the traditional knowledge of First Nations peoples.

For example, this new entity might take the form of a foundation which would hold in trust any recognized intellectual property rights, trademarks, or patents arising directly from the application of traditional knowledge. In this way, the foundation may license the use and application of such traditional knowledge and may direct any revenues from these licences for the benefit of the First Nations peoples that are holders of the particular traditional knowledge and for the benefit the wider aboriginal community.

MKO also proposes the development of laws at the First Nation, federal, and provincial levels to explicitly recognize the unique importance of traditional knowledge to First Nations people and to provide mechanisms for the protection of traditional knowledge in Canada. These laws would also require that governments and the natural resources sector respect the interests of First Nations people in the values inherently associated with traditional knowledge as part of any resource licencing, allocation, or development activities.

MKO recognizes that in order for the MKO First Nations to survive and to fully restore our inherent right as self-governing Nations, we must achieve economic self-sufficiency. MKO First Nations also recognize that our traditional pursuits must be maintained, and that influence over decisions concerning natural resource harvesting, use, and development are directly tied to our social, cultural, and economic future. As a central part of these initiatives, First Nations must also ensure that our traditional knowledge is recognized, protected, and respected.

Ekosi!

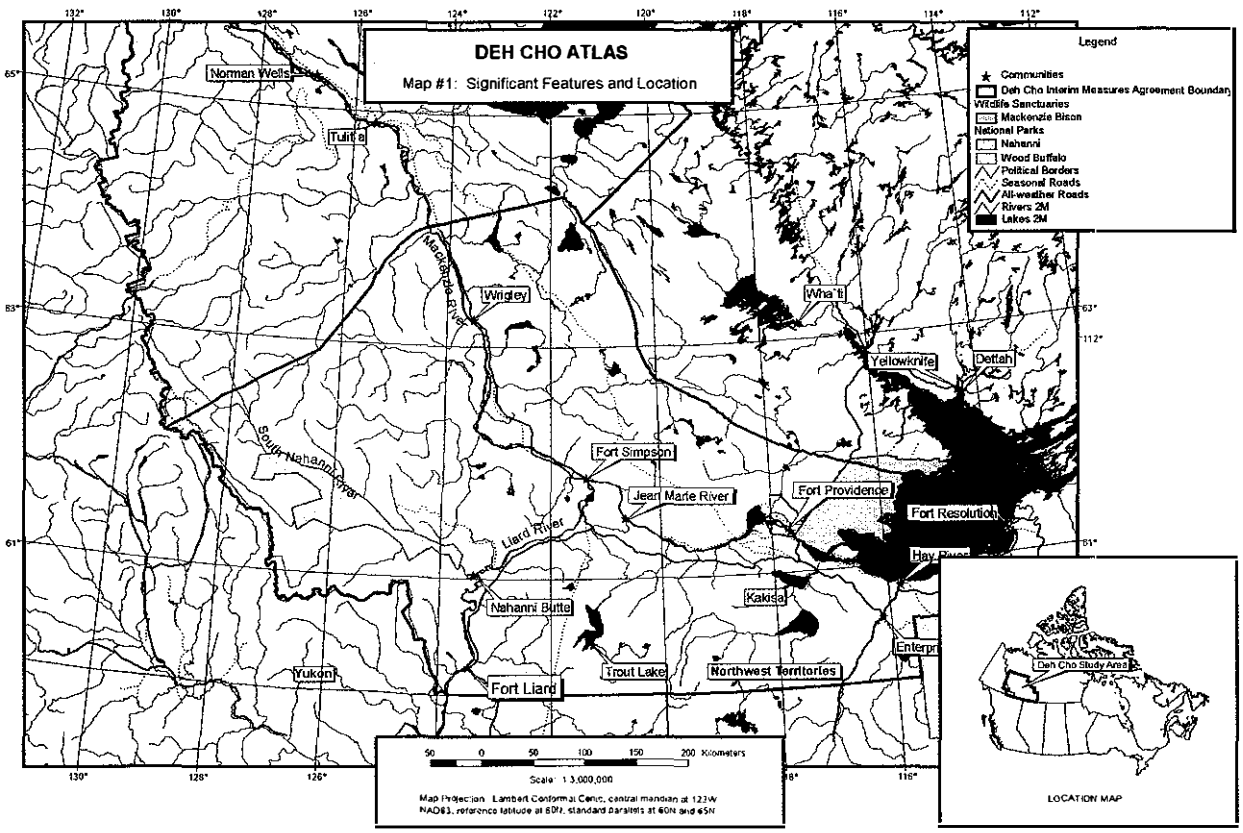
Theme 2
Traditional Land Use Studies: A State of the Art

Seeing the Dene in the Forest among the Trees

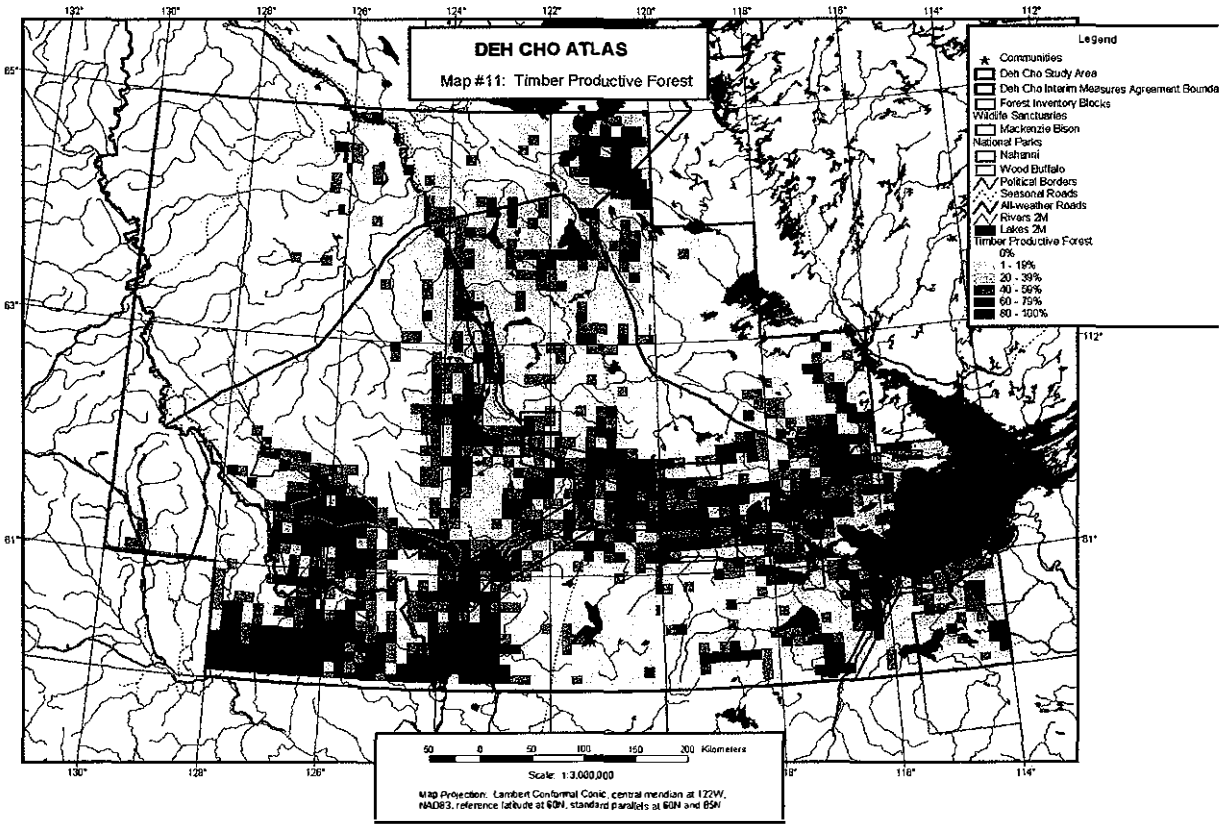
Using Traditional Land Use Mapping, GIS, and Satellite Imagery to Identify Forestry Opportunities in the Deh Cho Territory

Herb Norwegian,
Assistant Negotiator, Deh Cho First Nations;
Chair, Deh Cho Land Use Planning Committee; and
Member, Naha Dehe Consensus Team

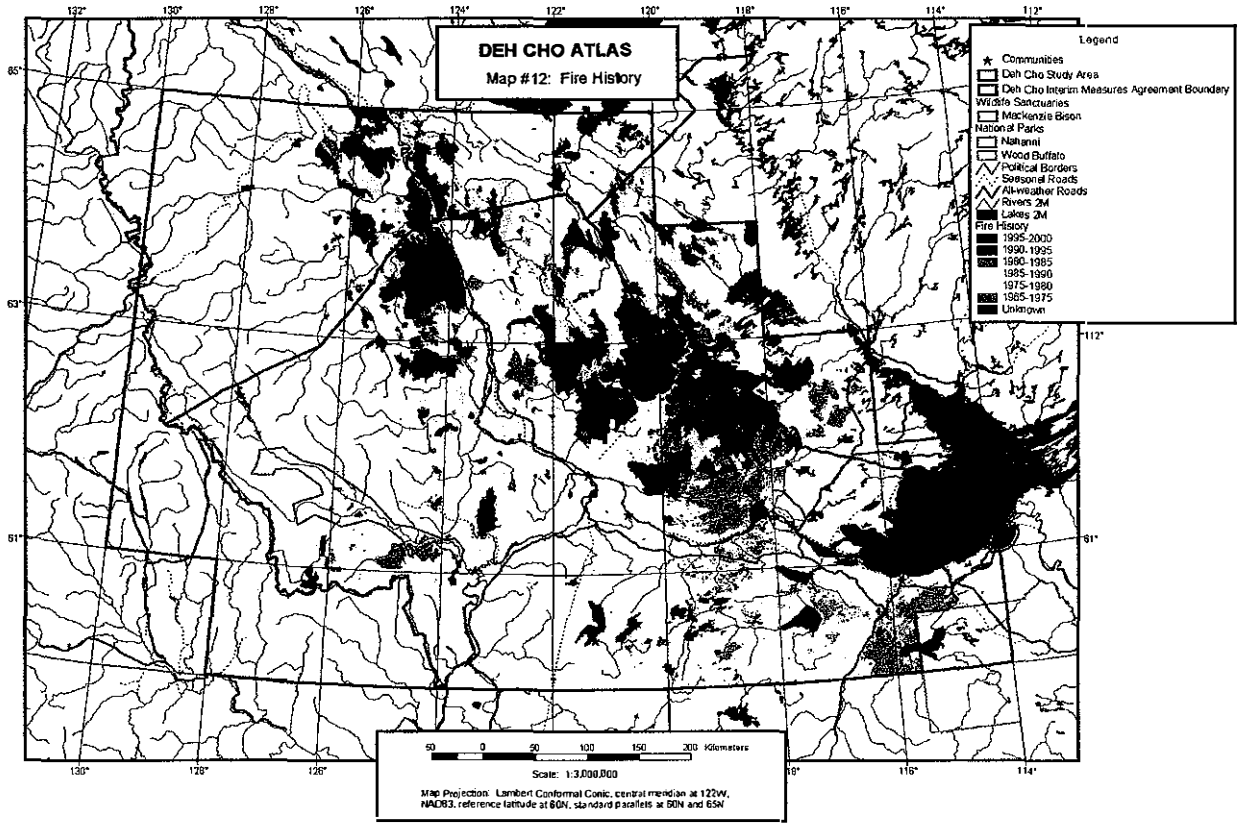
- The Deh Cho territory covers over 210,000 km± in the south-west corner of the NWT.
- Deh Cho First Nations, representing 10 communities, have been negotiating lands, resources, and self-government since 1999.



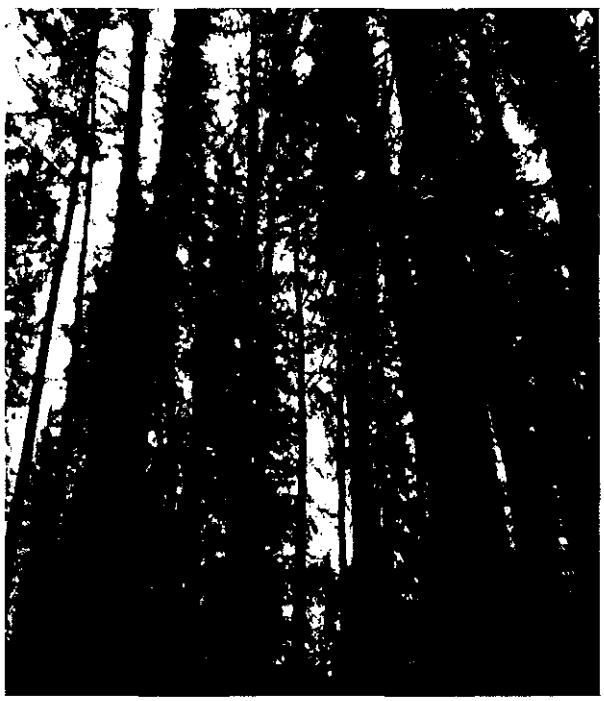
- Merchantable timber is spread very unevenly throughout the Deh Cho as seen in the National Forest Inventory at 1:20million.
- The most productive stands are located in the alluvial plains/terraces of river valleys or on slopes with good drainage.
- The GNWT is still completing timber inventory only in selected blocks.
- Only small-scale logging has taken place in the Deh Cho Territory.



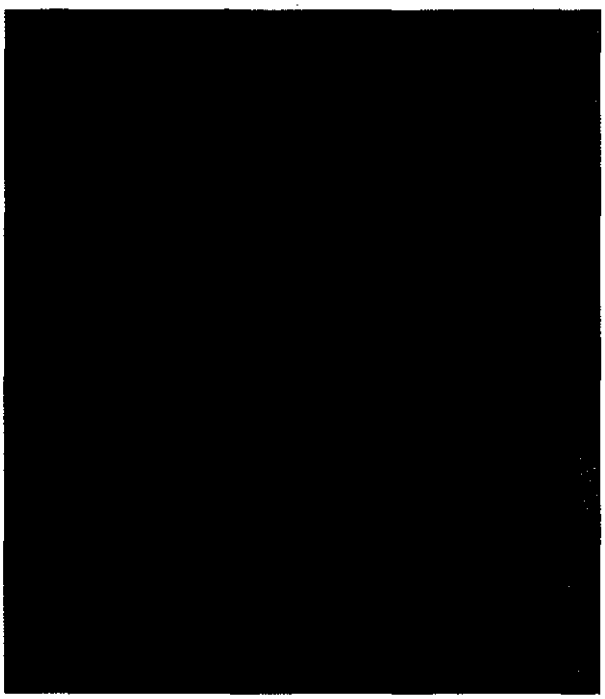
- The northern boreal forest depends on a natural fire cycle.
- Massive fires swept through the NWT in the mid-90s.
- The river valleys with the large trees are less fire-prone because of higher moisture levels.

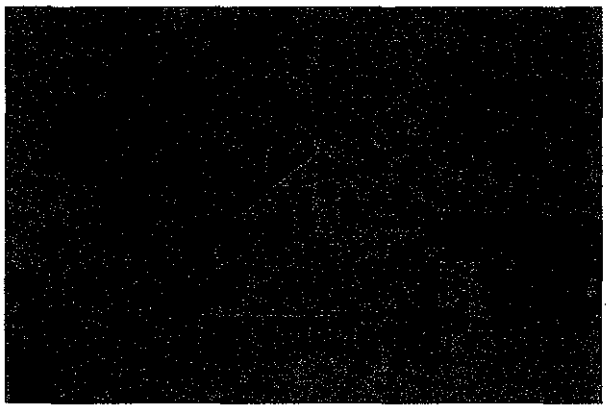


- White spruce grow in patches of straight, even-aged stands, some of which are 200 to 300 years old.
- The slow-growing wood is very dense and finely-grained.



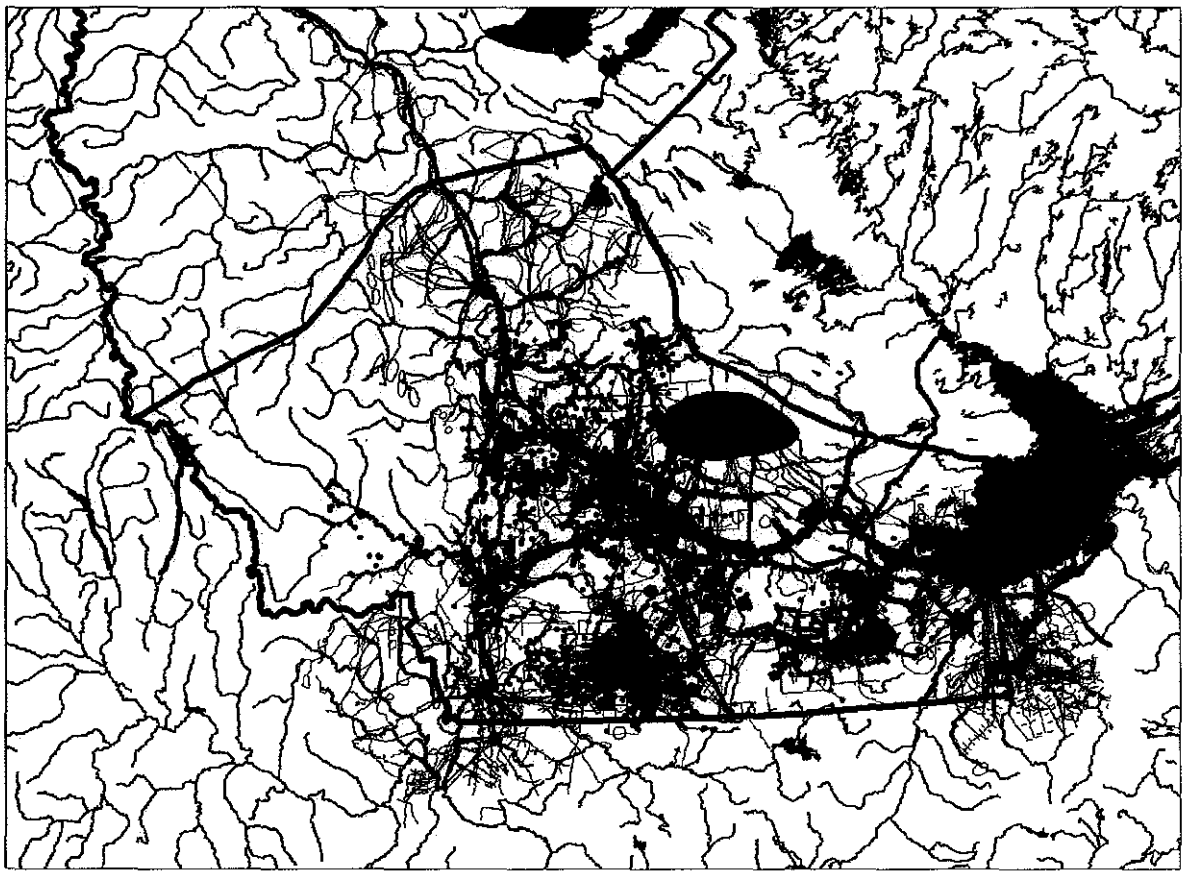
- The river valleys also include many important traditional harvesting areas and cultural/spiritual sites.





- The mouth of the Redknife River and the ancient drum circle/mound upstream are among the most significant Dene cultural/spiritual sites in the Deh Cho Territory.

