

**FOREST ECOSYSTEM STRATEGY PLAN**

**FOR**

**FOREST MANAGEMENT DISTRICT 19**

**LABRADOR/NITASSINAN**



**2003-2023**

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## Acknowledgments

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The Planning Team:

Jay Forsyth  
Larry Innes



Innu Nation  
Box 119  
Sheshatshiu, Labrador  
A0P 1M0  
(709) 497-8155

Keith Deering  
Len Moores



Dept. of Forest Resources & Agrifoods  
P.O. Box 429  
Northwest River, NL  
A0P 1M0  
(709) 497-8479

## **Executive Summary**

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### **Introduction**

On January 30, 2001, the Province of Newfoundland & Labrador and the Innu Nation signed a *Forest Process Agreement*. That Agreement was designed to enable and facilitate effective communication, information sharing, and the resolution of issues between the Province and the Innu Nation concerning interim planning and management, the development of sustainable forestry practices, and ecosystem-based management plans. This Forest Ecosystem Strategy Plan for District 19 is an important result of that agreement.

From the onset, the Planning Team recognized that both stakeholder participants and local communities would be required to be involved in the development of this Strategy Plan. Accordingly, public participation was sought in general sessions which were open to all members of the public, as well as through specific consultations in the Innu communities. Public participation was integral to the completion of the Plan. This document is therefore a reflection of the dedication and contribution of the many people who participated in the numerous meetings, workshops, and field trips which were an essential part of the planning process.

This Strategy Plan follows an Ecosystem-Based Planning approach, which requires a careful representation of ecological, cultural and economic values. Ecosystem-Based Planning is a relatively new approach to forest management in Canada. It is based on protecting, maintaining, or where necessary, restoring fully functioning ecosystems at different spatial scales over long time frames. Following this approach, the Strategy Plan is organized into three main chapters, reflecting Ecological, Cultural, and Economic Landscapes. An additional chapter was also added to include research and monitoring requirements.

### **The Ecological Landscape**

Forest Management District 19 is 7.1 million hectares in size, an area which is just over twice the size of Vancouver Island. District 19 has been further subdivided into Sub-Districts 19A, 19B, and 19C for management planning purposes. The focus of this Strategy Plan will be on District 19A, an area of 2.1 million hectares located in Upper Lake Melville.

Considering that most of Labrador is only sparsely forested or not forested at all, District 19A contains a majority of Labrador's closed canopy forest. This heavy to moderately stocked spruce-fir forest is mixed within a diverse mosaic of vegetation types, such as open sphagnum forest, lichen woodlands, mixed hardwoods (birch, aspen and poplar), black spruce bogs, and a variety of other wetland types. Although frozen most of the

year, a significant portion of the landscape (11.6%) is composed of water. The District's numerous lakes, rivers, and streams play a critical role in shaping its ecological character. The result is a unique ecological landscape, highlighting an important relationship between climate, topography, hydrology, and vegetation.

District 19 ecosystems possess several important natural characteristics, such as cold climates, extensive riparian ecosystems, and slow nutrient cycling. These characteristics indicate some of the ecological limits which serve as the foundation for the development of ecosystem-based forest management and help to provide a general picture of the unique ecological character of District 19.

The District has experienced relatively little ecological impact from human industrial activities. The main impacts on terrestrial landscape are concentrated on the Northside of the Churchill River, including road developments, past timber harvesting activities, and human-caused forest fires. There have also been significant impacts associated with changing water levels and flow patterns resulting from the Upper Churchill hydroelectric development.

One of the key principles of Ecosystem-Based Planning is the identification of an ecological Protected Area Network at different levels of planning. For this Plan, the Protected Area Network was designed to protect ecological functioning at three distinct levels or spatial scales: Landscape, Watershed, and Stand. Each level functions as a "filter" to identify and protect the ecosystem structures and functions which are best reflected at these different map scales.

For example, woodland caribou are wide-ranging, migratory animals which require a variety of habitat types over the course of a year. Protection of caribou requires particular consideration of "coarse" landscape patterns at small map scales (1:250,000-1:500,000). Caribou are best protected at the Landscape level. Other species (for example, Marten) have much smaller ranges, and depend on finer-scale features. Accordingly, their habitat needs are considered at the Watershed level (usually mapped at 1:50,000). At the finest level of detail, consideration is given at the Stand level to protecting site-specific features, such as rare plant communities and fish-bearing streams (1:12,500 map scale). Although each level focuses on protecting different features, all levels test for rare, threatened, and endangered species and ecosystem types.

The following specific ecological objectives have been identified and addressed in the Strategy Plan:

- 1) Identification of Species at Risk
- 2) Wildlife & Habitat Management
- 3) Ecosystem Health & Water Quality
- 4) Global Implications

## **Cultural Landscape**

The cultural character of District 19 is a diverse blend of Aboriginal and non-aboriginal peoples. These groups have historically interacted with the land, plants, animals, and with each other. The District's unique climate, vegetation, wildlife, and other ecological characteristics have shaped the people who call this land home. For over two thousand years the people of Labrador have been "living off the land," and thus a fundamental requirement of protecting cultural heritage values means protecting the land itself.

The Strategy Plan recognizes the critical importance of protecting and respecting Aboriginal and non-aboriginal cultural heritage and land-use priorities across the District. A Cultural Protected Areas Strategy was developed to ensure that sensitive cultural areas and values are protected under this Plan. Subsequently, a cultural Protected Areas Network was mapped and removed from the commercial timber harvesting landbase.