- Deh Cho First Nations have conducted detailed traditional land use and occupancy mapping with over 300 harvesters and Elders since 1996.
- Over 45,000 data elements have been coded for each harvester and land use type in a GIS.
- The Deh Cho Atlas also contains 45 GIS layers of natural resource data.



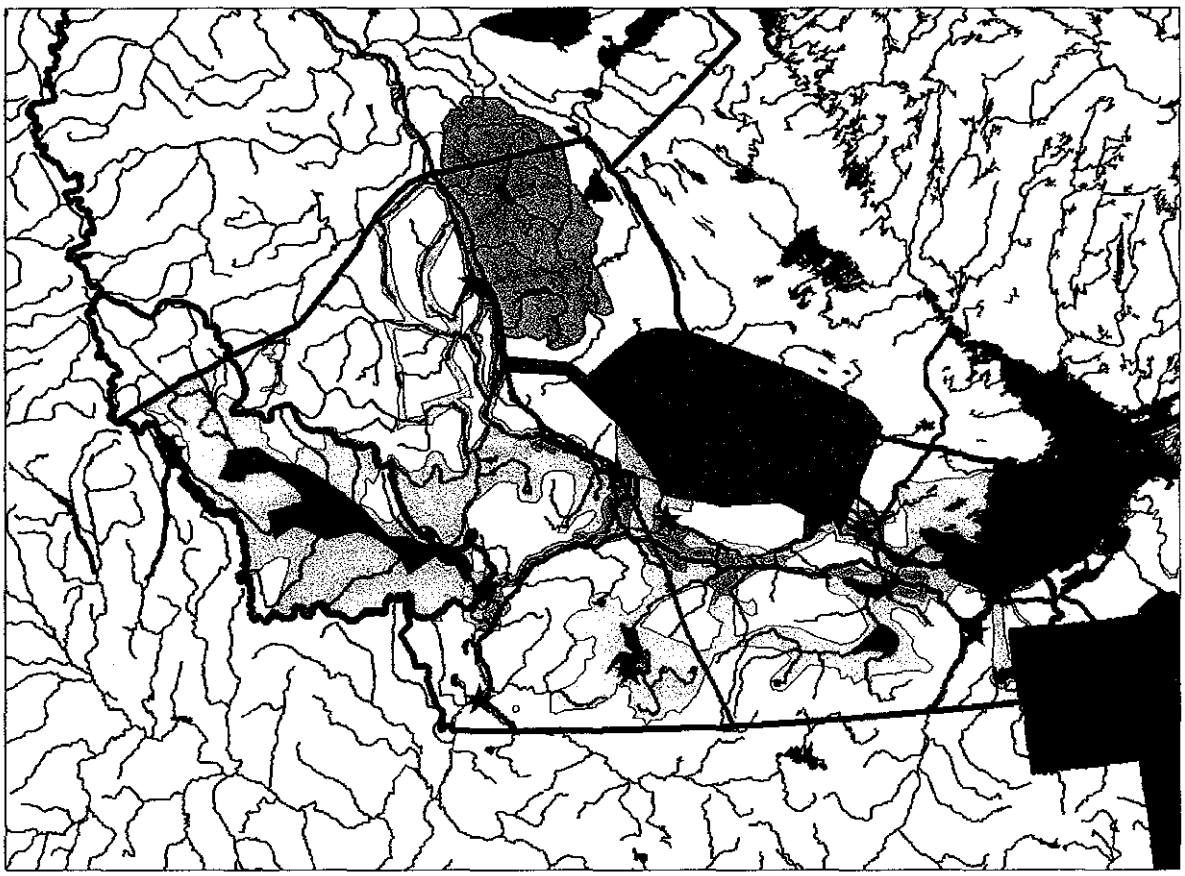
200 0 200 400 Kilometers

Lu_polygons.shp
Lu_points.shp
Lu_lines.shp
Deh cho communities.shp
Municipal.shp
Enbridge pipeline row.shp
Highways
Rivers2m.shp
Lakes2m.shp
Land_claim_boundaries.shp
Deh Cho IMA

N
W E
S

Deh Cho First Nations
Traditional Land Use and Occupancy

- Deh Cho First Nations are negotiating interim land withdrawals, to protect traditional land use, cultural/spiritual sites, ecologically sensitive areas, and watersheds.
- Most traditional land use occurs in river valleys where the most productive forest is also located.
- The Deh Cho Interim Measures Agreement provides for surface and/or sub-surface land withdrawals.

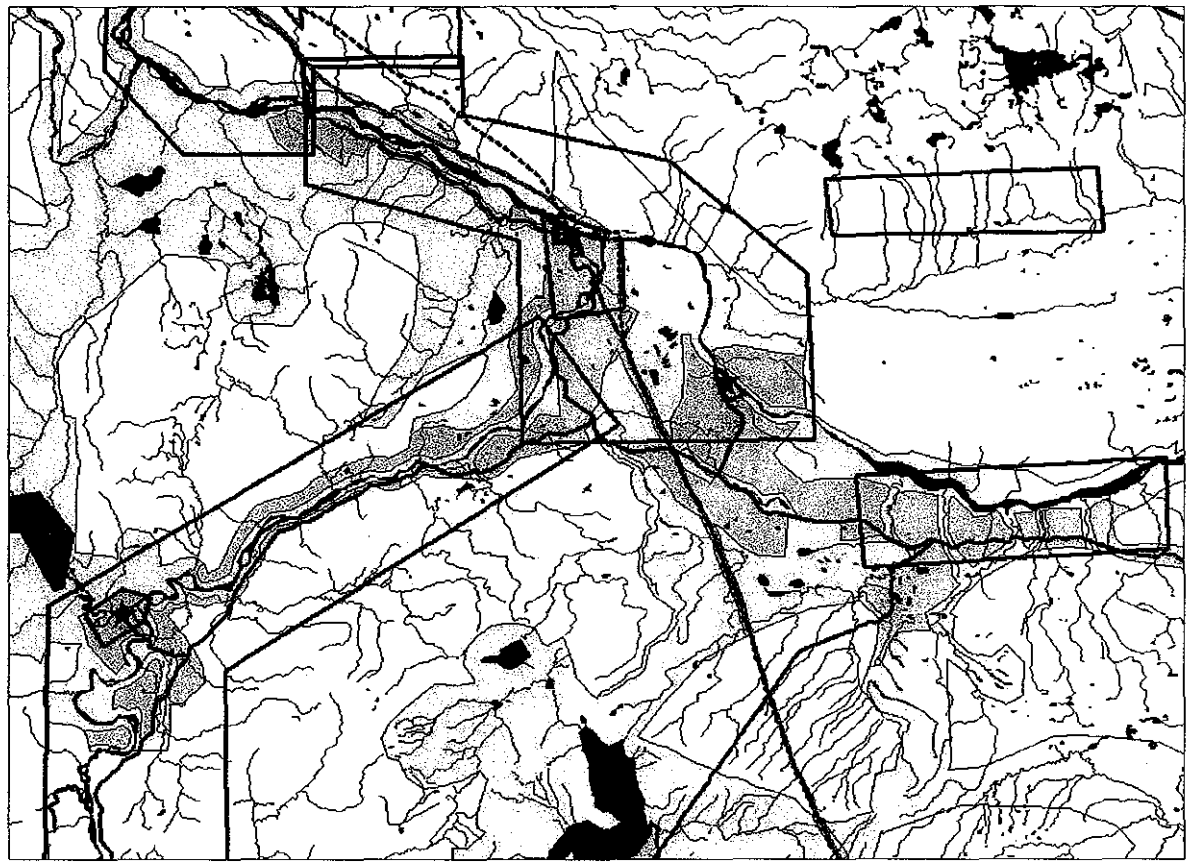


Deh Cho Protected Areas and Proposed Land Withdrawals

- The GNWT provided a complete forest inventory only for the Fort Simpson-Jean Marie River block.
- The high timber potential stands from the forest inventory were correlated with LANDSAT imagery and extrapolated to the whole region using GIS.
- Merchantable timber within proposed withdrawn areas and within 10km of roads was identified using GIS.

Merchantable Timber in Withdrawn Lands within 10km of All-Weather or Winter Roads

- Using GIS, the traditional land use data was overlayed on the merchantable timber.
- Cultural/spiritual sites and areas with a high density of of traditional use were excluded.
- A 1km buffer was established along all river valleys to prevent logging near the water's edge.
- Sub-surface only land withdrawals identify forestry opportunities that do not conflict with other values.



Sub-Surface Only Land Withdrawals for Forestry Opportunities

Next Steps

- The Deh Cho Land Use Planning Committee has contracted professional foresters to carry out a detailed analysis.
- Forestry opportunities will be incorporated into a land use plan for the Deh Cho Territory at a coarse scale.
- Community-based forest management planning need to be initiated.
- Forest inventories MUST be completed.
- More value-added industries, such as the log home mill in Jean Marie River, need to be established.

Working together, we can leave a living legacy for our children's children.

Mahsi Cho

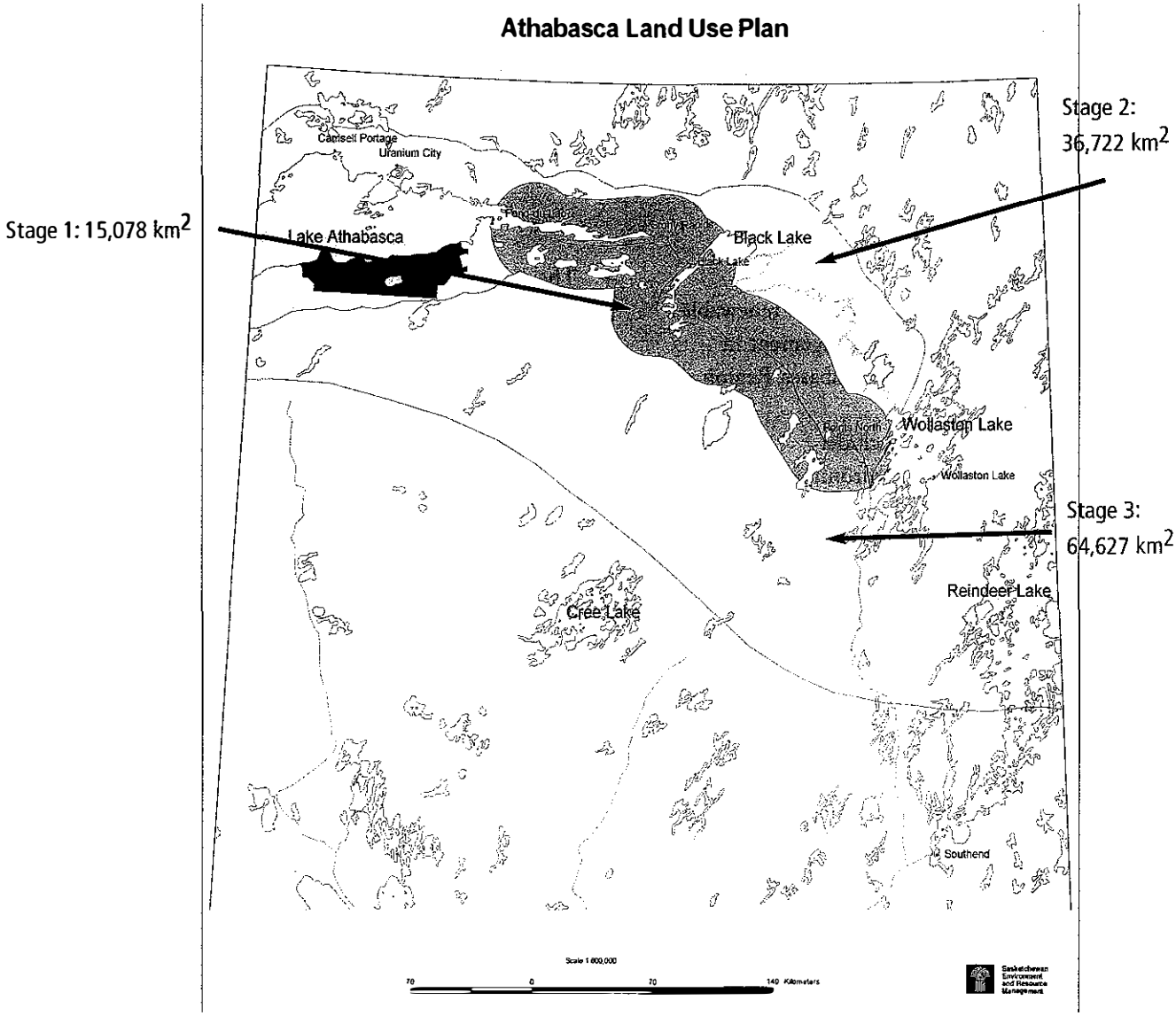
Athabasca Basin Traditional Land Use Study

Diane McDonald and Peter Brook
Prince Albert Grand Council

The Agreement

- The Agreement respecting land and renewable resource use planning and management in Northern Saskatchewan – Athabasca Region, (signed 2000)
- Parties to the *Agreement* include:
  - Saskatchewan (Sask Environment, Northern Affairs)
  - First Nations (Fond du Lac, Black Lake, Hatchet Lake)
  - Provincial Communities (Camsell Portage, Uranium City, Stony Rapids, Wollaston Lake)
  - Prince Albert Grand Council
- The total area of the Athabasca region is approximately 116,400 km^2
- Objectives of the *Agreement* related to local and traditional land/resource use research include
  - develop a land/resource use plan that integrates local and traditional harvesting knowledge;
  - develop a resource management regime model that is integral to land/resource plan implementation;
  - develop a training program in resource planning and management as part of a community development and capacity building process towards joint resource management.

- The Agreement establishes a three staged planning process:



Research Program Purpose:

- To incorporate local land use and traditional ecological knowledge into the planning process and the management structure of the region
- To ensure the interests of Athabasca residents is represented in the three planning stages
- Maximize benefits and provide capacity building in the region for future management of resources

Traditional Land Use Research Project

- Describes, documents, and analyzes the traditional lands, natural resource use, and occupancy of First Nations and provincial community residents in the Athabasca region.
- Provides a tool to reinforce First Nation and other northern resident interests in development and sustainable management of their forest lands.
- Resulted also in qualified and experienced workers resident in Athabasca Communities.

Objectives

- Accurate collection of land use and occupancy information
- Fieldwork data consistent with the criteria and standard in the methodology
- Accurate spatial information digitized
- Ongoing entry of textual data and geo-referencing
- Ongoing organization of spatial data and textual data
- Basic GIS training
- Transcription and translation training

Capacity Building

- Certified training program developed in conjunction SIIT
- 9 Athabasca residents completed the UOM training and went on to do interview
- 4 interns were trained in transcription techniques
- 80 interviews from Phase 1 plan area were selected for initial transcription
- Basic GIS training conducted offered to interns

Accomplishments to Date

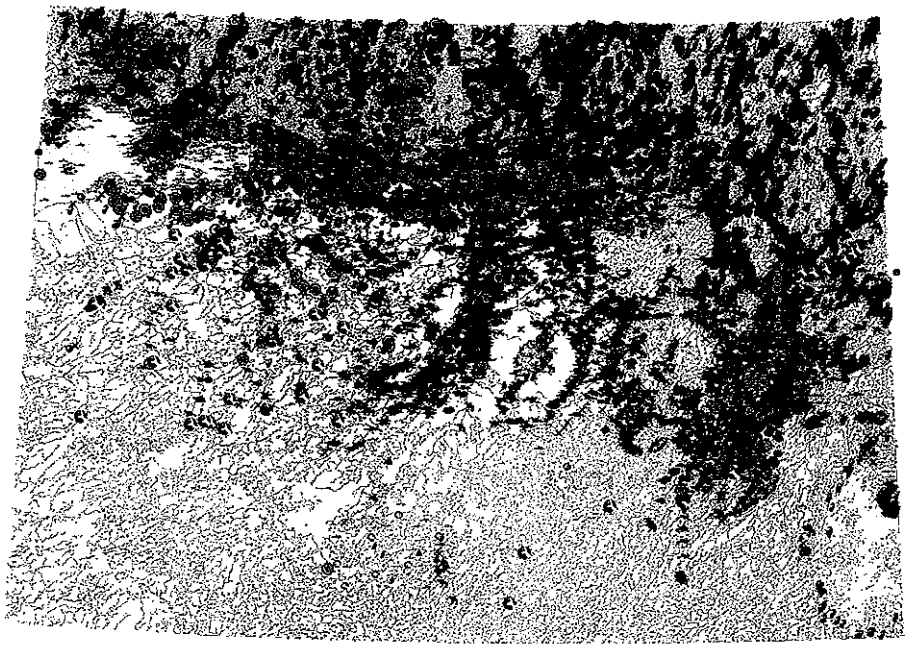
- Over 423 adult land/resource users were interviewed (more than 20% of adult residents, and the majority of active harvesters).
- Employment was provided to qualified researchers who completed the Traditional Land Use Program in 2002.
- Athabasca residents are trained and qualified to participate in potential future resource management.
- Production of aggregated maps demonstrate the land use patterns of the Athabasca residents.
- Suporrs ongoing development of database of natural and cultural resources for the whole region.
- Over 1100 map overlays have been digitized and now are in GIS format.
- Transcription training completed with four resident researchers and 80 interviews from the most active harvester in phase I area to be transcribed by end of current project.

Integrating UOM in Planning

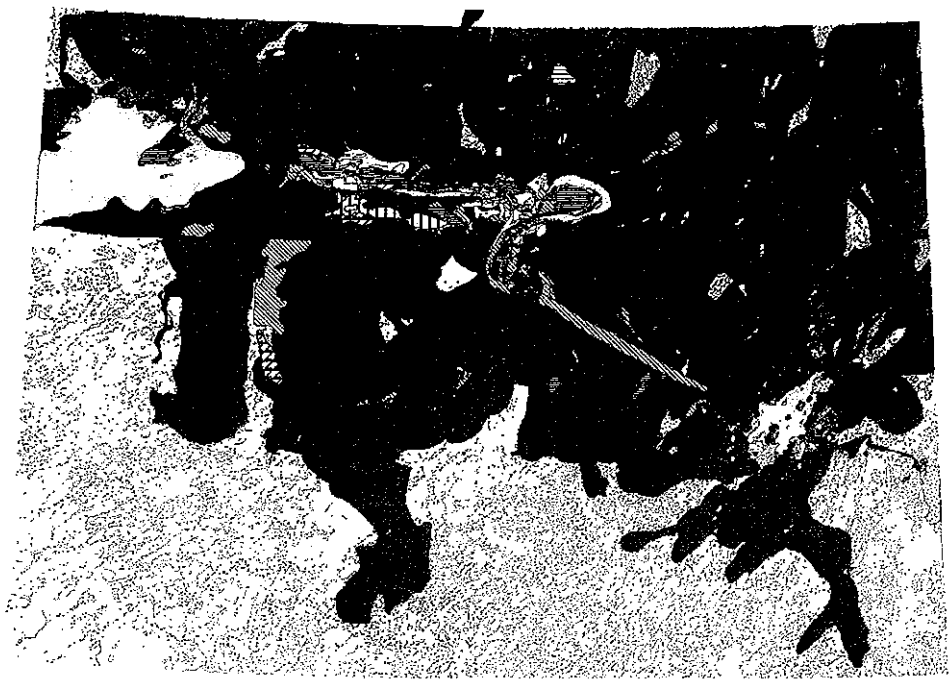
- The panel developed a priority list of issues to address in the plan.
- Addressing these issues involved negotiating acceptable activities and the conditions under which they would be permitted.
- This puts together information on priority geographic areas for land uses in the area:
  - forest products
  - trapping
  - hydro
  - mining and exploration
  - tourism
  - infrastructure
  - sensitive habitat
  - core protection areas
  - cultural areas
  - traditional use areas.
- UOM information will help represent the interests of First Nations and Athabasca residents.

Use and Occupancy: SITES

- Over 1100 map overlays, covering ~10% of the resident population
- Harvest, commercial, and cultural sites with icons

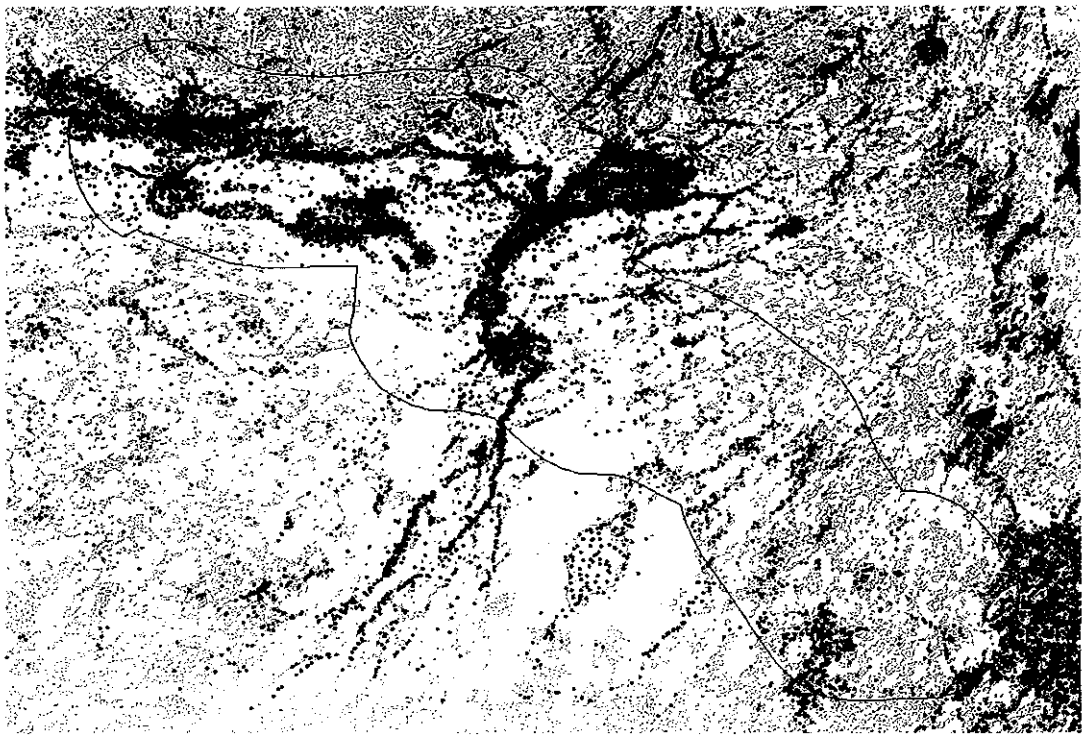


Use and Occupancy: AREAS



Putting the UOM Data into a Format Useful for Planning

- Patterns of traditional land use are evident from the UOM information.
- Harvest, commercial, and cultural sites without icons.



The green areas in this slide capture areas of extremely high traditional use. Note that commercial use sites are shown, but are not included in the analysis. Note that these maps are in draft form and are intended to assist the panel to consider how traditional use interacts with other land uses.

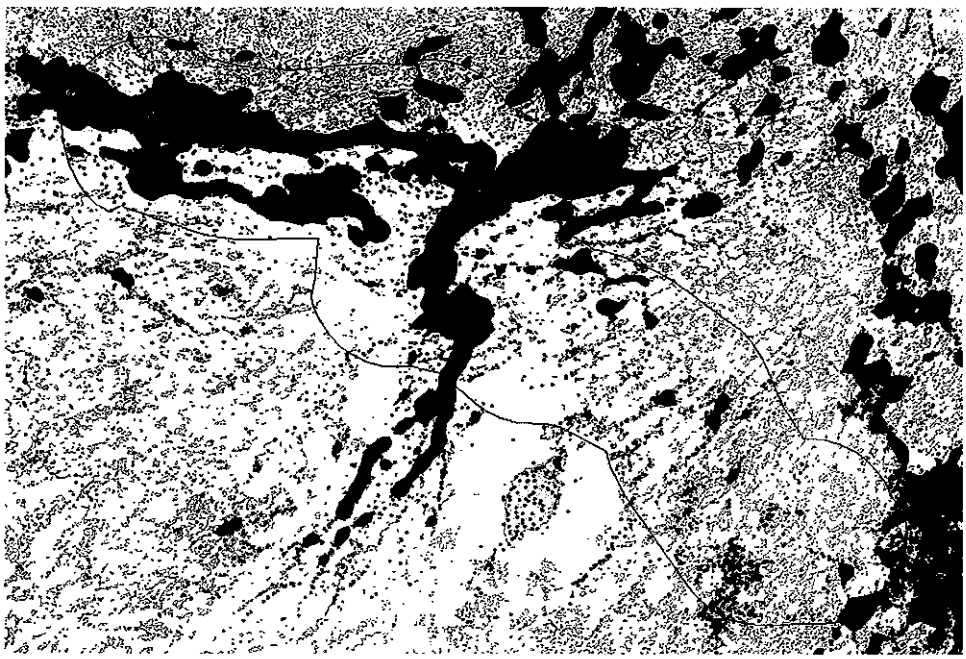
This analysis is a measure of 'priority', rather than 'importance'; ask any traditional land user – all the land is important! However, in land use planning, you also have industry people saying that all the area is important for development, and from a conservation perspective – the entire ecosystem is important. There can be no doubt – all the area is 100% important! Therefore, as planners we are in a difficult situation. Economic development is important for everyone in the region, just as important as respect for the land base. Where then, can development proceed while having the least impact on the people, their culture, and the land that they depend upon?

We need to remember that plans are based on the values of society today and may change in the future, given that society's priorities can change over time. In the land use plan then, we are really looking at the PRIORITIES for the land in the next 10-15 years.

Our task here was to capture 3 priority levels of traditional use, just as we looked at priority areas for other land uses.

Our main tool was a piece of software called Spatial Analyst. We ran a density analysis with a search radius of 3000m to determine areas using a scientific and repeatable method.

The dark areas on this slide capture areas of higher traditional use, which are significantly different from the areas with no shading. (again commercial use sites are shown, but are not included in the analysis)

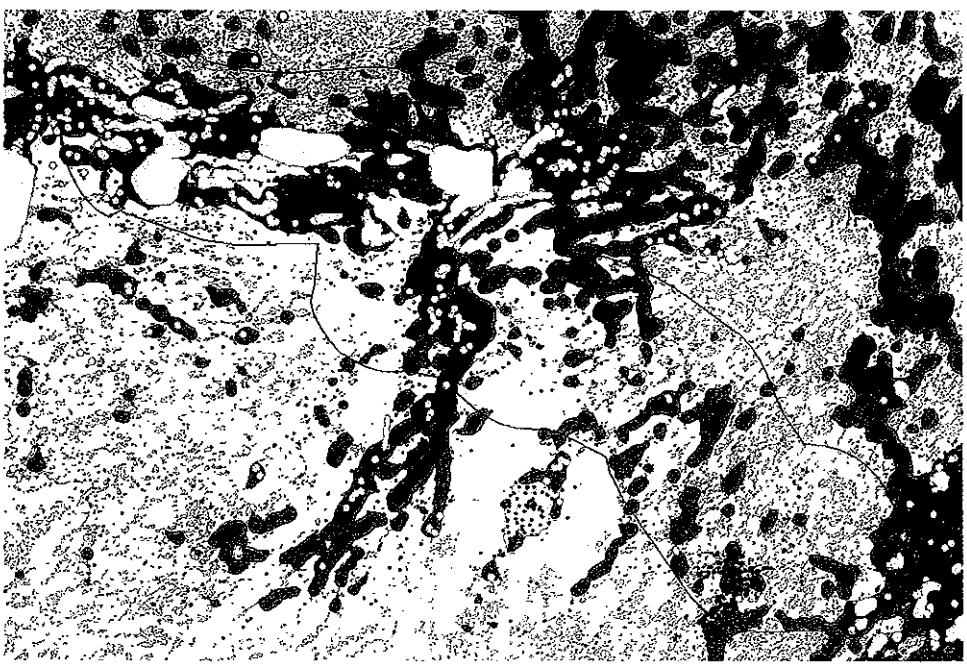


Cultural Sites

White areas indicate cultural sites, including: burial sites, death sites, birth sites, sacred areas and medicine plants.

Note that cultural sites correspond to areas of very high traditional use – where people have traveled, hunted, fished, trapped, and occupied the land for a very long time.

Cultural sites were not included in the density analysis. For confidentiality, the cultural site categories are not shown separately, and their location is buffered.



Finding Conflict Areas

Conservation

Yellow areas indicate cultural sites, including: burial sites, death sites, birth sites, sacred areas and medicine plants.

Note that cultural sites correspond to areas of very high traditional use – where people have traveled, hunted, fished, trapped, and occupied the land for a very long time.

Cultural sites were not included in the density analysis. For confidentiality, the cultural site categories are not shown separately, and their location is buffered.

Traditional Use

Commercial Renewable Resource Use

Subsurface Use

Targets

- Critical Habitat Mapping Project to be completed by March 2003
- Final Research Report by April 2003
- Distribution of individual maps and appreciation certificates to participants
- Preliminary Athabasca Plan for Phase I area completed by July 2003
- Commence work on Phase II Planning by August 2003
- Parties reach Agreement on resource management regime for Athabasca region by March 2004
- Textual analysis/database using Atlas-ti
- Use UOM data to design potential TEK research projects
- Explore the development of a 2-year Resource Management Program in the Athabasca region.

Kituskeenow Traditional Land Use

The Development of a GIS Department for the Bigstone Cree Nation

Burck Hantel

First of all, I'd like to thank everyone for coming. During the next 10 minutes or so, I am going to give a brief overview of the document I have been preparing during the last few months. Keep in mind, this is a recommendation report and it was made basically by me looking through a window into your organization. It can be thought of almost as a requirement to hire a GIS analyst and use this document as a guide. The analyst should perform a needs analysis to ensure that all the Bigstone Cree Nation's needs are met.

History

- Al-Pac warehouses a partial dataset of the Kituskeenow Traditional Land Use data.
- Data has been shelved, with the exception of some operational planning.
- Ideas originated through a presentation on the Kituskeenow data (July 4th, 2002)
- The document written identifies what to consider when developing a GIS department for the BCN consultation office.

Why? – To Avoid Conflict

- GIS department capable of mapping Kituskeenow traditional land use data and industrial activities
  - assists in Resource Management
  - awareness for opportunities
- Opportunity to prevent conflict
- Educational Tool – pass down cultural history to the younger Bigstone Members

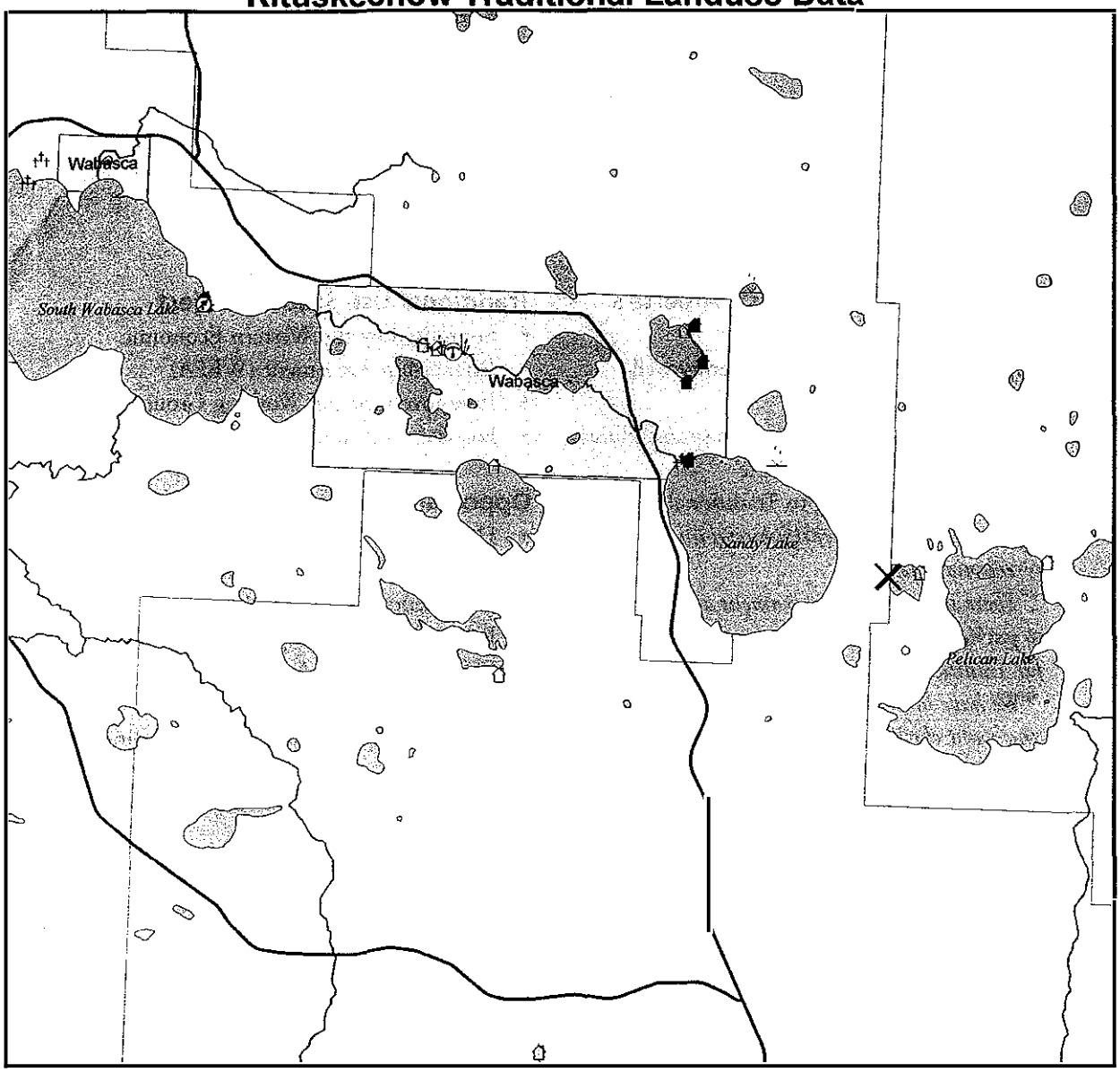
What are we [Alpac] doing?

- Providing support in the start-up of Bigstone's GIS office
  - GIS recommendation report
  - financial
  - hiring of GIS Analyst

Results and Benefits

- Results
  - Bigstone will have a fully functional GIS department
  - update record of traditionally significant data pertaining to the Kituskeenow land area
- Benefits
  - *good neighbor* relationship with Bigstone
  - source of Cultural Land Use Data for operational planning

Sample Map Using the Kituskeenow Traditional Landuse Data

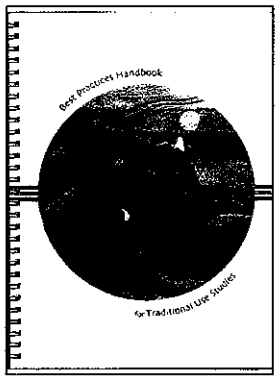


Legend

- Abandoned Cabin
- Active Cabin
- Artifact
- Graves
- Plants
- Bush Grave
- Camp
- Spiritual Site
- Muskekowatica
- Muskekewatic
- Mineral Licks

N W E S

0 1.5 3 6 9 12 Kilometers



A Discussion of the Best Practices Handbook for Traditional Use Studies

Jamie Honda-McNeil

"Strengthening Relationships", Alberta's Aboriginal Policy Framework

- To improve individual and community well-being and self-reliance
- To clarify the Province's roles and responsibilities with respect to Aboriginal people
- Some feedback pertaining to Traditional Use:
  - *"There is a need to identify burial and ceremonial sites."*
  - *""There is a need for government and industry to participate in the development of standards for Traditional Use Studies."*
  - *""We have land management responsibilities and want clarification of the expectations to protect identified sites and how our rights to the land might be affected."*
  - *""Timing is a key issue, as many Elders are passing away and their knowledge with them."*
  - *""Adequately funded, First Nation controlled Traditional Use Studies are an essential precondition to meaningful consultation."*
  - *""Ownership of the information produced through a TUS is a key question."*
- "In consultation with First Nations and industry, facilitate development of best practice guidelines for studies of public lands in relation to the provisions of the Natural Resources Transfer Act and the treaties, including First Nations rights to hunt, fish, and trap on public lands" (APF, p.18).

Traditional Use Studies Project

- Supported by the Western Economic Partnership Agreement (WEPA)
- Intergovernmental Working Group
- Focus on facilitating a dialogue

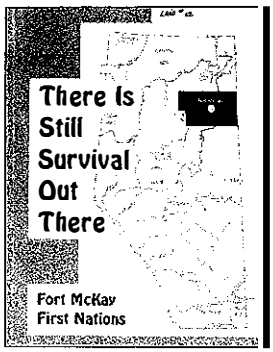
Opportunities for Involvement

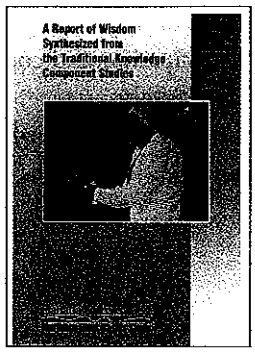
- Hosted Workshop (February 7-8, 2001)
- Alexander First Nation's Traditional Land Use Conference, March 2001
- Round Table Meeting (June 26, 2001)
- Elders Gathering, August 2001
- MNAA Sessions on Jan 23, Feb 22, 2002
- Small Validation Round Table Meeting Jan 24, 2002
- Numerous meetings/discussions with 5 Provincial Organizations
- Information Session March 6, 2002
- Final Round Table Meeting March 7, 2002

Traditional Use Studies Best Practices Handbook

- Information Document
- Recognition of a range of views
- Two key pieces: Best Practices Handbook, Directory

- Examination of completed and in-progress studies in Alberta including:
  - consultation mechanisms (Aboriginal community/industry/government)
  - methods/information Coding
  - site identification
  - definitions of traditional use
  - funding
  - sharing of information





Traditional Use Studies Best Practices Report Directory

Listing of:

- communities that have conducted a Traditional Use Studies
- institutes that hold resources for Traditional Use Studies (e.g., Arctic Institute, Circumpolar Institute)
- government departments that have resources
- funding agencies
- industry partners
- contacts that provide services related to Traditional Use Studies

Traditional Use Studies Best Practices Report Background

Non-Biased summary that reflects the views of government and the Aboriginal community about the relationship of Traditional Use Studies to:

- Natural Resources Transfer Act
- Treaties
- Relevant case law
- Federal and provincial policies

Issues In Traditional Use

- Disagreement on the nature and intent of treaties, scrip, Natural Resources Transfer Act

- Intellectual property rights
- Appropriate funding
- Sharing, security and storage of sensitive information

- Exclusion from economic development
- Agreeing on terms
- Request for formal government-to-government discussions

What the Critics have Said

"This is an important and complex issue....I would like to continue to support your department's efforts..."