The following specific cultural objectives have been identified and addressed in the Strategy Plan:

- 1) Cultural Heritage Values
- 2) Landscape Aesthetics
- 3) Hunting and Trapping
- 4) Non-Timber Forest Products (NTFP)
- 5) Socio-Economic Factors
- 6) Domestic Forest Products

## **Economic Landscape**

The Planning Team recognizes that domestic harvesting, including hunting, trapping, berry gathering, and similar activities are a large and important part of the Labrador economy, as well as a vital and highly valued part of both Aboriginal and non-Aboriginal ways of life in the District. However, for the purposes of analysis and description under the Plan, most of these activities are considered to be part of the Cultural Landscape. The Economic Landscape presented here is intended to describe forest-based activities which have a direct market value either as products or as services. Such activities include timber harvesting, sawmilling, value-added wood production, outfitting, and guided or self-directed adventure or eco-tourism, etc.

Forestry and tourism are among the primary forest-based industries in this region. The timber harvesting and sawmilling industry currently employs approximately 60 people. None of the current forest industry workforce are members of the Innu Nation, and only 2% are women. Considering that currently over 85% of harvested timber is exported as round logs, there is significant potential for future employment in the saw milling and value-added sectors. With approximately 46 Labrador outfitter businesses offering

fishing, hunting, and wilderness adventure trips, tourism and related spin-off industries are showing signs of significant growth.

The commercial forest of District 19 is dominated by black spruce, which encompasses approximately 91% of productive forest area. Balsam fir constitutes 5% of the area, while other softwoods and hardwoods make up the balance. The general characteristics of forest stands in District 19A can be summarized as stands greater than 140 years, between 10 - 15 meters in height, having 51-75% crown density and occupying predominately medium and poor quality sites.

The commercial use of the timber resource within District 19 has been relatively cyclic, with varying degrees of economic success. After Labrador Linerboard ceased large-scale (over 300,000m<sup>3</sup>/year) operations in 1977, harvesting continued at much lower levels up to 1992 to supply the export market. There has been a gradual increase in commercial harvesting activity from about 5000 m<sup>3</sup> in 1993 up to about 40,000 m<sup>3</sup> in 2000. This has been undertaken mainly by local operators to supply both local and island mills.

Outside of the total Protected Areas Network, ecosystem-based management areas are identified for timber harvesting and other extractive resource-based activities. The forest landbase available for timber harvesting has been divided into five different management classifications: Domestic, Selective-Commercial, Commercial, Visual Management, and Conservation Emphasis. Tourism and related activities are permitted within the Protected Area Network.

The rate of annual harvest or Annual Allowable Cut (AAC) is an important calculation that defines the scale at which harvesting occurs over time. The District AAC is divided into two distinct management areas: north and south of the Churchill River (“Northside” and “Southside” respectively). The majority of management activities and all commercial harvesting allocations are proposed to take place on the Northside. A Southside allocation will also be implemented when access issues are resolved, the final alignment of Phase III of the Trans-Labrador Highway is determined and appropriate provisions for secondary processing within the District are met. Southside allocations will require an amendment to this Operating Plan and be contingent on the following conditions:

- 1) Approval of Phase III of the Trans-Labrador Highway (Goose Bay to Cartwright Junction) following Environmental Assessment;
- 2) Bridge access across the Churchill River being constructed within the life of this Operating Plan.
- 3) Construction of required roads to provide access to proposed Southside Management Units
- 4) Investment in local capacity to harvest and process the majority of Southside timber allocations.

The calculations for the AAC incorporated a 28.6% area net-down to account for more detailed air-photo analysis, and the designation of watershed and stand level ecological protected area networks created during operational planning. A further 20% reduction was also applied to account for stand level volume reduction due to tree retention, cull and waste. Through this analysis the Northside AAC was estimated at **56,700m<sup>3</sup>/year** and for the Southside at **141, 900 m<sup>3</sup>/year**.

The total AAC for District 19A of 198,600 m<sup>3</sup> represents a significant reduction from the previous (2000) analysis, which set the AAC at 400,000 m<sup>3</sup>. The primary reason for this 50% reduction in the AAC was due to the major shift in planning emphasis under the Forest Process Agreement and through the incorporation of public values and concerns raised during the consultation process. This resulted in a significant change to how the timber management landbase was determined. The incorporation of ecological and cultural priorities in conjunction with changes in stand level harvesting practices resulted in a significantly reduced commercial harvesting area, thus allowing for a far greater level of ecological and cultural protection.

The following specific economic objectives have been identified and addressed in the Strategy Plan:

- 1) Forest Product Processing & Value Added
- 2) Timber Harvesting & Sustainability
- 3) Timber Resource Utilization
- 4) Forest Access Roads
- 5) Forest Resource Protection
- 6) Silviculture & Restoration
- 7) Tourism and Recreation
- 8) Future Economic Developments

## Summary

- Jointly prepared Plan by the Innu Nation and Department of Forest Resources & Agrifoods;
- Plan follows an innovative Ecosystem-Based Planning approach, which requires a careful representation of ecological, cultural, and economic values;
- Planning process includes an ongoing public participation component representing stakeholders and local community participants;
- Plan identifies ecological Protected Area Networks at three different levels of planning, as well as a cultural Protected Area Network that ensures sensitive cultural areas and values are considered; Combined Protected Area Network encompasses over 50% of the District;
- Annual Allowable Cut (AAC) for the District is estimated at 198,600m<sup>3</sup>. This represents a 50% reduction from previous planning efforts.