– Jim Nichols, Deputy Solicitor General

"It is an excellent piece of work, and I am confident it will be a useful tool for Aboriginal communities..."

– Dr. Bill Byrne,
Deputy Minister of Community Development

"It was important...that an extensive consultation process took place so that the Aboriginal community would have ownership of the document. The TUS Committee understood this....which resulted in achieving the goal mandated to them."

– Dr. Bob Fessenden, Deputy Minister of
Sustainable Resource Development

Next Steps

- Formulation of a cross-Ministry committee (critical linkage made to consultation group)
- Continue to work with Aboriginal organizations/communities
- Release of the document to ministers and public (mid-November)
- Focus on information-sharing protocols

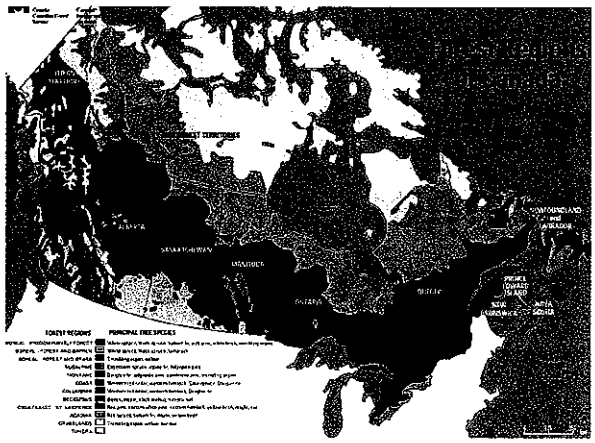
Conclusions

- Relationship is long-term.
- Participation and cooperation between all parties is necessary.
- Critical linkage needs to be made to the consultation group.

Theme 3
Climate Change:
Implications and Opportunities

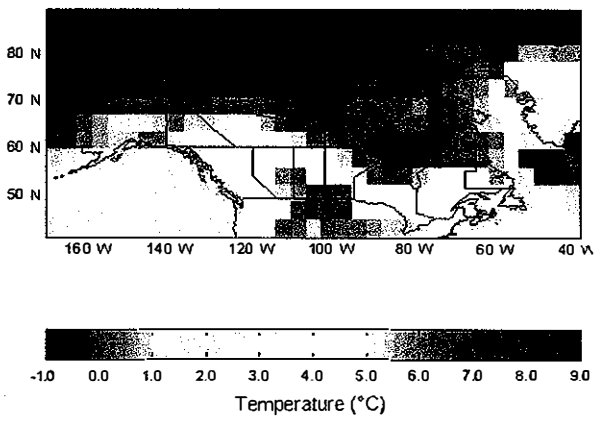
Climate Change and the Western Boreal Forest: An Overview

E.H. (Ted) Hogg
Northern Forestry Centre
Canadian Forest Service
Edmonton, Alberta



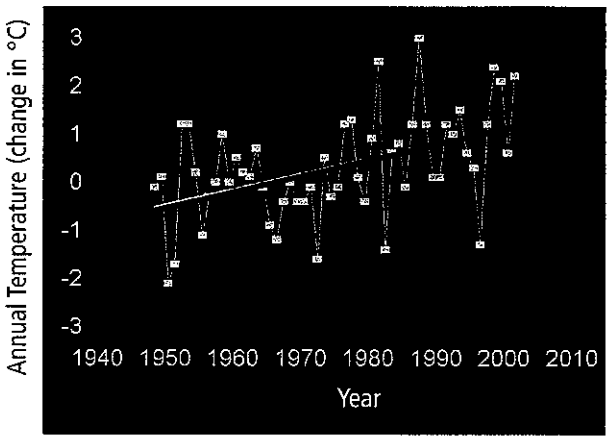
General Circulation Models (GCMs)

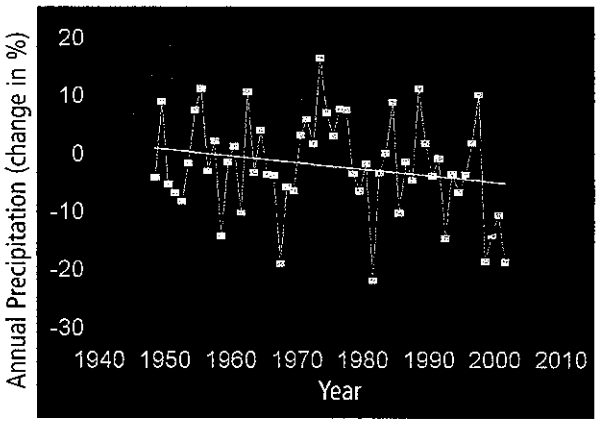
- Global-scale computer models of future changes in climate under increasing concentrations of CO_2 and other greenhouse gases
- Model output of projected mean temperature change from 1961-90 to 2080s



- CGCM2, Canadian Centre for Climate Modelling and Analysis Global Coupled Model 2 GAX – Greenhouse Gas with Aerosol Simulation

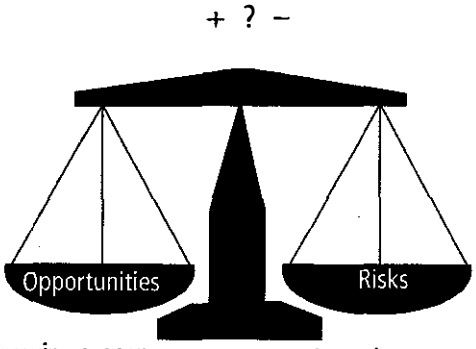
Climate trends in the western boreal forest





Data from Environment Canada Climate Trends and Variation Bulletin, 2001.

Climate change impacts on tree growth

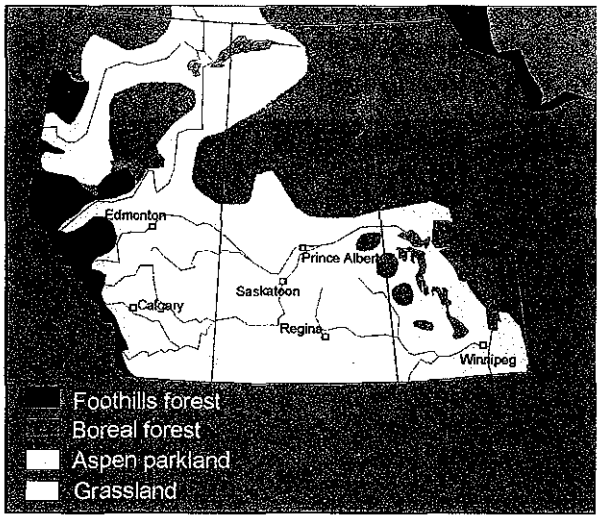


Growing season
Soil temperature
Nutrient cycling
N deposition
CO_2 fertilization

Drought
Fire
Extreme weather
Insects and diseases*
Air quality (ozone)

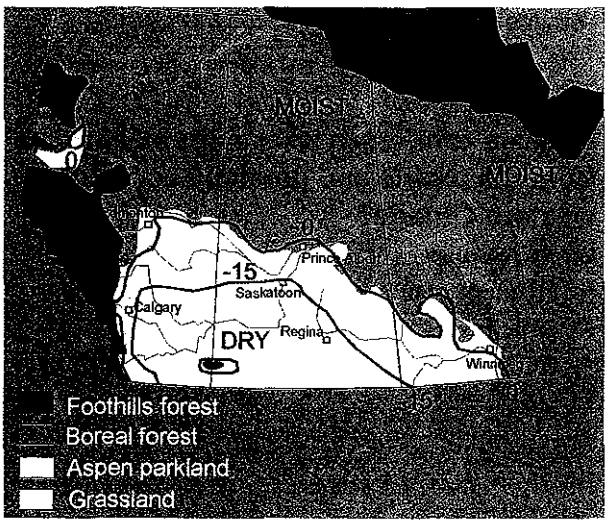
**including exotics*

Future climate?



Modified from Hogg, E.H. and P.A. Hurdle. 1995. The aspen parkland in western Canada: A dry-climate analogue for the future boreal forest? *Water, Air and Soil Pollution* 82: 391-400

Present climate showing moisture index



Modified from Hogg, E.H. and P.A. Hurdle. 1995. The aspen parkland in western Canada: A dry-climate analogue for the future boreal forest? *Water, Air and Soil Pollution* 82: 391-400

Potential impacts of climate change on the western Canadian boreal forest

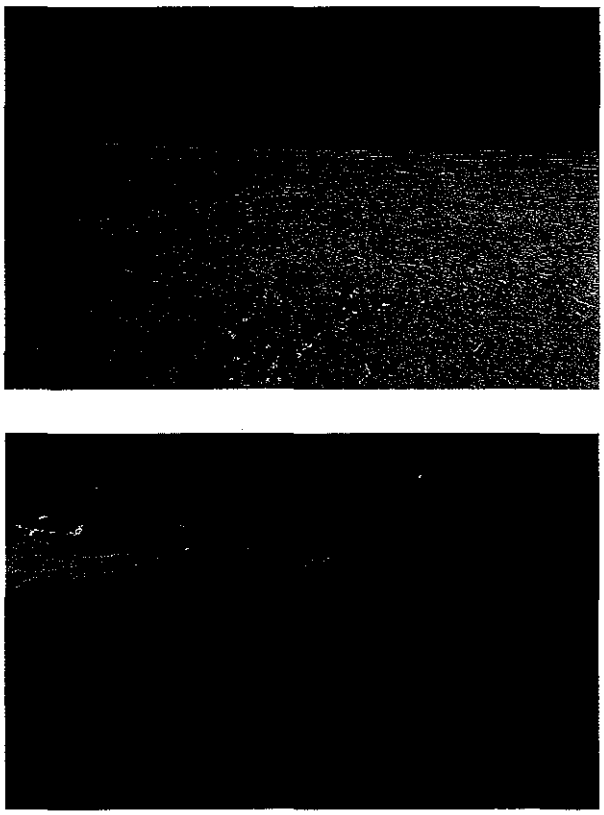
?

	Boreal forest	Parkland and Prairie
Climate:	Moist (P>PET)	Dry (P<PET)
Lake levels:	Stable	Variable
Wetlands:	Bogs and fens	Marshes and sloughs
Conifers:	Several species	Rare or absent
Aspen:	Productive stands	Stunted patches

Water is critical to all aspects of ecosystem functioning!

Potential impacts of climate change on northern lakes and wetlands

- Reduced water levels during periods of drought
- Risk of increased salinity in some areas



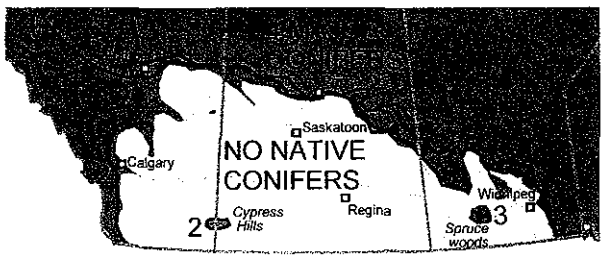
Kenilworth "Lake" near Vermilion, Alberta: 1992 (top) and 1999 (bottom). Photos by Ted Hogg, CFS

Peatlands

bogs, fens and 'muskeg"'

- Major component of the boreal forest (total area >1,000,000 km2 in Canada)
- Peatlands require waterlogged conditions (low oxygen leads to slow peat decay)
- Absent from prairies and parklands
- A drier climate could have major impacts on these ecosystems! (especially in western Canada)

Natural distribution of boreal conifers



WHITE SPRUCE

Natural range

Absent (except where planted)

Source: Zoltai (1975)

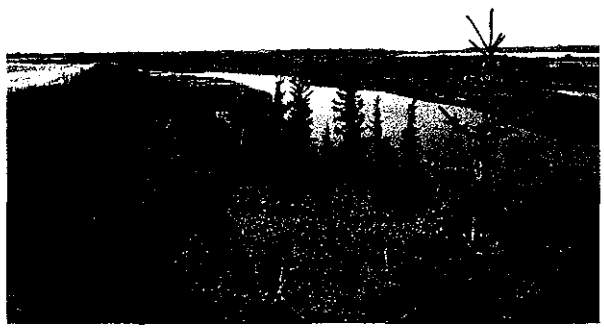
Southern range limits of other boreal conifers

- Jack pine
- Lodgepole pine
- Black spruce
- Tamarack

Why are coniferous trees naturally absent from the prairie and parkland zones of western Canada?

Likely reasons:

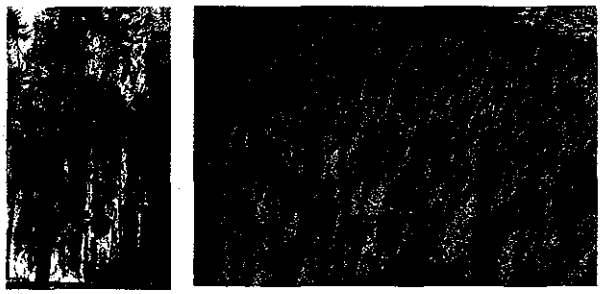
- Frequent prairie fires prior to European settlement
- Climate is too dry to allow regeneration from seed



White spruce on north-facing slope of North Saskatchewan River near Battleford, Saskatchewan

Climate change impacts on coniferous forests

- Expected increases in fire and insects
- Can conifers regenerate naturally under a drier future climate?



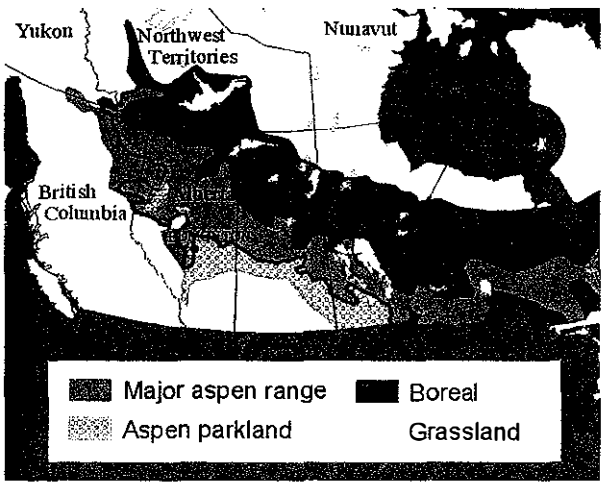
Lodgepole pine forest killed by mountain pine beetle

Conversion of jack pine forest to grassland due to regeneration failure following fire

Trembling aspen

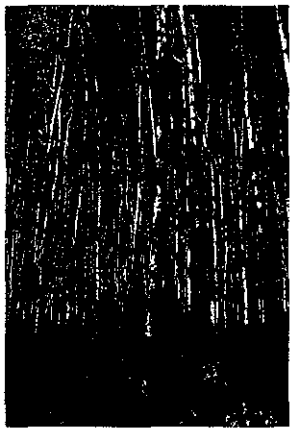
Populus tremuloides Michx.

Also known locally as white poplar



Potential climate change impacts on aspen

?



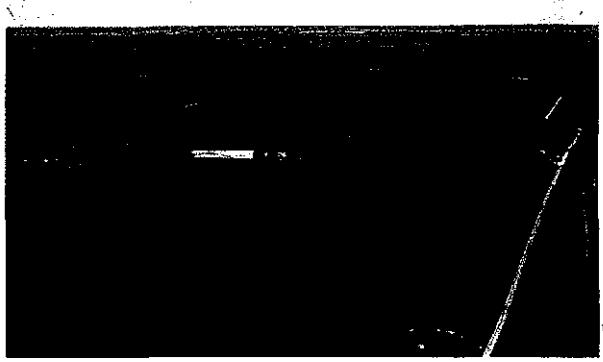
Boreal aspen forest
(moist climate)

Aspen parkland
(dry climate)

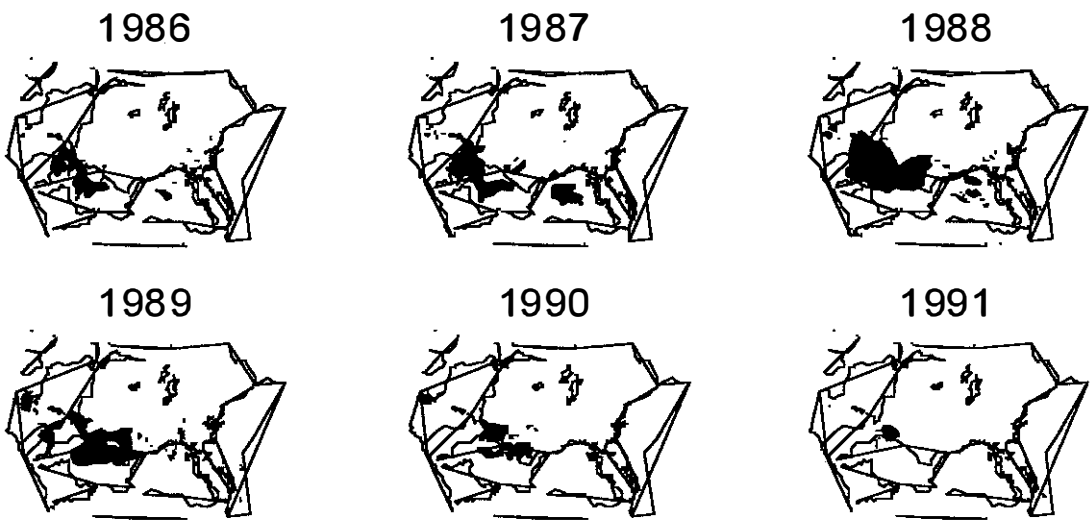
Crown dieback in the aspen parkland

Major causes: drought and severe defoliation by insects

Forest tent caterpillar (*Malacosoma disstria*) Outbreak of 1986 -1991



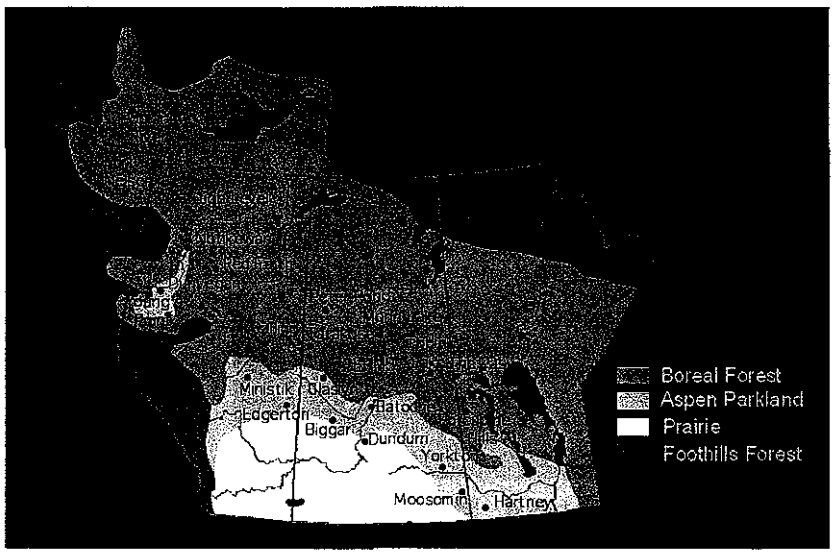
Aerial view of severely-defoliated aspen forest in July



CIPHA (Climate Change Impacts on Productivity and Health of Aspen)

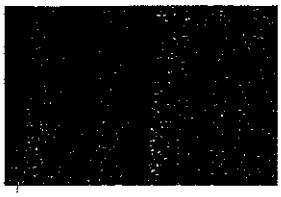
Objectives:

- Tree-ring analysis of past growth responses
- Annual monitoring for early detection of change
- Model projections of climate change impacts

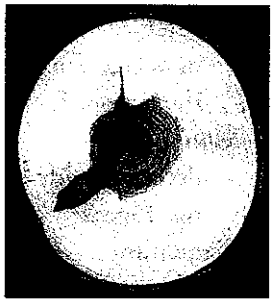


CIPHA results

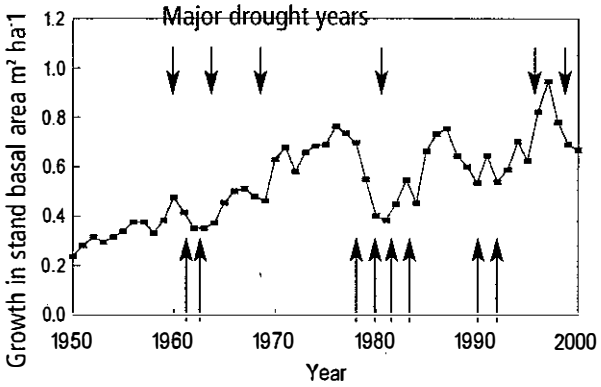
Regional growth of aspen (poplar) from tree-rings



1984 1991



White tree-rings formed during years of defoliation by forest tent caterpillar

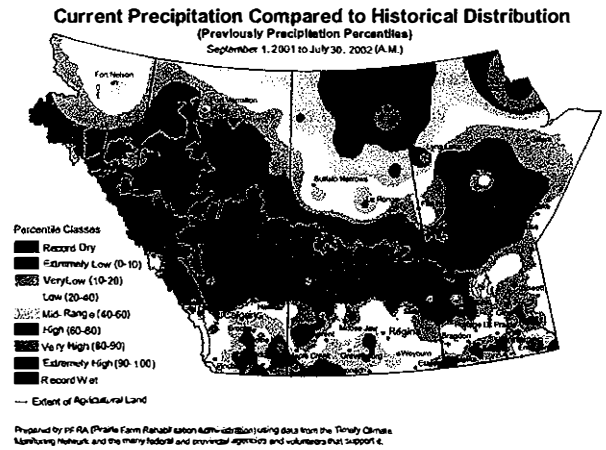


Major insect defoliation years

Mean for 72 aspen stands across western Canada (432 trees), growth is expressed as increment in stand basal area from aspen alive in 2000

Recent concerns

- Record drought across region in 2001-2002
- Warmer and drier than normal since 1998
- Early signs of climate change?