## **Executive Summary (Innu-Aimun)**

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### **Minashkuat tsheishi pempantakant Katapuetatunanut Mishinaikan**

#### **Ushkat etshitshepannanut**

Stshe-pishum 30, 2001, Akamissisit mak Labrador stsheutshimau mak Innu Nation utiteimupant Katapuetatunanunit Mishinaikannu kie shash tshi mishinatautishupant nenu mishinaikannu. Eukun ume Katapuetatunanut Mishinaikan tshenashatakau ntshent Akamissisit stsheutshimau mak ne Innu Nation neme tsheishi pempantakant mishkuat katshimikaishkanut, tsheishpish tshimikauakannit mishtukut ute shtassinat, kie kassinu tsheishi takuaimatet ne katshimikauakanit mishtukut kie tan tsheishpish utinakannit mishtukut. Ume Katapuetatunanut mishinaikan eishi nishtutatunanut ne tsheioshi nakatuentakant minashkuat (District 19) ishinikateu nta tshetakueimatet minashkuat.

Ume tsheishi takueimatet minashkuat tshika ui apitshiakanut ntshent auentshent nte pesis etakuannitshi utenamuaa nta tshetshimikaissanunit tshetshi uauitshiaushit nenu uieuetishutakannitshi nenu minashkuat. Kassinu auen muk shiapentak tshetshi itutet nte uetshimau iminanuntshi uishamakanu tshetshi issishuet tan etentak nenu tshipa eishi penmpantakanu ne minashkuat etakueimatet. Mamukakanipan ume mishinaikan tshetshi tutakant Nete etutakant uiauitakant ume tsheishi pempantakant mishkuat kassinu auentshent kaishpish eissishueht mamushtakannipan.

Tshetshi tutakant ume mishinaikan ne tsheishi pempantakant minashkuat kassinu tshakuan pitima tshitakanu nte minashkuat etakuak miam ntshent aueshishet kie kassinu tshakuan netautshik nte minashkuat kie tante tshipa utshi tutakanu ne shuniau nta ut minashkuat. Ne anutshish meshkakanut tsheishi takueimatet anutshish en mishkakanu tshipa eishi takueimatet ne minashkuat ute Canada, ne apashtakanu tshetshi nakatuentakant minashkuat, kie tshetshi kau ntautshiakannit ntshent mishtukut katshi tshimikauakantaui, nete nikan aishkat tshitapatakanu tan tsheishi nakuak ne minashkuat tshetshi kau nitaushit ntshent mishtukut ne ishpish tshi mitshetuppuaki. Nishtuiekan ne tshakuan tsheishi nakatuapatakant, ne eishi nakuak minashkuau eshk eka tshemikeisanut, shashish kaitapishtakant ne assi kie tshetshi ut shuniatshanut nta ut minashkuat. Kie ne tshika tshitapatakanu tshetshi nantutshissentakant nte minashkuat eishi takuak aueshishet kie ne kassinu eishi nitaushik nta assit mak tshetshi nantam nakatuapatakant ne minashkuau.

#### **Minashkuat etashkamikat**

Ne tiakueimatet mishkuau atshitashun etishtet 19, ume ishpishau ne eminashkuat (7.1 million hectares) peik mak nishuass tatunnu estshemitashumitunnu mak tshishkestshemitashumitunnu, nishuau tatuau ishpishau ne eshpishat Vancouver



minishtuk . Ne minashkua atshitashun etishtet 19 nishuau tipeikanu ne kutak atshitashun 19A ishinikateu, mak ne kutak 19B ishinikateu, mak ne 19C ishinikateu muk ne tshetshi ut tshissentakuak ne minashkuau eishi takueimatet. Ume tshitshue tshetshitapatakant minashkuau 19A etishtet, ume ishpishau ne eminashkuat 2.1 million hectares kie nta takuan Euikuekimat ume Atatshuinipek (Upper Lake Melville).

Kassinu nte etshitapatakant ute Labrador eminashkuat muk eiapishish nte minashkuau kie nete itetshe nasht katak ninemeu apu nasht minashkuat, ekuta uta muk tshitshue menashkuat ume etishtet 19A ute Labrador itetshe. Ume tshitshue eshinakushit mishtukut sheshekatukut mak innashtet mak kutakat eishinakushit mishtukut miam shikaua, kie kutakat (ushkuei, mitush, uatshinakan,) kie mineik, mak ntshent missekut kenitautshutshi mishtukut. Mishkutinna kassinu shakaikana nte nutshimit pepuaki, muk mishte mishau nte nutshimit ne nipi 11.6% eshpish takuak ne nipi nte assit, miam ne missekua, shipissa , kie shakeikanna, mak shipua. Shipissa, shipua, mak shakeikana eukuannua tshitshue nukuaki nte nutshimit. Eukuan mak ne uet tshji minu ntautshik kassinu tshekuan nta assit neme eshpish mishat ne nipi etakuak nta assit.

Ume minashkuau etishtet 19A mamitshetuiet nta ishinakuan ne tshekuan miam ne kemishte takaua pepuaki, kie nte usham nete naneu shipit mak nete naneu tshishutipet ekut6e nte tshitshue menuminashkuat, kie usham ekute nte etat aueshish nte uet mistshut eussintautshinnit tshekuannu. Eukuan mak ne minashkuau uet minuak tshetshi ut nakatuentakant kie tshetshi minu takueimatet mamu ne minashkuau etishtet 19.

Ume eshinakuak minashkau mishte apishish muk nimetaut aentshent nenu minashkuanu ne eshpish tshimikaissanut. Ume muk miantentakuak nta minashkuat ute nenim itetshekam mishta shipit: neme katutakant mishte utapan meshkanau, mak nene katshimikaissanut, mak ne eishkuashakant nte minashkuat. Mak neme uet meshte mishkutshipant tshekuan nene katshi tshipeikant neme mishta paushtuk uashtenimakana uet pempantakantshi katutakant.

Ume tshitshue tsheapashtakant eshinakatuentakant ne assit menashkuat, eukuan ne tshetshissinuashtakant nta tshenakatuentakant ne minashkuau Nishten nta tshekuan tshitshue tshenakatuentakant eukaun ne: Ne eshinakuak ne assi, kie nenua shipissa, kie ntshent mishtukut ntsehnt miamitshashkushit mishtukut eukuan en eshinakushit tshetshi tshimikauakanit. Kassinu nta mishinateikanu nta assiu mishinaikant nta tshenakatuentakant ne minashkuau miam itentakuan, “shikuashkupantakant” eukuan tsheut tshi minu nakatuentakant ne minashkuat.

Mak ne eishitakuak nte minashkuat, miam ne minashkuau-atik kassinu nte eituteu minashkuta, Kie ntshent aueshishet ketshiuapanutshi tekuatshinnitshi piapintau ute napinnitshi kassinu nte nutshimit et eitaut. Ne atik enakatuenuimakant apu tshikut animitshentakuannit tshetshi mishinateikannit nta assiu mishinaikant(1:250,000 1:500,000 etishtent asiu mishinakanu. Tshikanakuan ne atik eshpish apishtat nenu assi nte eitutet

mishinateikannu nta assiu mishinaikant. Eku ntshent kutakat aueshishet eiapishissishit miamne itatau, (Uapishtan) apu katak eshpish apashtat assinu apu katak eishpatat mishte apishish nta tshika mishinateikannu nta assiu mishinaikant nenu eshpish apashtat nenua assinu. Ne aushish nte usham etat emishte minashkuat miam nte pessish shipissit kie nete naneu minashkuat shipit mishinateikannu nta assiu mishinaikant (1:50,000) etishtent assiu mishinaikannu. Kie ne kutak tshekuan ne natautshik nte minashkuat , kie nimeshet nenua etat shipissa nta mishinateikannu assiu mishinaikan etishtet (1: 12,500). Kassinu eishinakusht aueshish tshika nakatuenimakanu, pisse en aueshishet shash apu shuk mitshetit shash tshekat metshiniput kie mak metshiakannut.

Eukuan ume tsheitatussanut mak tsheishi nakatuentakant ne assit etakuak tshekuan ume nashuk keuaitakanua:

- Tshika uauinakanut ntshent aueshishet shash tshekat miessiakannit
- Aueshishet & mak nte eitaht tsheishi takueimatent
- Eshinakuak anutshish nte minashkuat mak ne nipi etakamit
- Nutam nte eshpitashkamikat eishi matentakuak kassinu tshekuan

### **Auentshent etapishtaht nenu assinu**

Ne kamishinateikant assi atshitashun etishtet 19 innut mak akaneshaut nenu apashtashipant. Shash nete pet shash apashtashipant umenu assinu kie nenua aueshisha kie mamu eshpish apashtashipant umenu assinu. Kassinu eishinakushintshi nenua aueshisha kie nenu tshekuannu natautshjinni9t nta assit eiapishtauakue kie umenu assinu eukuannu umenu eshinikatakau ntassinan ekute ute uetshiat. Shash nishustshemitashumitunnu epunnishapant eshpish apashtaht innut umenu assinu Labrador keishinikatummua akaneshau. Kie ekute ute uet pikassiuakue ntshent innut nte nutshimit kie eukuannu nenu uet minashtat umenu assinu.

Ume tsheishinakuatuentakant ne assi mishinaikan nishtuapatakanu kie ishpentakannu nenua innut mak akaneshaut kaitapishtakuent shashish nenu assinu. Kassinu nenu kaishpish apashtauakue innut mak akaneshaut nenu assinu tshika tshissinuashtakannu nta assiu mishinaikant. Kassinu shashish kaiapashtauakue innut nenu assinu miam nte kaitshinanukue nantam tshika tshissinuashtakannu nta kie shash nta tshi tshissinuashtakanu nta assiu mishinaikant kie apu tshika tapuetakant nta tshetshi tshimikaissanut nta pessish.

Nenu shashish kaitapishtauakue innut nenu assinu nishtuapatakanu kie uaitakanu uta ne tshekuan tshenakuatupatakant:

- Shashish nenu innut eitapishtauakue tshekuannu
- ne assi kaispish minunakuak
- entuiunanut mak eshtakantshi tishunakana

- nitamuk mishtukut eshpish tshimikauakanit
- eshuniatshanut nte ut mishtukut
- mishtukut eshpish tshimikauakanit tshetshi kutuatshanuit

### **Eshuniatshanut nta ut assit**

Ntshent etushkatakau nenu tsheishi takueimatent nenu minashkuanu nishtuapatamut nenu etapishtantshi innu nenu assinu nte uet puikassitishuntshi miam ne

Kantuiunanut, tishunakana kaishtakantshi, kie mina emaushunanut kie kutakanu tshekuannu nta assit uetinakau innut tshetshi ut pikassitishut eukuan ume tshitshue eshinniunanukue nete pet shashish ute Labrador tshetshi ut pikassitishut innut mak akaneshaut eukuan ume eshinniunanukue uta assit. Eku ume anutshish eshi tshitapatakanu nene shashish kaishinniuit innut miam ne minashkuau kau nitautshin tshekuan nta assit. Eku ne nta assit tshetshi ut shuniatshanut eukuan ne uiauitakant shuniau nta uetshipant mishtukut miam, etrutakant tshekuan nta ut mishtukut. Kie ne shuniau nta tutakanu tshemikauakantau mishtukut tshetshi tassiputatshanut pepishtukut tshetshi ataatshanit, kie kutak tshekuan nta assit uet shuniatshanut eukuan ne peik kaksuseutshuapa tutakanu tshetshi shuniau tutakant, kie mak muk kapipanmuteiakanit akeneshaut muk tshetshi uauapatakau nte nutshimit assinu, mak kutaka tshekuanna.