Agriculture and Agri-food Canada, Drought Watch web site at www.agr.gc.ca/pfra/drought/default.htm 30 July 2002

CIPHA

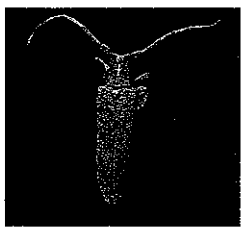
Preliminary highlights of health assessments (2000-2002)

- No increase in dieback and mortality (despite the drought)
- But evidence that wood-boring insects are increasing!
- Poses concerns about aspen decline in the near future

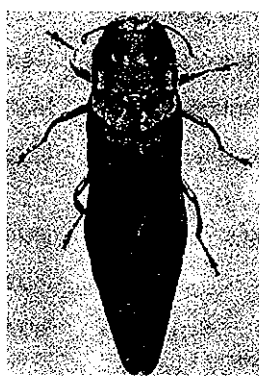
	Year		
	2000	2001	2002
Average crown dieback (%)	10	11	11
Average tree mortality (%)	–	2.4	2.4
Poplar borers (% trees affected)	8	12	18

Note: Poplar borers include *Agrilus* and *Saperda* species (wood-boring insects)

Poplar borers



Saperda calcarata



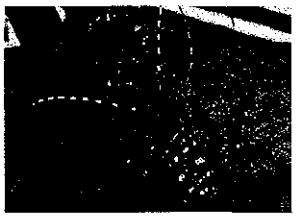
Agrilus liragus

Climate change: increased risk of exotic pests?

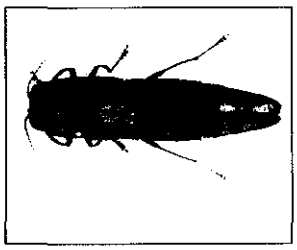
Recent introductions of exotic insect defoliators in Edmonton's urban forest: (City of Edmonton web site www.gov.edmonton.ab.ca/)

- Ash leaf-tier
- Cottony psyllid, ash
- Elm leafminer
- Gypsy moth
- Pine false webworm
- Red-headed ash borer
- Satin moth
- Yellowheaded spruce sawfly

Gypsy moth



Asian long-horned beetle



Emerald ash-borer

Summary of potential climate change impacts on Canada's northern forests

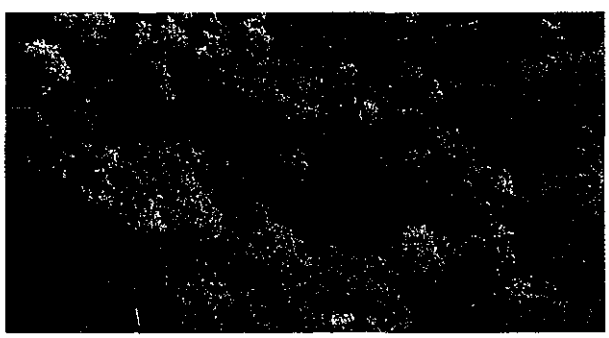
Growing seasons	Longer
Soil temperatures	Warmer (thawing of permafrost)
Nutrient cycling	More rapid
Forest growth	Increase from CO2 fertilization (if other factors not limiting)
Drought	Increased risk
Fire	Increased risk
Insects and diseases (including exotics)	Increased risk
Forest decline	Increased risk

Emerging issue of climate change impacts and adaptation

We need to address knowledge gaps through:

- Research
  - understanding how climate change may impact our forests
- Monitoring
  - detecting early impacts of climate change in our forests
- Adaptation
  - strategies to minimize impacts and realize potential benefits

- Established under the Government of Canada Climate Change Action Fund
- Nodes being established by region (e.g. prairies) and by sector (e.g. forestry)
- C-CIARN Forest Node hosted at Northern Forestry Centre, CFS, Edmonton
- Objective: To build a coordinated network of researchers, governments and stakeholders that will help develop and provide to Canadians credible information on
  - the vulnerabilities of Canada to climate change
  - the most significant impacts of future climate change and variability
  - adaptation options
- Visit the web site at /www.forest.c-ciarn.ca



Social and economic considerations: Climate change impacts and adaptation in forest based communities

T. Williamson
J. Parkins
D. Davidson

Why is it important to look at climate change impacts at a local level?

- Because in order to evaluate impacts and plan and prepare for climate change, it is necessary to understand the pathways, linkages and feedbacks between social, economic, ecological, and atmospheric systems at local levels.
- Because some locations and communities will be more vulnerable than other locations due to their interdependence to climate sensitive ecosystems.
- Because adaptation capacity is affected by social networks, community resources, and community circumstances.
- Because differences in perceptions of risk may lead to conflict and/or discounting of risks.

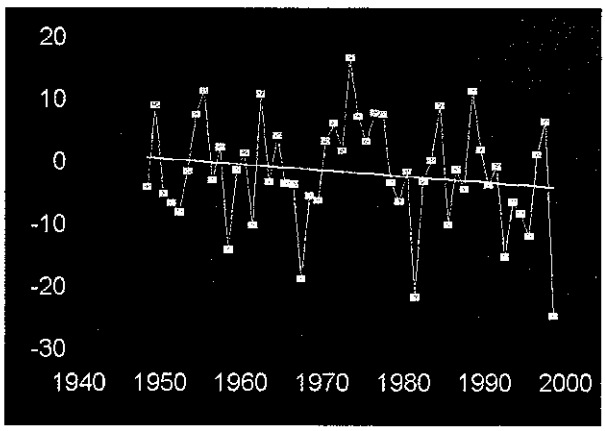
Potential mechanisms for impacts

- Discrete events: droughts, forest fires, insect outbreaks, heat waves, severe storms, etc.

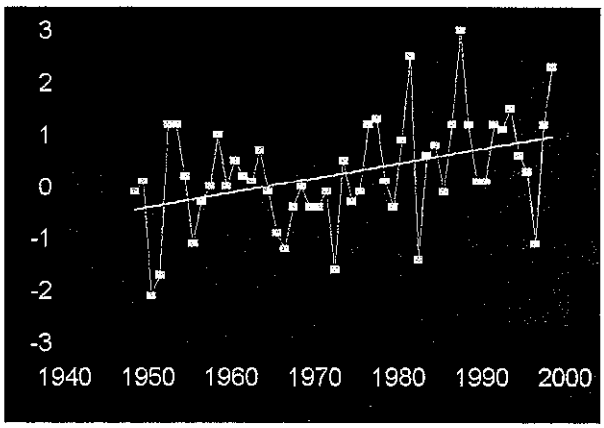
Possible mechanisms for impacts

- Latent changes: seasonal average temps and precipitation, water temperatures, season lengths, moisture regimes, forest product prices, soil temps, etc.

Annual Precipitation
(change in %)



Annual Temperature
(change in °C



Trends in the Western Boreal Forest

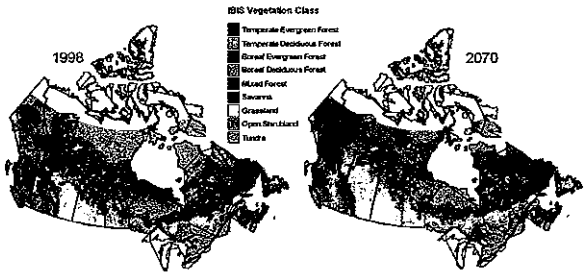
Data from Environment Canada Climate Trends and Variation Bulletin 1999

Potential community level impacts

- Local timber supply
- Global timber supply/competitiveness

Potential community level impacts

- Outdoor recreation and amenity values
- Summer recreation (probable gains)
- Winter recreation (probable losses)
- Ecosystem values
  - economic values
  - existence value
  - bequest value
  - option value
  - concern for national/provincial parks/ protected areas
  - cultural values



- Community well being
  - capabilities
  - ffunctioning
  - sense of place
- Property and financial assets
- Health and safety

Adaptation

- Adaptation and impacts are closely linked.
- Adaptation may be motivated by changes in prices and costs.
- Adaptation may be motivated by changes in perceptions and knowledge.
- Combination of three things will influence adaptation:
  1. recognition of a problem
  2. decision to take action
  3. capacity to adapt

Features of forest based communities that provide a particular social context for climate change risk

- Close linkages to climate sensitive ecosystems
- Un-diversified economic bases
- Adaptive capacity (?)
- Tendency to underestimate risks (?)
- Long term nature of forestry investments and decision making
- Simultaneous change in multiple risk factors

Tendency to underestimate risks

- Complex – significant scientific uncertainty
- Not previously experienced – no precedence
- Perception that impacts are far in the future
- Perception that risks to individuals are low
- No clear start and end points
- Forest fires and other climate change manifestations are events already faced by people and they may not associate changes in frequency and intensity to long term patterns of climate change
- Discount climate change due to association with environmentalism

Long term nature of forestry investments and decisions

- Long time periods before investments mature
- Irreversibility of investments
- Dynamic risks
- Examples
  - forest rotation under increasing risk of fire
  - regeneration investments
  - large scale processing facilities
  - parks

A proposed framework for community level risk analysis

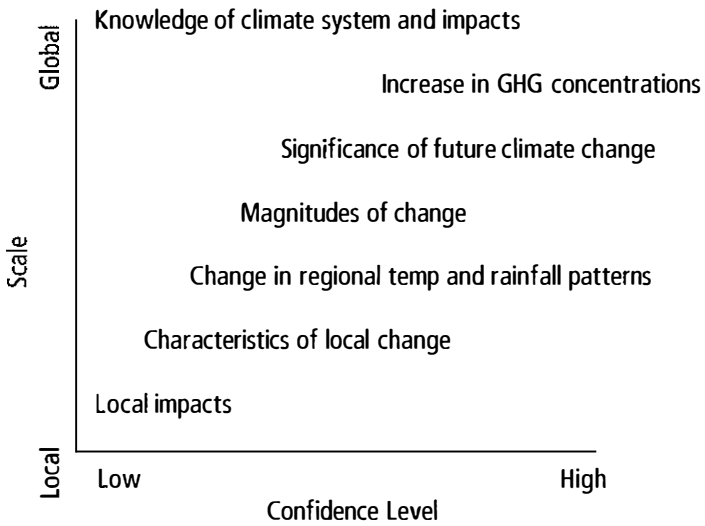
Three main components:

1. Capacity to adapt
2. Risk assessment
3. Risk perception

Capacity to adapt

- Community characteristics affect adaptability (adaptation capacity indicators)
  - social capital, human capital, infrastructure, financial capital, natural capital, technological capacity
  - methodological frames: community well being resilience and sustainability
- Institutions and policies affect adaptability

Local adaptation strategies



Source: G. McBean, Institute for Catastrophic Loss, University of Western Ontario

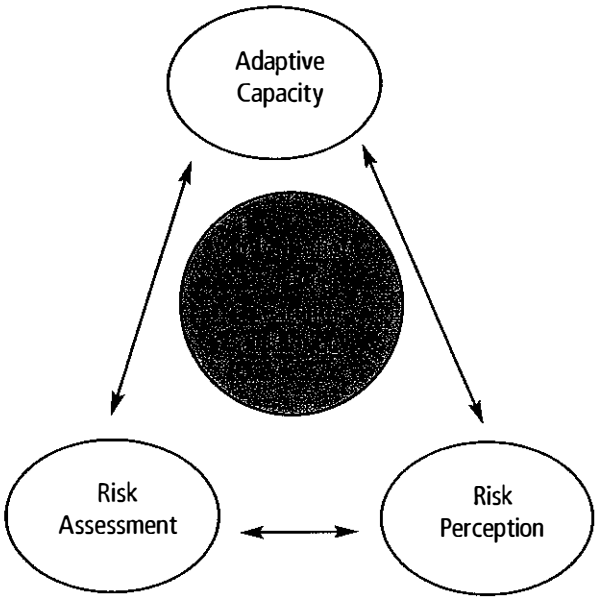
Risk assessment

- Local risk assessment
- Understand hazard and exposure (threat and impact) PLUS adaptation – ranges of possibilities
- Sound science – peer reviewed
- Climate scenarios, ecological models, productivity models, predictions of change in fires and other disturbances, timber supply models, market models
- Potential role of social science analysis in risk assessment

Risk perception studies

- Social theories
- Measurement – psychometric survey research
- Some studies of perceptions of climate risk but tend to be at a general level.
- Risk perception at multiple scales
  - policy scale,
  - manager level,
  - residents / stakeholders / firms / land owners.

Understanding climate change risk at a community level

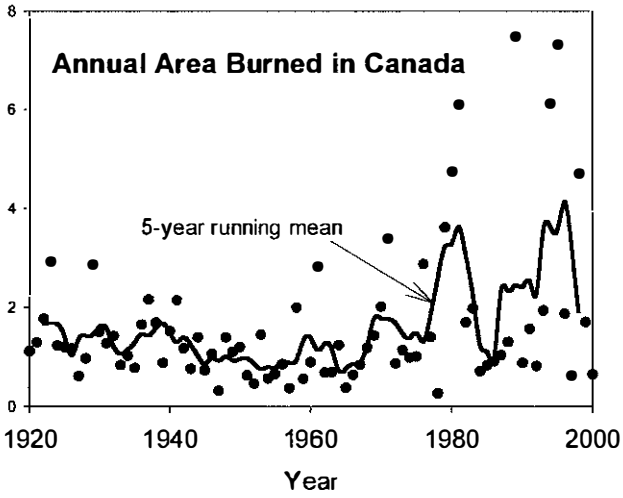


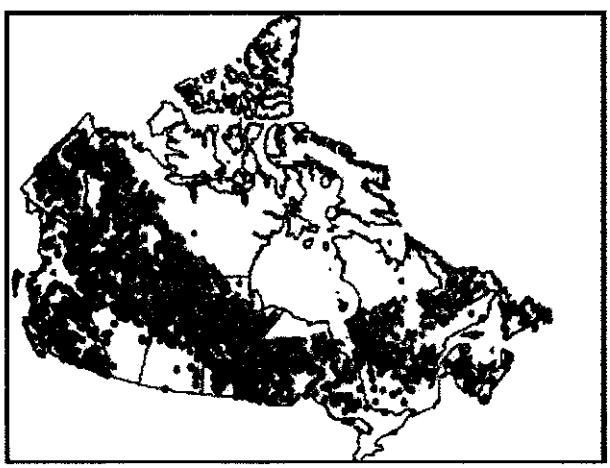
Fire, Climate Change and Community Protection

Bill de Groot

Canadian Fire Statistics

- Incomplete prior to 1970
- Area burned is highly episodic
  - 0.7 to 7.6 million ha
- Lightning fires
  - 35% of total fires
  - represent 85% of area burned
- Fire size
  - 3% of fires are >200 ha
  - represent 97% of area burned

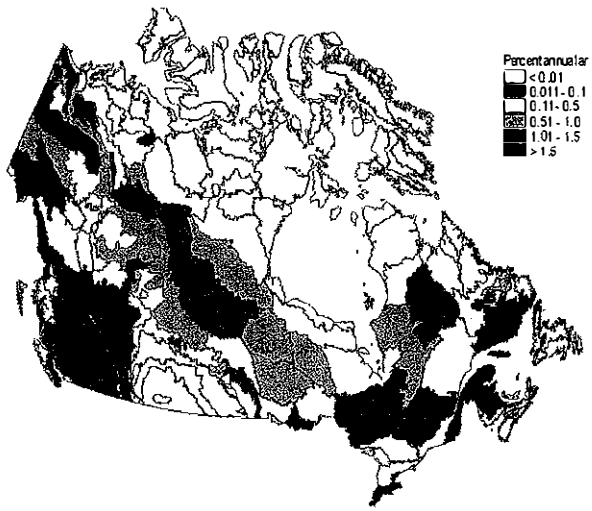




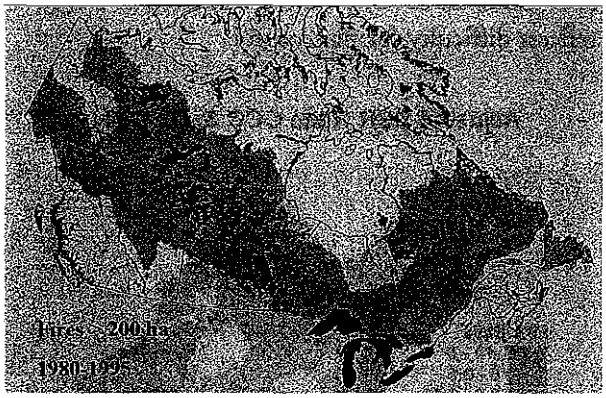
Canadian Large Fire Database

- 1950 to present
  - polygon/attribute data
- Fires > 200 ha
  - 97% of total area burned (all fires)
  - 65% of fires are lightning-caused
  - 77% of area burned ftom lightning fires
- Fire distribution is related to the boreal forests
- Boreal forest ecology is shaped by large fires

Fire Polygons in Northern Saskatchewan1980-1989

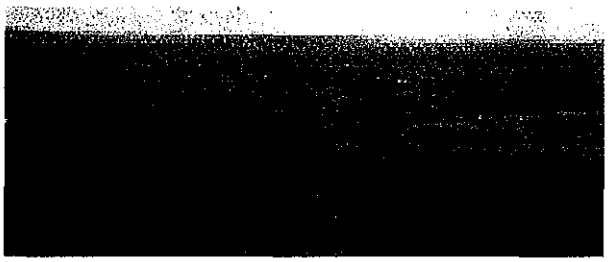


Large Fires in Canada

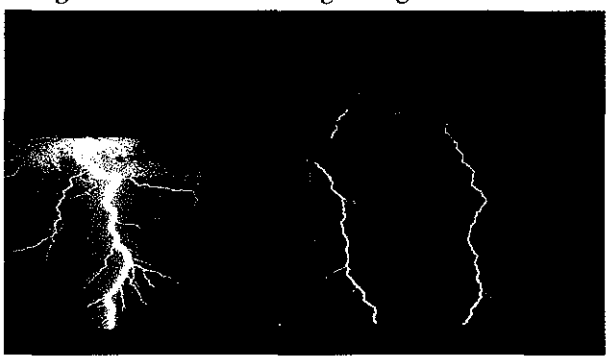


Forest Fires – 3 Drivers

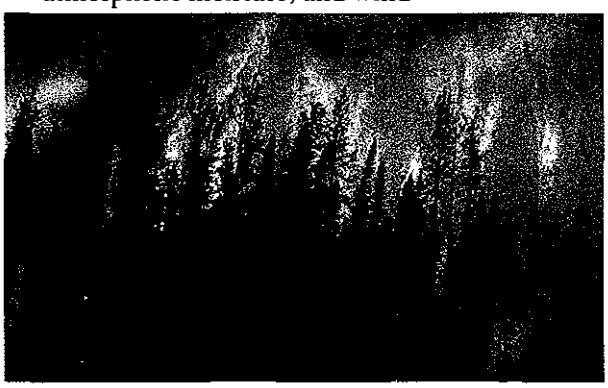
- Fuel – loading, moisture, structure etc.