Ne tshitshue atusseun meshat ute eukuan ne minashkuta atusseun mak ntshent akaneshaut kemishekautshi muk tshetshi uauapatakau assinu. Ne mishtukut katshimikauakanit mak ne katassipunakanit mishtukut eukuan ne atusseun anutshish 60 tatunnu eshut kaitusseht nenu.

Eshk muk nasht apu taht nte innut tshetshi atusseht nte minashkuat atusseunnu kie 2% nishut muk ishkieut etussht nte minashkuat atusseunnu. Kassinu ntshent eshpish tshimikauakanit mishtukut 85% tshekat en kassinu tshitaunakanut nete katak etaatshanit, muk eshk eiat mishte minunakun kie tshipa ishpannu mitshet tshetshi tutakantshi atusseunna nte katassipunakanit mishtukut. Ute Labrador nutshimit neunnu emikana ashu kutuass (46) kaksuseutshuapa, kantuiunanut mak kapapamaunakanit katak akaneshaut, eukuan ne atusseun etitu uet tshishipant enitautshik. Ne minashkuau etishtet 19 sheshekatukut eukuan tshitshue matshetit eshinakushit mishtukut miam ishpitentakushut 91% tshekat kassinu sheshekatukut. Minuat ne innasht mishtuk eukuan kutak eshinakushit mishtuk matshetit miam ishpitentakushut 5% eku patush ntshent kutakat eshinakushit mishtukut etshimakannit. Ne kassinu eshpish minashkuat etishtet 19A minashkuau peikumitashumitunnu epunnemikanutshi ashu neunnu (140 years) ne eshpish minashkuat, kie kutunnu (10 - 15 ) mak kutunnu ashu pitetat tatumishiteshut eshpish tshinuashkushit mishtukut, apum kassinu etashit mishtukut minushit pisse muk (15 - 75%) apu kassinu ishinakushit tshetshi tassipunakanit.

Emishte tshimikauakannit mishtukut ute ut minashkuau 19 katshissinuashtakant enuet kau nitautshut kie apishish shuniatshenanu. Katshi tshipeikant nene Labrador Linerboard kamishte tshimikaissanut ume ishpish minakanipant tshetshi tshimikauat mishtukua

peikuppunna (300,000m<sup>3</sup>/year) nene pupunnu etishtent 1977, eku nene pupun etishtet 1992 muk apiss tshimikauakanipant mishtukut tshetshi ataatshant nete katak. Eku minuat ishkupannipan eshpish tshimikauakanit mishtukut nenepupun etishtet 1993 nta ut 5000 m<sup>3</sup> nuash mak neta 40,000 m<sup>3</sup> eshpish tshimikauakanipant mishtukut neme pupun etishtet 2000, kie ntshent auentshent tshemikeissaht muk natikam akaneshaut tshimikaissepant tshetshi ataatshet nenua mishtukua ute mak nete akamissisit katassiputatshanunit.

Eku nta unuitamit ne eshpish takueimatet ne minashkuau, assi mamu aueshishet tsheishi takueimatet ne minashkau nte tshetshimikaissanut mak nenua kakusseutshiuapa tshetikuaki tshetshi ut shuniatshanut nta ut assit. Ne minashkuau eshitipeikant tshetshi ut tshimikauakanit mushtukut pitetat tatuiet ne tshika ishinakutakanu tsheishi takueimatet ne assit tshekuan etakuak;  
ne peik auen uetshit tshetshi ut apashtat nenua mishtukua, tshetshi mishte tshimikaissanut, tshetshi takueimatet ne minashkuau, mak nenua kutaka tshekuanna tshetshi tutakantshi nte assit tshetshi ut shuniatshanut.

Ne eshpish tshimikauakannit peikuppunna mishtukut, kie mak ne eshpish tapuetakant tshetshi ishpish tshimikauakannit mishtukut (AAC) eukuan ne menuat eshitipeitshannut. Ne minashkuat etishtet (AAC ) nishuiet nte tipeikanu nete akamit itetshe Mishta shipu mak ute itetshekam Mishta shipu. Ume tshika ishinikateu “Southside” mak Northside” mishta shipu. Eku anutshish keauaitakanua ne tsheishi takueimatet ne katshimikauakanit mishtukut ute itetshekam mishta shipu tshika tshimikaissanut. Eku nete akamit itetshe patush ne ashukan tshi tshutakantshi eku patush tshetshi tapuetakant tshetshi tshimikaissanut nte akamit itetshe mishta shipit. Tapuetakantshi tshetshi tshimikaissanut (AAC) nete akamit itetshe mishta shipit ne pitima tshika ashuapatakanu pisse tshekuan tshetshi takuak:

1. Tshikaui pitima tapuetakanu neme Utapan meshkanau kaui tutakant neta Nutapineuant tsheut tshitamutakant nuash mak ute a[ppani-Kushpe tshepet itamutakant kie patush tshi tshishtakantshi ne kanantutshissentakant tshekuan assit etakuak.
2. Patush tshi tshishtakantshi ne ashukan tshetshi tshkamishamut neta Mishta shipit
3. Tshetshi tutakantshi utapan meskananua nete itetshent akamit mishtashipit tshetshi ut autshitapanuit ntshent mishtukut.
4. Tshetshi tshishkutamuakannit auentshent tshimikaisseht nete akamit tapuetakantshi tshetshi tshimikauakanit mishtukut.