- Ignition – human and lightning



- Weather – temperature, precipitation, atmospheric moisture, and wind



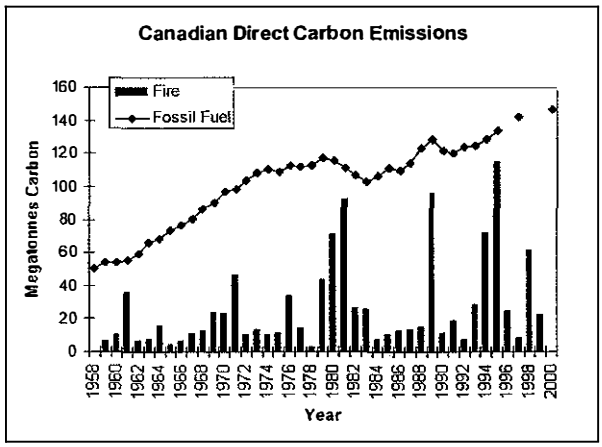
Fire and Carbon

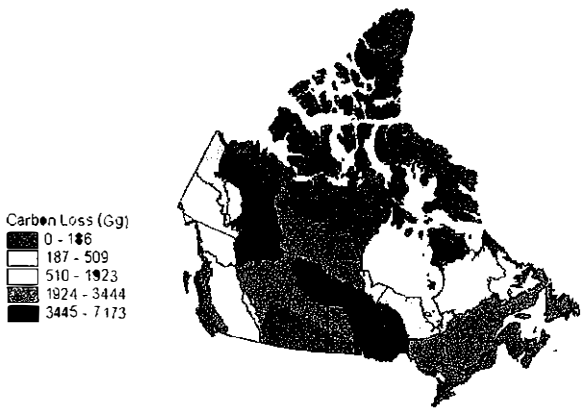
Fire plays a major role on carbon dynamics

1) combustion – gases and black carbon
2) charcoal
3) decomposition
4) stand renewal
   - ~700 Pg carbon stored in the boreal forest ~37 % of the global terrestrial biosphere

Direct Emissions

- Combustion from forest fires – average 27 Tg carbon/yr ~ 20% of carbon from fossil fuels in Canada



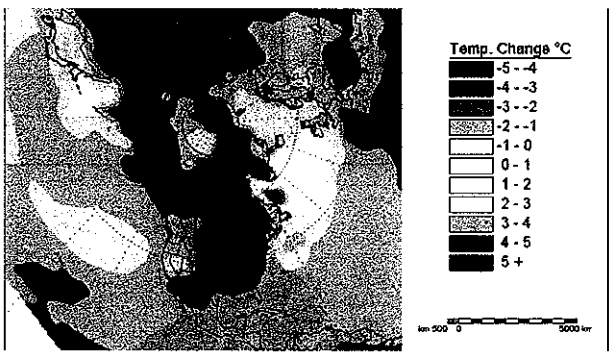


Climate Change Projections

- GCMs project 1 – 50°C increase in global mean temperature by 2100
- Greatest increases will be at high latitudes, over land and winter/spring
- Projected increases in extreme weather
- Observed increases across west-central Canada and Siberia over past 40 years
- Method – Canadian Fire Weather Index (FWI) System

Projected Summer Temperature Change Between 1975-1995 and 2080-2100

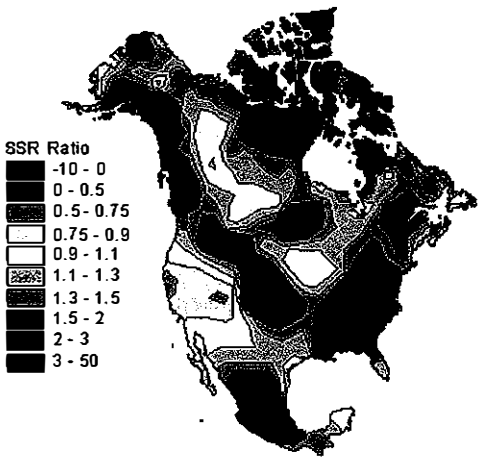
Combined Effects of Projected Greenhouse Gas and Sulphate Aerosol Increases – Canadian Model



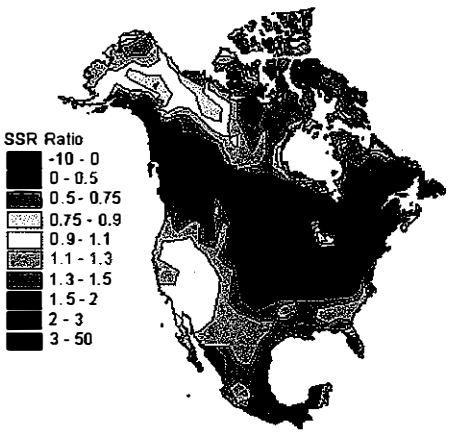
Global Climate Models

SSR=Seasonal Severity Rating (function of FWI): reflects difficulty for fire control

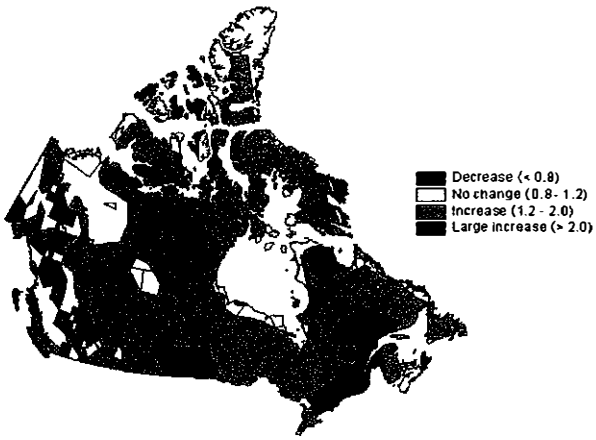
Adjusted SSR Ratio CCC 3x/1x Daily



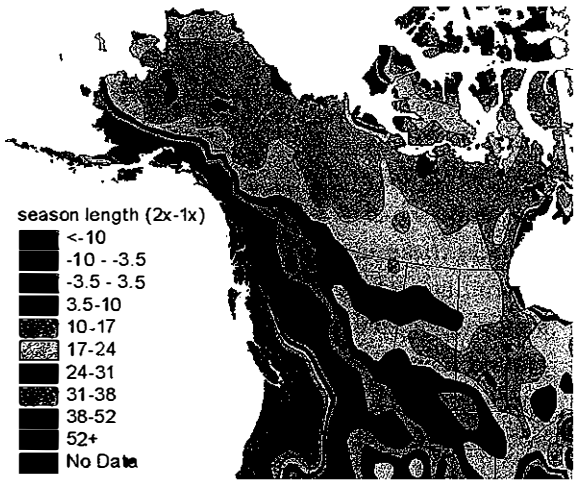
Adjusted SSR Ratio HadCM3 3x/1x Daily



Canada SSR: best estimate of change



Length of fire season (Regional Climate Model results)



Other Factors

- Ignition agents
  - lightning and human-caused
- Change of vegetation
- Human activities
  - fire management
  - landscape fragmentation
    land use e.g. agriculture and urbanization

FireSmart: Protecting Your Community from Wildfire

Recent Interface Incidents in Western Canada

1999 – Ft McMurray, AB; La Ronge, SK.
1998 – Salmon Arm, BC; Swan Hills, AB.
1997 – Hinton, Granum, AB
1995 – Ft Norman, Norman Wells, NT.

Wildland/Urban Interface – Definition

Any area where combustible wildland fuels are found adjacent to homes and other buildings.

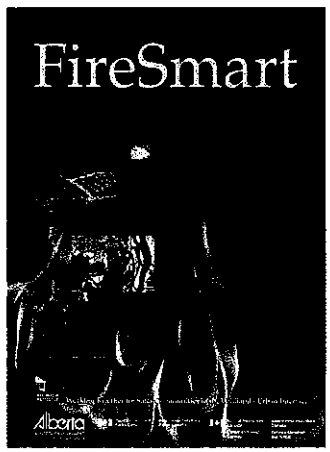
WUI Examples

- Harvie Heights, AB
- La Ronge, SK
- Prince Albert, SK
- Swan River, MB

Community Planning Manual

Purpose

A comprehensive resource package that will give communities and individuals across Canada the information and tools they need to confront interface fire protection issues.



Topics/Chapters

Theme 1: Assess the Situation

1. The Issues
2. Wildfire Hazard Assessment System

Theme 2: Resolve Existing Problems

3. Solutions and Mitigations
4. Emergency Measures
5. Wildland/Urban Interface Fire Training
6. Communications and Public Education
7. Land Use Planning
8. Communities Taking Action – Templates for Success Resources and Appendices

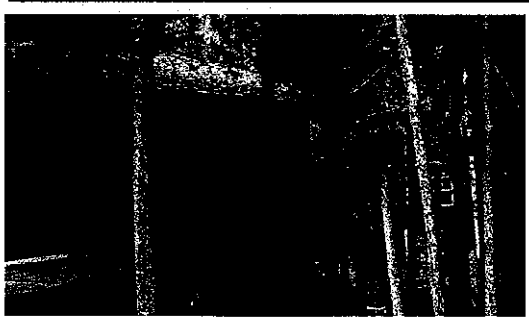
Wildfire Hazard Assessment System

Procedure

1. Structure and Site Hazard Assessment Form
   – evaluates building and adjacent site characteristics (Zone 1 and 2).
2. Area Hazard Assessment Form
   – assesses site characteristics greater than 30 metres from the building itself (Zone 3).

Other Structural Factors

- Eaves, vents, and openings
- Balcony, deck or porch
- Window and door glazing
- Location of woodpile and combustibles



Vegetation 0 – 10 metres from Structure

- Aggressive removal of all surface fuels and replacement with non-combustible or trimmed lawn is recommended.

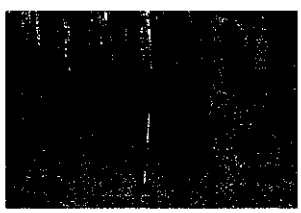
Vegetation 10 – 30 metres from Structure

- Removing all or most understory vegetation which includes trimming or pruning and removing of accumulated dead and down ground fuels is recommended.

- Species conversion, from softwoods like pine and spruce trees to a hardwood tree like poplar and or birch.

Vegetation 30 + metres from Structure

- Pruning and thinning as in Zone 2 to reduce fire intensity.



Defensible Space for Communities: Community Fireguards

- The community fireguard incorporates both fire breaks and fuel breaks.
- Fire breaks are barriers to fire spread built by clearing or thinning fuels on strategically located land.
- Fuel breaks are trenches dug down to mineral soil that stop surface fire spread within the fire break.

Fire Break Guidelines

- The width of the fire break will vary with the slope, minimum 50 metres.
- Widen the fire break where gullies and terrain increase slope.
- Remove, reduce, or convert vegetation within the entire width of the fire break.
- Build a fuel break on both sides of the firebreak. The fuel break should be one metre wide, dug down to the mineral soil.

Summary

- Climate change is occurring
- Future fire regimes will be more severe
- Greater fire activity will cause an increase in wildfire threat to northern communities
- Protection of communities from wildfire can be done through various fuel management techniques as shown in FireSmart

The Kyoto Protocol: Implications for Forestry in Saskatchewan

Mark Johnston
Saskatchewan Research Council

Why?

- Carbon dioxide is taken out of the atmosphere through photosynthesis: sequestration.
- We can manipulate plants and soils on the landscape in ways that **increase sequestration** or **decrease emissions.**
- We can incorporate this manipulation into resource management: forestry, pasture, agriculture.

In the Beginning...

- World Environment Conference in Rio de Janeiro, 1992
  - United Nations Framework Convention on Climate Change (UNFCCC)
  - signed by nearly all countries – Conference of the Parties (COP)
  - called for voluntary CO_2 emission reductions to 1990 levels
  - came into force in March 1994

How's It Going?

- 1995 Assessment of Progress in Berlin – COP 1
  - showed that UNFCCC targets would not be reached (because they were voluntary)
  - Berlin Mandate: agreed to the need for legally enforceable emission reduction obligations
  - set the stage for formal negotiations that would result in legally binding targets

Kyoto Meeting

- COP 3 met in Kyoto Japan in November 1997
  - resulted in Kyoto Protocol to the UNFCCC (they must be considered together)
  - 39 Countries (Annex B) accepted emission limitations
  - most have reductions of ~5% below 1990
  - Australia, Iceland, Norway allowed slight increases
  - New Zealand, Russia, Ukraine no change

Is It Really About Climate Change?

- Targets of major trading partners roughly similar
  - Canada, -6%; US, -7%; UK, -8%; Japan, -6%; Germany -8% (relative to 1990 levels)
  - outcome determined by relative trade advantage as well as concern for atmosphere
  - must keep political process in mind in interpreting positions of countries
  - US withdrew in March 2001

Carbon Credit Trading

- Carbon sinks can be counted in determining countries' emission reductions
  - "human induced activities since 1990" only
- Countries can trade excess carbon sequestered:
  - within a country: Domestic Trading
  - between Annex B countries: Joint Implementation
  - between Annex B and other countries: Clean Development Mechanism
- Market mechanism still in planning stages
- Trading firms and venture capitalists convinced that market is real
- Some deals have been concluded but only on a one-off basis
  - e.g. SE – SaskPower forestry project
- No real price signal – what's a tonne of CO_2 worth?
- Domestic Emissions Trading system part of national Climate Change Plan

- Certain sectors will have caps on emissions – will trade below cap
- System similar to US SO_2 trading system – has been very effective and efficient
- Will include carbon credits from non-capped sectors: agriculture and forestry

Land Use Activities in the KP

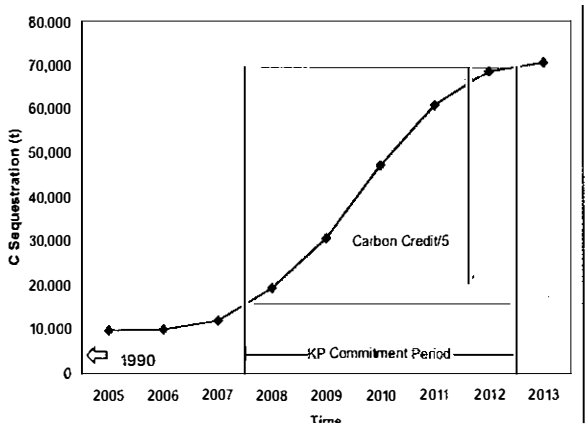
- Originally limited to ARD since 1990:
  - **afforestation**: planting trees where they occurred > 50 years ago
  - **reforestation**: planting trees where they occurred < 50 years ago but not after 1989
  - **deforestation**: permanent removal of forest (forest harvesting is **not** deforestation)
- Countries are **required** to include these activities in their CO_2 accounting

Land Use Activities Added to the KP in November 2001

- Forestland Management
- Cropland Management
- Grazingland Management
- Revegetation
- Decision required by 2006

Carbon in Trees

- Trees store large amounts of carbon because they are large and have long lives – e.g.
  - white spruce: 0.5 – 1.5 t C/ha/yr
  - aspen: 1.0 – 1.5 t C/ha/yr
  - hybrid poplar: 5.0 – 10.0 t C/ha/yr
  - up to 100-150 t C/ha over rotation



Potential for Saskatchewan

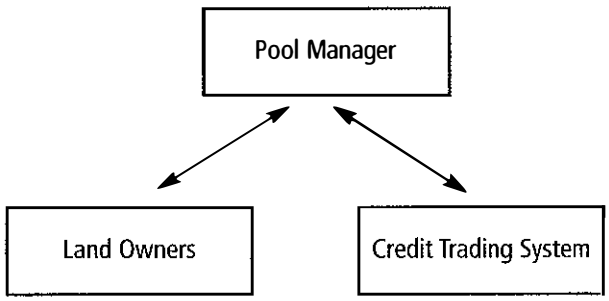
- Large land area available for afforestation
- Probably based on hybrid poplar – mature in 20 years

But…

- Economic viability?
- Associated environmental benefits?
- Permanence?
- Biodiversity concerns?

Private Landowners

- Could sell carbon credits based on undertaking agricultural or forest land use activities as defined by KP
- Strong need for rigorous monitoring and verification
- Permanence, risk, ownership important issues
- Carbon pool an attractive idea



Where next?

- Land use practices have been identified
- Countries need to define what's in/out for each land use by 2006
- Still need to define details of monitoring, verification methods – IPCC Good Practice Guidance Report in draft form
- Huge policy vacuum: lots to be done at international, national and provincial levels
- Ratification of Kyoto Protocol has occurred
- Likely to come into force in 2003 (Russia)
- Will require development of national domestic emissions trading system (DET)
- National Climate Change Plan of Nov. 21 explicitly mentions inclusion of carbon credits from agriculture and forestry in DET system
  www.climatechange.gc.ca/plan_for_canada/plan
- Large amount of carbon modeling in agriculture and forestry by Federal departments
- Several national committees active in defining policy regimes
- Very active federal-provincial negotiations regarding ownership and other aspects of trading systems
- Saskatchewan Forest Centre (PA) has funded small hybrid poplar plantations
- Dr. Van Rees has established 40 ha of hybrid poplar plantations near Meadow Lake for intensive study of growth, silviculture, and carbon sequestration
- Saskatchewan Environment is making hybrid poplar available to landowners

Afforestation

A Viable Option for Aboriginal Communities in Saskatchewan?