Ume ititshitakanu tsheishpish tshimikauakanit mishtukut 28.6% ne eshpish tat mishtukut nte ut ishpimit eakunikant ne minashkuat. Eku mamu tsheishpish tshimikauakannit mishtukut ute itetshekam mishta shipu 20% tshika ishpish nashikupinut ne etatishit etenimakannit mishtukut ntshent tsheka tshi apatshiakannit miam ntshent

eiapishashkushishit, kie uassitekuit. Ume eshpish tipeitshanut tshetshi ishpish tshimikauakannit mishtukut ute itetshekam mishta shipit (56, 700 m<sup>3</sup>/peikupunna eku nete akamit itetshe mishta shipit 141, 900 m<sup>3</sup>/ peikupunna tsheishpish tshimiakuakannit mishtukut. Eku mamu tsheishpish tshimikauakant mishtuk nta 19A , 198,600m<sup>3</sup>/ (2000 pupun etishtet kantutshissenimakannit mishtukut etashit, eukun ne kue tapuetakant tshetshi ishpish tshimikauakannit mishtukut 400,000 m<sup>3</sup>/. Ume ne uet nashikupantakant eshpish 50% ne AAC kaishinikatet , ne uet tutakanipan katshi uauitamuakanit ntshent katshimiakisseshit eukuannu umenu ishintuentamupant tshetshi ishpish minuanunit mishtukua tshetshi tshimikauakannitshi. Katshi uauitamuakanit ntshent katshimikaisseshit kue mishkutinkanipan pisse tshekuan ne tsheishi takueimatet minashkuau.

Uauitakanu ne tshetshi ut shuniatshanut nta ut minashkuat tshekuan etakuak ume nashuk kuauitakanui nenua tshekuanna tsheut tshi shuniatshanut nta minashkuat:

- meshtuk eitapitshiakant mak eshpish shuniat
- Mishtukut etshimikauakanit & mak minekash tshetshi pempant ne atusseun
- tshimikauakanut katassipunakanit mishtukut
- utapan meshkanaua itamutakanua tshetshi tshimikaissanut
- Eishi nakatuentakant nte minashkuat
- Kau tshetshi nitautshiakanit mishtukussit & kau tshetshi ishinakuak
- Kappepamaunakanit akaneshaut mak kametuanut
- Nete nikan aishkat tsheishi nakuaki atusseunna

### **Kakuapitshenikanshu kau ne kauauitakant**

- Ume mishinaikan eishi uauitakant nishukamupant umenu ntshent Innu Nation mak ne Stsheutshimau ukakusseshima Minashkuat & Pisinauna Kanakatuentakau.
- Ume mishinaikan etutakant nashatakanu neme tsheishi nakatuentakant nte minashkuat, kie tante tshetshi ut shuniatshanut nte minashkuat eia mak tshetshi ut minashtakant ne minashkuau.
- Ume mishinaikan uet tshi tuitakant nantam pet uauitamuakanipant katshimikeisseshit mak ntshent auentshent etat nte utenat ie utinikannipan nenu eissishuet.
- Ume mishinaikan uauitakanu nta tsheishi nakatuentakant ne assi kie nishtuiet ne tshika ishinakuan tsheishi nakatuentakant assi, tshika nakatuentakanu nte eiatpashtat assinu innut tshetshi eka tshimikaissanunit nte eiapashtat nenu assinu innut. Ume tsheishi nakatuentakant ne assi nast tetaut 50% ishpitentakuan eshpish nakatuentakant ne assi.
- Ne peikupunna eshpish tapuetakant tshetshi ishpish tshimikauakanit mishtukut (AAC), ume tsheishpish tshimikauakannit mishtukut 198,600m<sup>3</sup>. Tetaut ne eshpish nashukupentakanu neme ueshkat kaishpish itastakant nta mishinakanit.

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## **CHAPTER 1: PLAN INTRODUCTION**

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## **Introduction**

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When Forest Management Districts were declared in 1974, it was required through legislation that each District would prepare its own management plans. Initially, management planning was completed by each District Manager in consultation with other resource agencies. Throughout the 1980's this concept was expanded to include input into plans through public meetings. In the 1990's, planning expanded into the use of questionnaires and a series of public meetings throughout the District to gauge public opinion. By 1994, the Newfoundland Forest Service began to move toward management on an ecosystem basis. In 1997, Forest Ecosystem Management District 19 entered into Forest Ecosystem Planning.

The two key planning documents in the Districts are this document, (the Forest Ecosystem Strategy Document) and the Five-Year Operating Plan. The Forest Ecosystem Strategy Document deals with the broad concepts or overall thrust of management. The Five Year Operating Plan shows specific areas for operations and other detail. An Annual Work Schedule and Past Report are also prepared as part of the planning process.

On January 30, 2001, the province of Newfoundland & Labrador and the Innu Nation signed a historic agreement. The Province of Newfoundland and Labrador recognized the significance of the unsettled Innu Nation land claim in this District, and how decisions made under this plan could affect those interests. Accordingly, the *Forest Process Agreement* was designed to enable and facilitate effective communication, information sharing, and the resolution of issues between the Province and the Innu Nation concerning interim planning and management, the development of sustainable forestry practices, and ecosystem-based management plans.

Under the terms of the Forest Process Agreement, several committees were established, with equal representation from both parties, to oversee current forestry operations and to develop both long-term operational and strategic forest management plans for these areas. This Plan is an important result of that process.

This Plan also reflects the dedication and contributions of the general public who participated in the meetings, workshops and field trips that were an essential part of the planning process.

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## **Vision Statement, Goals, & Objectives**

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The Planning Team adopted the following vision statement:

*To create an ecosystem-based forest management plan for District 19 that protects ecological and cultural integrity, productive capacity, resiliency and biodiversity while advancing economic opportunities for the sustainable development of forest-based industries.*

This vision will be achieved through an adaptive management strategy that works toward four goals. The Plan also identifies specific objectives and associated actions, which are described in detail throughout this Plan and summarized in Table 1.1

### ***Plan Goals***

- Follow an Ecosystem-Based Planning approach that requires careful and systematic consideration of ecological, cultural and economic values;
  - Make use of all applicable ecological and cultural information and databases, recognize and identify gaps in this information, and make provisions throughout the life of the plan to fill those gaps;
  - Ensure that ecological and cultural values are adequately protected within a District Protected Area Network, which incorporates ecologically and culturally sensitive areas and representative ecotypes, and through environmentally appropriate forest management activities;
  - Give full consideration to the values of the local citizens of the District who demonstrate a sense of stewardship and responsibility for the management and maintenance of forest ecosystems and ensure that they are given adequate opportunity participate in both in the development and implementation of the plan.
-

**Table 1: Plan Objectives and Page Reference.**

<b>Objective</b>	<b>Statement</b>	<b>Page</b>
<b>1. Identification Of Species At Risk</b>	<i>To recognize the critical importance of identifying species at risk within the District and ensuring their habitats are protected from disturbance.</i>	30
<b>2. Wildlife &amp; Habitat Management</b>	<i>Ensure all species of wildlife and their associated habitats are maintained throughout the District; to coordinate with other Aboriginal and Government wildlife management initiatives.</i>	32
<b>3. Ecosystem Health &amp; Water Quality</b>	<i>Ensure the health and integrity of the District's ecosystems and water quality is maintained during management activities.</i>	33
<b>4. Global Implications</b>	<i>Recognize and respect the global importance of the District's intact boreal forest; to assist in the implementation of Canada's obligations under international agreements (biodiversity, climate change, etc.) .</i>	35
<b>5. Cultural Heritage Values</b>	<i>To identify, respect and protect the diverse range of Aboriginal and non-aboriginal cultural heritage values across the District.</i>	42
<b>6. Landscape Aesthetics</b>	<i>To recognize the cultural and economic importance of landscape aesthetics in the District and strive to protect, maintain, or enhance landscape aesthetics where possible.</i>	44
<b>7. Hunting and Trapping</b>	<i>To identify, respect, and protect both Aboriginal and non-aboriginal hunting and trapping activities within the District.</i>	46
<b>8. Non-Timber Forest Products (NTFP)</b>	<i>To recognize and identify the economic potential and cultural importance of NTFP in the District. Ensure appropriate areas are reserved for NTFP harvesting activities.</i>	47
<b>9. Socio-Economic Factors</b>	<i>To identify critical socio-economic factors in the District and work towards enhancing local employment from forest-based industries.</i>	48
<b>10. Domestic Forest Products</b>	<i>To ensure that the sustainability of resources that provide for domestic forest products are not to be compromised under any circumstances. Acknowledge the cultural significance of domestic forest products and related activities to both Aboriginal and non-aboriginal people.</i>	50
<b>11. Forest Product Processing &amp; Value Added</b>	<i>To acknowledge the importance of developing a viable forest product processing and value added industry within the District and highlight options that will support, promote, and facilitate forest product processing and value added industries within the District.</i>	62
<b>12. Timber Harvesting &amp; Sustainability</b>	<i>Ensure that all timber harvesting activities are ecologically responsible and sustainable over the rotation period.</i>	64
<b>13. Timber Resource Utilization</b>	<i>To minimize merchantable wood wastage during timber harvesting operations, while providing for adequate retention of forest structure for natural habitat and ecosystem function requirements.</i>	66
<b>14. Forest Access Roads</b>	<i>To develop a forest access road strategy for the district that balances the short and long-term access needs with other ecological and cultural objectives.</i>	67
<b>15. Forest Resource Protection</b>	<i>To develop mechanisms for forest resource protection against disturbances such as fire and insect outbreaks which considers the risks to human life, property, commercial timber, and ecological health.</i>	69
<b>16. Silviculture &amp; Restoration</b>	<i>To develop a silviculture &amp; restoration strategy that fits the unique ecological characteristics of the District and that strives to re-establish pre-disturbance species distributions to disturbed or degraded sites.</i>	71
<b>17. Tourism and Recreation</b>	<i>To acknowledge the economic and cultural importance of tourism and recreation in the District. All forest-based activities will consider mutual impacts and aim to coordinate economic and cultural benefits.</i>	72
<b>18. Future Economic Developments</b>	<i>To recognize the importance of potential economic developments in the region and consider how all developments will interact with the goals, objectives, and principles of this plan.</i>	74

## **Ecosystem-Based Plan Framework<sup>1</sup>**

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Ecosystem-Based Planning (EBP) is a relatively new approach to forest management in Canada. EBP is seen by many different sectors, including First Nations, Government, industry, and environmental non-governmental organizations as a balanced, “go forward” approach to forest management. The EBP framework has been endorsed internationally by the Parties to the *Convention for the Protection of Biodiversity*.