Deb Weedon R.P.F (AB)
Agroforester
Saskatchewan Forest Centre

Saskatchewan Forest Centre

- Separate non-profit corporation.
- Board of Directors:
  - provides strategic direction
  - promotes industry support
- Board includes representation from:
  - industry
  - Aboriginal groups
  - funding agencies.
- Monies come from federal, provincial, Western Development, Industries, and Resources
- There is a bakers dozen on the BOD
- Provide technology transfer services to Saskatchewan forest sector
- Participate in a series of partnerships.
  - acquire, create, and disseminate forest related knowledge
- Coordinate activities through industry and existing organizations

Technology Units

- Agroforestry Unit
  - broaden the economic choices for farmers and land managers.
  - provide the technical information and advice needed by growers.
- Value Added Unit
  - promotion of new and higher-valued uses for wood
- Fire/Forest Ecosystems Unit
  - communicate technological improvements in forest and forest fire science.

What is Afforestation?

Afforestation

The planting of trees on land that has not previously, or recently, carried a tree crop for a period of 50 years.

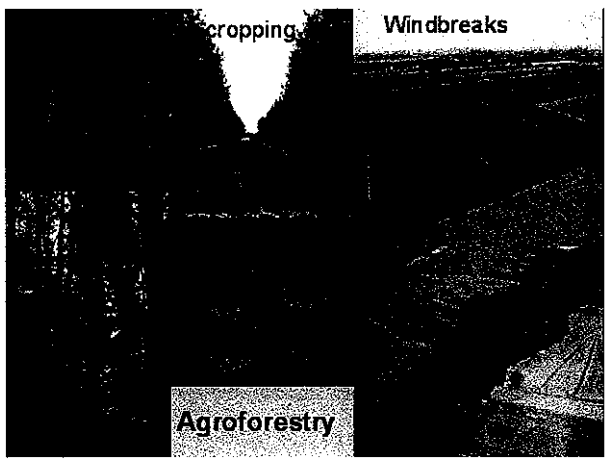
Reforestation

The planting of trees on lands that did not contain forest as of Dec. 31, 1989.

Agroforestry

"A dynamic, ecologically based, natural resources management system that, through the integration of trees in farmland and rangeland, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels."

World Agroforestry Centre



Windbreaks are planned and managed as part of a crop and/or livestock operation to enhance production, protect livestock, and control soil erosion.

Forest farming: high-value specialty crops are cultivated under the protection of a forest canopy that has been modified to provide the correct shade level:

- Food (nuts, mushrooms, strawberry crowns)
- Botanicals (herbs, medicinal)
- Decorative (floral greenery, dyes)
- Handicrafts (baskets, wood products)

Riparian Forest Buffers are natural or re-established streamside forests made up of tree, shrub, and grass plantings.

They buffer non-point source pollution of waterways from adjacent land, reduce bank erosion, protect aquatic environments, enhance wildlife, and increase biodiversity.

Silvopasture combines trees with forage and livestock production. Trees are managed for high-value sawlogs, provide shade and shelter for livestock, forage, reducing stress and sometimes increasing forage production.

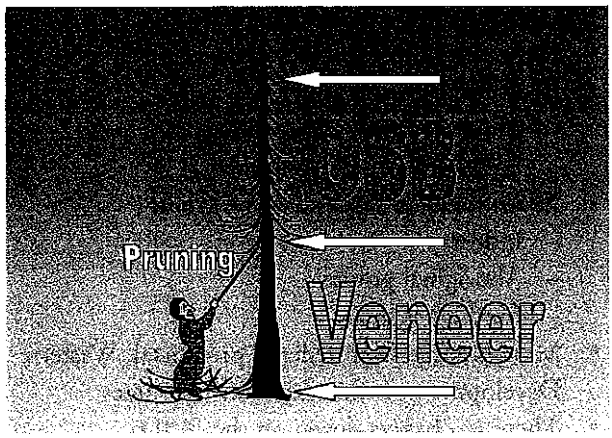
In alley cropping, an agricultural crop is grown simultaneously with a long-term tree crop to provide annual income while the tree crop matures.

Woodlots are managed for a diversity of wildlife and habitat requirements; the wooded portion of a private property upon which small-scale forestry operations are carried out.

Afforestation is yet another term – this is also referred to as plantation forestry. Fast growing trees are planted in rows on agricultural lands. This is a picture of a plantation in SW US. Note these trees were planted at tight spacing for pulp production, but when market fell – rows were thinned and trees were grown for veneer and lumber products. Anything left was then used for pulp. Thus you have one species being used for a potential of three different markets.

Western Oregon, USA – hybrid poplar
Plantation – pulp

Multiple Use Strategy: Where is the Potential in Saskatchewan?



Canada has:

- 10% of the worlds forests!

Saskatchewan has:

- Total area of Saskatchewan – 65.2 million ha
  - forested land – 35.5 million ha
  - agriculture land – 29.7million ha
  - 46% – agriculture land
- To understand where the potential is, we have to know what we have in SK as far as land and the possibility of where afforestation might occur

Fast growing plantations:

- Represent 5% of world's total forest area
- Provide 35% of timber supply
- Provide alternative wood supply – potentially lessening the pressures on natural forests
- Improvement in forest conservation
- Biodiversity enhancement
- Smaller land base required to support the demand for timber
- Fast growing plantations produce a low cost fibre!

What can fast growing plantations offer?

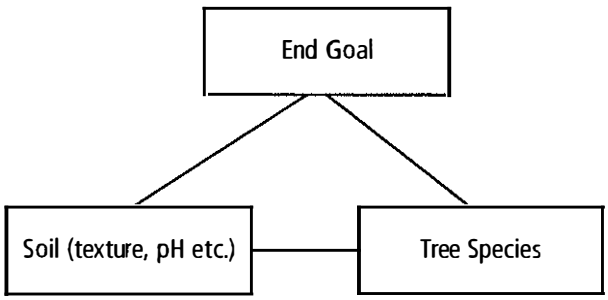
- Increased demand for engineered wood products
  - Engineered wood (OSB – oriented strand board): Meadow Lake OSB will be putting their wood through in August. The province has a new provincial policy – any new industry coming to the province will get 80% of their wood supply from the crown forest, thus the remaining 10% comes from either private land owners, or other wood trade deals with other forest industries.
  - LVL – Laminated veneer lumber – veneer wood that is glued into layers.
  - I-joists – PSL- paralam strand lumber
- New opportunities in international markets – Europe, Japan and USA will be the main purchasers
- New employment potential
- Restoration of degraded lands
- International markets

Fast Growing Species

- Hybrid Poplars – *Populus* spp.
- Siberian Larches – *Larix siberica*
- Red Pine – *Pinus resinosa*
- Scots Pine – *Pinus sylvestris*
- Fast growing species rotation = 20-30 yrs
- These are just some of the species one can think about for use in afforestation.
- Note that hybrids used are from conventional breeding of parents: that is the better parents, male and females are chosen and bred to produce an offspring that may grow faster, have fewer branches, be more cold hardy. They are not GMO's.
- Note that you must match your end goal with the tree species and with soils. It is no good having a saline soil or very high pH and planting a hybrid poplar into it; the tree will only suffer, as will your pocket book when you go to harvest it in 20 years!
- You must also be aware of certain 'needs' of the tree. What does the tree species need in order to grow? shade sunlight, moisture, nutrients. This must all be determined prior to any plantings!

Why Practice Agroforestry/Afforestation?

- Economic Benefit 'Value Added'
- Crop diversification
- Environmental issues/carbon sinks
- Waste management
- Wildlife habitat/stream bank stabilization
- Biomass production
- Reduce soil erosion and salinity
- Shelter for livestock and crops
- You MUST have a plan that includes:



It is very important to first decide why you want to plant trees.

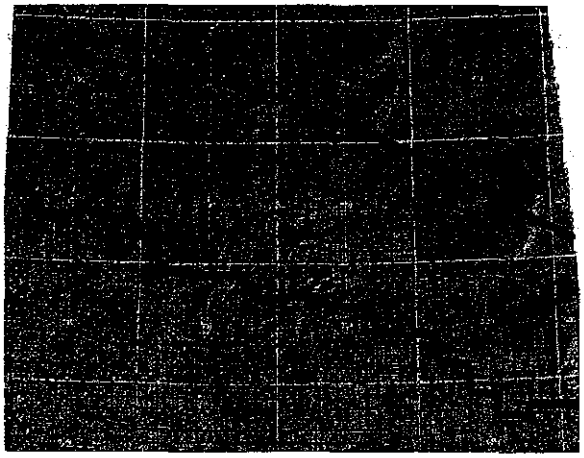
- for economics
- increasing biodiversity
- riparian habitat or upgrades to your soils

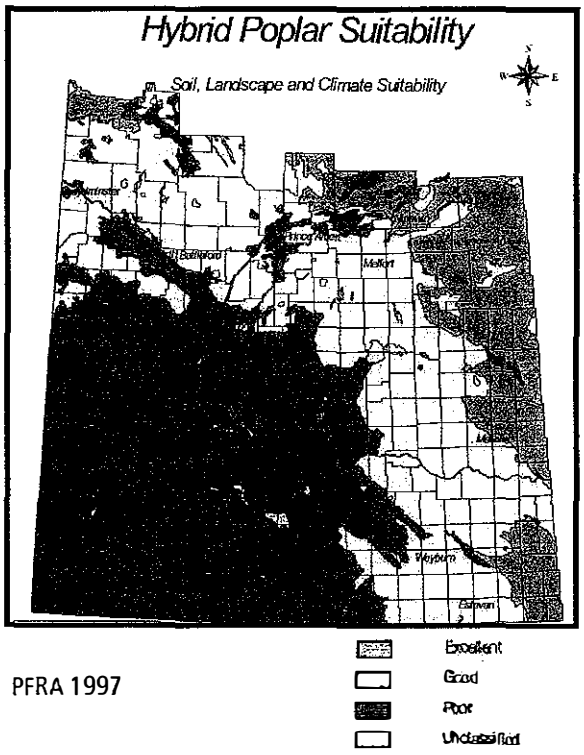
Then you must determine what tree species will get you there, and what is the silvics of that tree?

- what does it take to make it grow?

Where and What is the Forest Fringe?

- Transition between Boreal and Grassland eco-regions
- Takes into account agriculture lands, both marginal and productive
- Contains approximately:
  - 1.3 million ha of land with tree cover
  - 706,000 ha of private land
  - 414,000 ha on agricultural Crown land
  - SAFRR identified a potential for 1 million acres

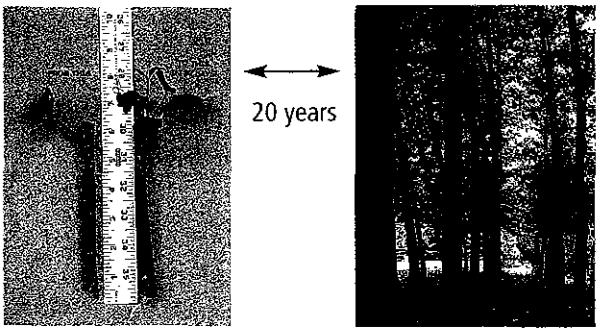




PFRA 1997

Hybrid Poplar Potential

What we want from fast growing platations such as hybrid poplar is being able to go from these little 6 inch cuttings to a mature productive forest in 20 years (give or take)



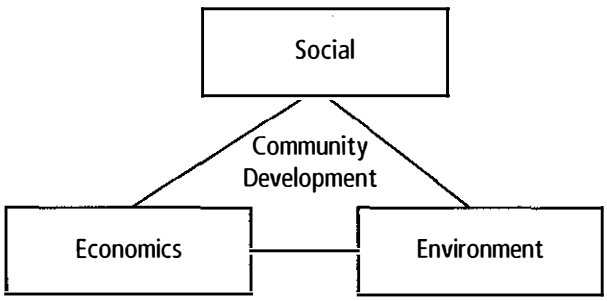
What Sites do Hybrid Poplars Like?

Soil texture	Hybrid poplar prefer loamy soils but will tolerate sandy to clay loams. They do not like hardpan soils. The minimum depth for optimal growth = 1m.
Soil pH	Hybrid polar prefer a slight acidic soil with pH = 5.5 to 7.5.
Drainage	Hybrid poplar prefer high moisture areas. They do not tolerate a water table that is less than 50 cm from the surface.
Nutrients	Hybrid poplar prefer a soil rich in available nitrogen.
Sun	Hybrid poplar prefer to grow in full sunlight.
Slopes	Hybrid poplar will not grow on slopes greater than 8%.

Economic advantage to afforestation on private/agricultural lands

- Road infrastructure already established
- Processing mills in close proximity
- Workforce in place
- Marginal lands
  - offer diversification
  - profitable returns

What does this mean to Aboriginal Communities?



'Spin offs' from Afforestation

Social

- Economic opportunities (diversify/kickstart)
- Community stability and self sufficiency
- Regional development
- Development of education and training programs
- Recreation

Economics

- Creating employment – skilled workforce
- Value added industry
- Increase of capital investments
- Markets:
  - Japan: clearly the market with highest appreciation for aspen
  - Europe: may present opportunity to replace Ramin and other medium- and light-density timbers
  - US: greatest market opportunity for lower-grade commodity aspen

Environment

- Biodiversity, including conservation of both genetic and biological diversity
- Wildlife habitat – creating or maintaining
- Kyoto requirements (carbon sequestering)
- Environmental and cultural objectives
- Water resources – aiding the riparian habitat, stream bank stabilization, etc.
- Soil enhancement – reducing soil erosion

Woodlot Management

- Knowing what you have in your 'backyard'
- What do you want from that wooded land?
- Sustainable management of your woodlands
- Developing management plans

There is already a considerable amount of forested wooded lands; however, the quality of the wood is questionable due to the fact that much of these lands were not managed. When I say managed, I mean many different things. I am not saying that they have to be all pruned or that dead and decaying matter must be taken out. However much of the wooded lands has not be kept sustainable. When individuals realize either the economical or aesthetic value of their woodlands, they take on a different attitude.

Management plans for sustainable harvesting are being developed to ensure harvesting meets their objectives. In other provinces, owners who have management plans may be eligible for tax breaks, different crop insurances etc.

Potential Programs to Aid Afforestation Efforts

Forest 2020

- National program
- Sustainable land use initiative
- 2.2 billion trees on 2 million hectares
- Fast growing trees
- Potential financial investment. There is some discussion surrounding the 'financial investment'. The option includes statements such as, "Private land owners will retain titleship to the land, while investors will own the trees." This has yet to be clearly laid out!

Greencover Program

- "removal of marginally productive land to plant trees and groundcover".
- Range, pasture and forages
- Shelterbelts/trees/agroforestry
- Riparian management
- Ineligible Items: reforestation for economic development

Theme 4
Non-Timber Forest Products: What's Hot, What's Not!!

Non-Timber Forest Products
What's Hot and What's Not

Luc Duchesne
NRCan, Sault Ste Marie

Non-Timber Forest Products

- Food and food products
- Nutraceuticals
- Pharmaceuticals
- Ornamentals and crafts
- Industrial products (ethanol, methanol, biodiesel)
- Carbon credits (Kyoto agreement)
- Recreational opportunities

Socio-Economic Value

- Potential of
  - $1b/year (ntfp)
  - $50b/year (bioenergy and plastics)
  - 100,000 to 200,000 jobs
- Tool against poverty
  - Critical for First Nations
  - Critical for rural Canada
  - Critical for international development

Black morel

Retail value:	$195/KG
Fire dependent	
Jack Pine Stands	$4000/HA
Black Morel:	$150,000/HA

Matsutake-Pine Mushroom

- $240/lb retail in Japan
- Export of $50 m/year from BC
- Old growth forests
- Global market: $500 m/year

King Bolete

- Retail: $20-250/kg
- Demand: >$250 m/year
- Mycorrhizal

Mushroom market

Boletes	>$250 m/year
Matsutake	$500 m/year
Morels	$100 m/year
Chanterelles	$1.25 b/year
	$2.1 b/year (myc)
	$13.2 b/year (saprobes)

NTFP Industry in Canada

- Mushrooms
  25 commercial species
- Medicinal plants
  100 species
- BC: 200 ntfp species are used
- Michigan: 153 species are used
- Potential for 600 kinds of ntfp

Value of NTFP in Canada

Wild berries	$140 m/year
Maple sap products	$120 m/year
Wild mushrooms	$100 m/year
Medicinal plants	$ 50 m/year
Crafts and ornementals	$ 30 m/year
(Christmas trees $15 m)	
Essential oils	$ 1m/year
Total	**$ 441m/year**

NTFP Industry as Compared to the Logging Industry

- NTFP
  - current: $441 m/year
  - potential: $1 b/year
- Logging industry (1998)
  - $60 b/year
- NTFP/logging : 0.7 – 1.7 %
- New NTFP role in forest industry

NTFP are important at the regional level

BC salmon fisheries	$1 b/year
Provincial forestry outputs	
Newfoundland:	$ 0.6 b/year
Saskatchewan:	$ 0.7 b/year
Manitoba	$ 0.7 b/year
Nova Scotia	$ 1.1 b/year
Silviculture	$1.0 b/year

NTFP problems

- No mainstream NTFP culture
- Lack of resource inventory
- International markets unexplored
- Sustainability of harvest
- Commodity-type price fluctuations
- Cultural biases against harvesting
- Part time employment overlooked

Lack of NTFP Resource Inventory

- Past focus on timber resources
- Ecological knowledge lacking
- Non-productive vs. productive
- Problems with market contacts
- Problems with sustainable harvest

Renfrew County Study

- Mushroom harvest affected by
  - season
  - forest types
  - forest region
  - year

NTFP and Poverty

- Supplemental income $3000-$5000
- Preserve family values
- Require little investment
- Require minimal training
- Empower communities
- Traditional FN lifestyle

Black Ash Basketry

- $5 m/year
- Mohawks
- Black ash/white ash
- Sustainability

Taxol from Eastern Yew

- $1-2b/year
- Anti-cancer
- 1000 kg/year
- 1 kg taxol/10,000 kg eastern yew
- Value $8m/kg
- Powder $0.3m/kg

Phenological harvest

March:	maple syrup
April:	fiddleheads, yew
May:	morels, yew
June-July:	berries, yew
August:	mushrooms, berries
September:	mushrooms, yew
Oct., Nov., Dec.:	ornamentals, yew

Research Issues

- Domestication and biology
- NTFP inventory
- Integrating with logging
- Value-added products
- Certification
- Marketing issues
- FN Traditional knowledge

Ongoing Research Initiatives

- Sustainability of harvest in Kamchatka
- Surveying taxus potential in Ontario
- Domesticating labrador tea
- Co-management of medicinal plants in maple stands
- Effect of fire intensity on blueberry production

Ongoing Policy Initiatives

- CIF position paper
- CFS strategic directions
- SAF workshop
- NAFC working group on ntfp
- Centre of Excellence proposal
- United Nations working group

Ongoing Tech Transfer

- Three documentaries at different stages of production
- Proposal for book on NTFP for Canada
- 20 workshops/year
- Linkages with 20-30 SEDGroups
- Website
- Graduate program

What's Hot

- NTFP are hot internationally
- Great deal of grassroot interest in support for NTFP
- Applications in agriculture, health, biotech, soc. Sciences…
- Biodiversity conservation
- Industry needs support

What's Not Hot

- No partnership
- These are part-time jobs
- It's never going to work
- Other countries are ahead of us—we're too small
- If it's so good, how come we aren't doing it?

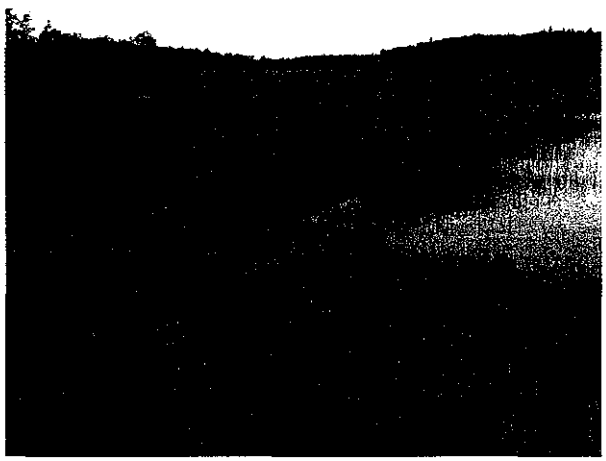
Aboriginal Involvement in Non-Timber Forest Products (NTFPs)

Gerry Ivanochko
Saskatchewan Agriculture, Food and Rural Revitalization

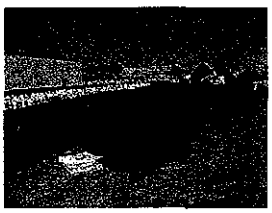
NTFP Industry Advantages for Aboriginals

- Knowledge of the area and the plants
- Have the necessary skills to find and harvest the various products
- Lower harvesting costs
- Buyers are looking for products harvested and sold by aboriginals

Wild Rice

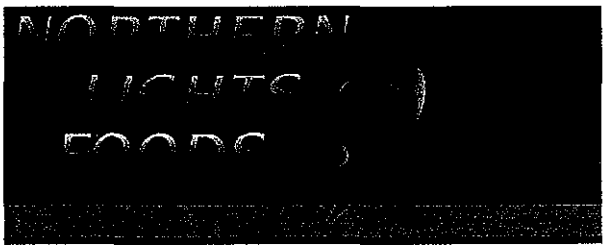


- Production
  - majority of producers are aboriginal
  - La Ronge Indian Band is the largest grower of organic wild rice
  - LLRIB produced over 1M pounds in 2002
- Processing
  - approximately 3 M pounds were processed in La Ronge in 2002



- Shareholders include:
  - Lac La Ronge Band
  - Peter Ballantyne Band
  - Montreal Lake Band
  - Meadow Lake Tribal Council
  - individual shareholders

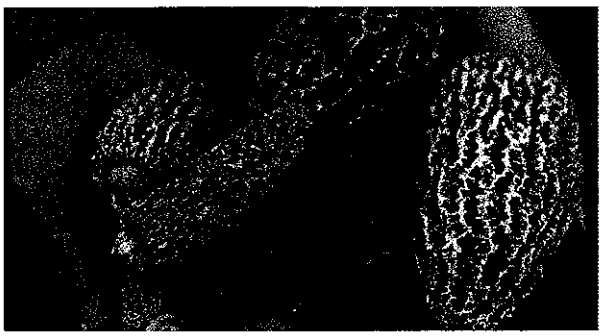
- Marketing



  - owned by Lac La Ronge Indian Band
  - consists of Meat Snack Division and an Organic Foods Division
  - Meat Snack Division has 20 full time employees and produces high quality beef jerky
  - Organic Foods Division has 10 full time employees and over 1000 seasonal workers involved in harvesting wild rice and wild mushrooms

Wild Mushrooms

Morels



- Prices range from $2 to $8 per pound, depending on supply and quality.

Chanterelles

- Harvest from July to September

- Prices range from $3 to $6 per pound
- Saskatchewan produces some of the best chanterelles in the world

Pine Mushrooms

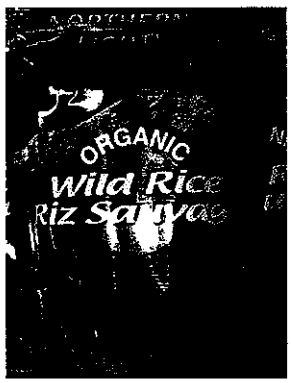
- Harvest in August and September
- Price can range from $1 to $15 per pound.
- Pines from Saskatchewan have been shipped to main market in Japan

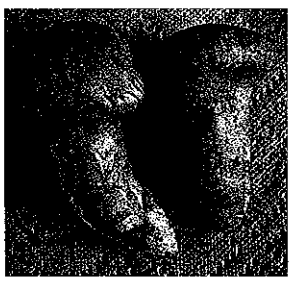
Organic Certification

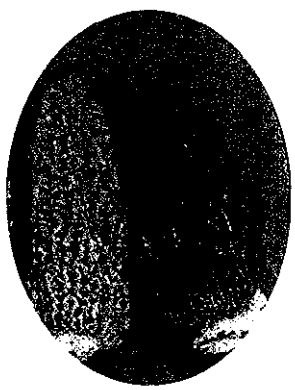
- Wild rice and mushrooms are certified organic in Saskatchewan Harvesters, processors, and marketers must be certified.
- Northern Lights Foods is the first company to offer organically certified wild mushrooms.

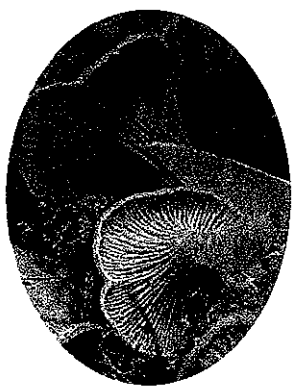
Value Added Processing

- Creates employment opportunities









What is Ecotourism?

Jackie Carter, SIAST

In Saskatchewan, ecotourism is defined as being *"respectful, environmentally responsible travel to relatively undisturbed and uncontaminated natural areas, with the objective of studying, admiring and enjoying the scenery, its wild plants and animals and cultural features.*
Ecotourism does not disrupt the wildlife or its habitat. It is nature-centered, non-consumptive, and promotes conservation and economic benefits to local communities"
(Ecotourism Society of Saskatchewan)

Ecotourism's Defining Characteristics

- Nature-based
- Educative
- Sustainable:
  - ecosystem
  - culture
  - business

How does Ecotourism fit into tourism?

There are two basic types of nature-based tourism

- Consumptive
  - hunting
  - fishing
- Non-consumptive
  - hard Adventure
  - soft Adventure
  - ecotourism
- Ecotourism is not a hunting or fishing tourism product
- Ecotourism does not consume(use-up) natural and cultural resources. Operators do not require an outfitting license.
- Ecotourism strives to protect resources so that future Ecotourists can enjoy all that the natural and cultural environment has to offer.
- Ecotourism is non-consumptive; its focus is on interpretation and education.
- Ecotourism is a form of non-consumptive tourism along with:
  - hard Adventure Tourism
  - soft Adventure Tourism

Hard Adventure Tourism:

- The focus is on activities which have a real risk of injury.
- Instruction before undertaking a hard adventure activity is definitely required.
- Activities are physically demanding; they are not for everyone.
- Examples of hard adventure activities include:
  - whitewater rafting/canoeing
  - ice/rock climbing
  - heli-skiing
  - sky diving
- Ecotourism is not hard adventure

Soft Adventure Tourism:

- The focus is also on activities, which here involve elements of 'excitement' but no 'real' risk
- Soft adventure activities require little physical exertion or prior skill training
- Some examples of these activities include:
  - dogsledding
  - trail riding
  - hiking and backpacking

Ecotourism is not soft adventure tourism, but it uses soft adventure activities while interpreting nature and culture.

What is Ecotourism?

Ecotourism is non-consumptive and sustainable and is distinguished by:

- Educational orientation
- Commitment to the conservation of ecosystems and cultures, and
- Commitment to local empowerment.

Ecotourism Activities

- Birdwatching
- Photography
- Wildlife observation
- Hiking and backpacking
- Canoeing/camping
- Wilderness canoeing
- Cross-country skiing
- Trail riding
- Snowshoeing

Ecotourism's Four Basic Resources

- Nature
- Cultures
- Present and past
- Trained guides and interpretors

What Makes Ecotourism Unique?

Not the activities or the settings, but:

- The commitment to natural and cultural conservation
- And the 'heart' of the Ecotourism product – **interpretation** and **education**

Types of Ecotourism businesses

- Tour packages -- inbound, outbound
- Accommodations – lodges, bed and breakfasts, tented camps
- Guiding services – interpretative talks, step one services
- Food services – restaurants, catering business
- Retail – equipment rentals and sales, books, arts, crafts
- Transportation--rentals, charters

Who is the Ecotourist?

- Highly educated: degree/post graduate
- High incomed: professionals/management
- in one of two age groups: 20-40 or 54+
- Urban
- Couples and single females
- Belong to nature-related organizations and subscribe to nature/culture-related publications

Where do Ecotourists prefer to spend their nights?

- Ecotourists sleep under the stars.
- Ecotourists sleep in rustic, good quality, nature-based lodges and cabins.
- Ecotourists are still tourists on holiday.
- Ecotourists are generally from away.
- They do not have ties to the land. They are on holidays. Their top priority is enjoyment.

How can the Impacts of Ecotourism on Nature and Culture be Minimized?

Business operators can minimize their impacts by:

- Adopting Codes of Ethics
- Developing Codes of Conduct
- Becoming Accredited or Certified
- Undertaking training and hiring trained staff

Code of Ethics

There are many examples, such as:

- Support the preservation of wilderness and biodiversity
- Use natural resources in a sustainable way
- Minimize consumption, waste, and pollution
- Respect local cultures
- Respect historic and scientific sites
- Communities should benefit
- Educate staff
- Make the trip an opportunity to learn
- Follow safety rules

adapted from the Arctic Tourism Commission's Code of Ethics

Codes of Conduct

Codes of Conduct are developed for:
- the Ecotourist
- the Ecotourism business itself
- business employees and partners

Codes should be specific to the Ecotourism activity:
- wildflower photography,
- birdwatching
- wildlife observation
- hiking
- camping

Accreditation programs

- Australia (NEAP-Nature-based and Ecotourism Accreditation Program)
- Costa Rica
- Saskatchewan (HORIZONS)
- an International Ecotourism certification program currently under development

Accreditation benefits:
- the customer
- the community
- the environment
- the business operator

Training of operators and staff

- SIAST Woodland Campus Ecotourism Certificate Program
- STEC's Tourism programs: Sask Best, Hospitality Skills, Heritage Interpretation
- First Aid; Wilderness First Aid
- Search and Rescue
- Activity Certification--canoeing, kayaking
- Business Development and Management

Ecotourism's Goal:
to protect and enjoy our natural and cultural heritage

Forests Sustaining Communities Communities Sustaining Forests

A review of a delivery program for marginalized forest communities offered by the Northern Forest Diversification Centre in Northern Manitoba

Frank Ducharme
Northern Forest Diversification Centre

Who We Are...

- Division of Keewatin Community College
- Located off campus
- Training, research, and service centre for the non-timber forest product industry

What are Non-Timber Forest Products?

A widely accepted definition is:
"all goods derived from forests of both plant and animal origin other than timber and firewood".

Non-Timber Forest Products General Categories

- Wild foods
- Wild medicinals
- Wild crafts and florals supplies
- Other (essential oils, soaps, salves...)

The NFDC Mission

To use the emergent non-timber forest product and eco/adventure tourism opportunities in all Northern Manitoba communities to create additional income streams and/or small businesses for community residents.

The Northern Forest Diversification Centre (NFDC) Vision

The non-timber industry is a network of community based and diverse micro enterprises supported by a 21st century packaging and marketing infrastructure.

The NFDC Strategy

The basic strategy is to identify non-timber forest product opportunities at the community level; interest and train local producers; and assist them with new product development, packaging, and a marketing support system.

The Action Steps

- Build awareness at community level
- Provide necessary training
- Provide initial enterprise support
- Build a network of trained harvesters and then support their efforts
- Explore regional support systems

How is it Unique?

- Project driven rather than program driven
- Partners with community in economic/community development
- Uses local skills, knowledge, and resources for local benefits
- Focussed on income creation rather than job creation
- Direct link between learning and income creation
- Combines traditional knowledge/skills with processing and market expertise

Benefits – Economic

- Increased income and wealth generation
  - individual
  - community
- Decrease in reliance on support services
- Diversified opportunities
- Re-investment in community

Benefits – Social

- Hope for the future
- Sustains local culture
- Enhances self worth
- Create renewed culture of entrepreneurship

10 Day Training Course

- No education/age restriction
- Classroom and hands-on shop/field activities
- Focus on non-timber forest products found near the community
- Some topics include:
  - Sustainable harvesting
  - Adding value
  - Basic bush skills
  - Low-tech processing
  - Aboriginal issues

Non-Timber Forest Product Training Courses

- Invitation to speak
- Cost proposal
- Locate funding
- Training location
- Meet students, review training course
- Training as scheduled
- Organize a chapter of Manitoba Wild Harvesters Association
- Aftercare

Aftercare

- Marketing
- New product development
- Product standards
- Quality control

Aftercare – the unwritten part

- Hand-holding
- Motivating
- Taking out the risk
- Solving problems
- Encouragement
- Continuing contact

Non-Timber Forest Product Regional Service Centres

- To insure continuing contact
- Buying depots
- To promote local control and management
- Three or four for Manitoba
- Close working relationship with NFDC
  - new Product Development
  - marketing
  - information Dissemination
  - ongoing Training

The Northwest Non-Timber Forest Product Regional Centre

- Initial meetings with potential committee members
- A proposal in writing
- Northwest Community Futures Development Corporation to chair committee
- 10 day training course - March 31/03
- Two processed wild food projects

Market Development Service

- Essential to stimulate development
- Not a break even enterprise
- Encourages and supports independent marketing efforts
- Enables individuals and communities to access larger markets by working together
- Manitoba Wild Harvesters Association may operate marketing entity

Forest Diversification Support Worker

- For each community or community group
- Similar to role of Trapline Officer
- Regular upgrading and training
- Key community contact
- To keep harvesters informed
- To handle requests for product orders
- Provide feedback re: problems, new products or concerns

A Few Small Steps

- Completed training in 5 communities
- Test marketed over 80 non-timber forest products
- Sales of over $50,000.00 last year
- Purchased products from 190 harvesters from 22 communities
- Train the Trainer/Community Support Intern program
- Full time experienced Market Development Manager
- The Alberta Gift Show
- Web Site: http://www.nfdc.ca
- Initial sales to 31 retail stores in Western Canada
- Two national wholesale distributors
- Images of Canada
- Algonquin Tea Company
- Three Non-Timber Forest Product Conferences in Northern Manitoba
- Award from Association of Canadian Community Colleges
- Soap/salve making workshop (20 participants from 7 communities)

Lessons Learned

- Innovation is 'messy'
- Awareness building required at every level
- Role of the NFDC is different: A partner in development vs. a deliverer of programs
- Community activity must be aligned with local needs, aspirations, history, culture and resources

NFDC – The future?

- A division of Keewatin Community College, managed by a board of directors (similar to Natural Resources Institute?)
- A network of trained forest diversification support technicians in each community
- Manitoba Wild Harvesters Association capable of operating their own marketing support system.

Summary and Wrap-Up Comments

Steve Price

We're close to the end of what has been a most informative conference. Normally I'd provide you with a detailed description of each and every presentation, but I can see that you're tired and I'm tired as well. So let's briefly recap the highlights of the conference.

We commenced with presentations dealing with Traditional Knowledge. **Myrle Traverse** talked about the challenges of balancing indigenous knowledge and sustainable forest management. She compared and contrasted indigenous knowledge and western science emphasizing the need to work together.

Mark Stevenson provided us with an overview of the NCE and talked about the 'sanitizing' of traditional knowledge to scientific knowledge. Mark talked about two-row wampum and explained that operationalization requires dialogue.

Anna Leighton then provided us with a primer on the plants of Northern Saskatchewan and recounted the use of plants by aboriginal residents.

Grand Chief Francis Flett focused on non-timber forest products referring to them as untapped and unregulated. He talked about the 'gold rush' mentality and risks. Grand Chief Flett closed with a recommendation that First Nations need to start taking notice of what's out there ... and protect it!

In the afternoon, we shifted to Traditional Land Use Studies. We had a number of project reports from **Richard Davis** who emphasized the sharing of information ... not the taking of information. **Herb Norwegian** talked about starting low-tech and progressing from there. **Peter Brook** reminded us that political boundaries do not equal traditional boundaries, and **Jennifer McKillop** and **Ben Hjermstad** provided us with an excellent overview of geographic information systems and the predictive capacity of GIS.

Sandra Cardinal and **Brian Tallman** then brought us up-to-date on the Big Stone GIS Project. **Rene Barker** provided an overview of the Manitoba Model Forest Traditional Land Use Study and in closing suggested that with so many studies taking place, there might be merit in "getting together" and sharing information and resources. **Jamie Honda McNeil** talked about the Alberta Best Practices Handbook for Traditional Land Use Studies.

Day two started with Ted **Hogg**. Ted talked about drought, fires, insect outbreaks, and growth and survival of trees in relation to climate change. **Tim Williamson** followed up with a presentation in which he talked about the potential impacts of climate change on local communities. He talked about the limited options that exist in many smaller communities in Canada's boreal forest. **Bill DeGroot** then talked about fires, climate change, and community protection. He told you that the number of fires is increasing and explained the links between the boreal forest and carbon storage. He talked about the wildland urban interface and the Partners in Protection – FireSmart Manual.

Mark Johnston provided us with what I believe to be the best explanation of the Kyoto Protocol that I've ever heard. Mark referred to the Kyoto commitment period and talked about afforestation, risk, carbon pools, and policy vacuums.

Deb Weedon then delivered a high-energy presentation on afforestation potential in

Saskatchewan. If hybrid poplar has the same energy levels as Deb, we can be guaranteed phenomenal growth! She talked about the difference between agro-forestry and afforestation. She talked about risks and possible future programs.

Gerry Ivanochko covered not only his own presentation but also **Luc Duchesne**'s presentation. He provided an overview of the opportunities and activities in the area of non-timber forest products with a special focus on Saskatchewan.

Jackie Carter from SIAST talked to us about eco-tourism providing us with a definition and talking about hard versus soft tourism. I'm told that the next FNFP conference will include rock climbing with Tamara Leigh leading the way, wilderness canoeing with Maria Moore, and skydiving with G R Giroux being the first to take the plunge.

Frank Ducharme gave us an overview of the Northern Forest Diversification Centre in the Pas and talked about efforts to grow the non-timber forest products business in Northern Manitoba with a focus on 'income creation' rather than 'job creation'.

We've had two days of great presentations and the opportunity to 'network'. This conference was a joint effort between the Prince Albert Model Forest and the First Nation Forestry Program. Prince Albert Model Forest is into Phase III of programming having been established as a partnership venture in the early 1990s. FNFP is a partnership initiative between CFS and INAC. We've enjoyed working with you for the past five years. We look forward to working with you for another five years!

Special thanks go to Prince Albert Model Forest, the FNFP Management Committees in Saskatchewan, Alberta, Manitoba and the NWT, staff at the Saskatoon Inn, our Organizing Committee and a special thank you to our speakers and moderators – great job. Continue the dialogue! Have a safe trip home!

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