An EBP approach requires a careful representation of ecological, cultural, and economic values. With respect to forest management, this balance provides adequate landbases for sustainable human uses while ensuring that ecological processes and values are protected. It also helps create a balance between timber and non-timber values.

An EBP approach to forest management is founded upon protecting, maintaining, or where necessary restoring, fully functioning ecosystems at different spatial scales<sup>2</sup> over long timeframes. Disturbance and change are accepted as natural and important ecological processes, but disturbance and change need to occur within the range of natural disturbance characteristics.

An EBP approach recognizes an important hierarchy in priority decision-making that is based on the acknowledgement that the maintenance of ecosystem health is the basis for sustaining cultures, which in turn is the basis for sustaining economies. In other words, if planning protects ecosystem functioning, then planning will ensure that human cultures are protected; and with healthy human cultures there will be healthy economies. Therefore, the first priority of an EBP approach is to protect the ecological functioning of the land and water of District 19, because these are the basis for human cultures and economies.

An EBP approach relies upon the following priority of decision-making:

**First Priority:** Ecological Responsibility – All activities will protect, maintain, and where necessary, restore fully functioning ecosystems at all levels of planning over long timeframes. An adequate protected landbase will be provided in order to sustain biological richness and services.

**Second Priority:** Cultural Responsibility – All activities will respect and protect Aboriginal and non-aboriginal cultural values. An adequate protected landbase will be provided to meet cultural needs.

**Third Priority:** Economic Responsibility – All activities will strive for economically sound practices and products. Local communities and organizations will assist in decision-making and provide key direction in realizing economic opportunities.

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<sup>1</sup> Adapted from H. Hammond 2001.

<sup>2</sup> The three distinct scales of planning utilized in this plan are the Landscape (from satellite images), Watershed (from air photos) and Stand (from field data).

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The EBP approach of “priority decision-making” ensures that ecological and cultural values are considered first, forming a protected landbase framework. Outside of the protected landbase, areas are identified for sustainable economic development and management decisions.

This Plan incorporates an EBP approach. The Plan is structured into three chapters Ecological, Cultural, and Economic Landscapes. As expressed in the Management Visions and Goals, this plan will strive to represent all values, and undertake a priority decision-making approach that is in line with the definition and principles of EBP outlined below.

### **Ecosystem-Based Planning Guiding Principles**

Although there has been significant debate over the objectives and methods of EBP, a set of common themes and guiding principles were accepted within this Plan. In Grumbine’s (1994) “*What is Ecosystem Management?*” the author reviewed more than 30 articles pertaining to EBP and identified 10 common themes. (Table 1.2)

**Table 1.2. EBP Common Themes and Guiding Principles.**

<i>Common Theme</i>	<i>FMD 19A Ecosystem-Based Planning Guiding Principles</i>
Ecological Integrity	1. Respect the ecological limits of various ecosystems to human disturbance. Natural biological diversity and natural disturbance regimes will be protected and maintained through historic range and variability in order to maintain natural forest functioning.
Hierarchical Context	2. Ensure that all plans and activities protect, maintain and where necessary restore forest functioning at the Landscape, Watershed, and Stand level scales.
Ecological Boundaries	3. Focus on the ecological features to retain and utilize ecological boundaries at all levels of planning.
Values	4. Aboriginal and non-aboriginal cultural values will be respected and protected.
Humans Embedded in Nature	5. Plan and carry out diverse, balanced activities to encourage ecological, social, and economic well-being and stability. The maintenance of ecosystem health is recognized as the basis for sustaining cultures and economies.
Adaptive Management	6. Apply the precautionary principle to all plans and activities utilizing monitoring, assessment, and adaptive management.
Data Collection	7. Research on ecosystem structure and function, sensitive habitats, disturbance regime dynamics, and impacts of timber harvesting will be carried out.
Interagency Cooperation	8. Ensure effective communication and cooperation channels are created between management organizations. Ensure all management organizations accept and support the listed guiding principles.
Organizational Change	9. Management organizations will strive to adapt past practices and operating structures in order to facilitate an EBP approach and build trust between other management organizations.
Monitoring	10. Review and evaluate the success of all forest activities in meeting the previous nine principles.



## **Public Participation Process**

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Innu Nation and the DFRA recognize the value of ongoing stakeholder and public involvement in the planning process. There is an important role for groups and individuals to play in identifying issues, contributing information, and evaluating interim results of the analyses that will be developed in the planning process. The Planning Team recognized that both stakeholder participants and Innu communities were required to be involved in the development of this Strategy Plan. Accordingly, the public participation process for District 19 was composed of two components: Innu Community Consultations and General Public Sessions.

### **Innu Community Consultations**

The Innu Community consultations began in October 2001 and were held primarily in Innu Aimun by the Innu Nation Forest Guardians and planning staff. These consultations took the form of presentations, field trips, and workshops within the communities of Sheshatshiu and Utshimassits. These consultations served to:

- Describe the Innu Nation programs developed under the Forest Process Agreement;
- Provide an opportunity to ask questions and identify concerns or issues Innu communities may have with respect to forest management planning and forest-based activities;
- Explain and receive feedback on the work completed by the Forest Guardians, Technician and Planner;
- Highlight issues, concerns and potential solutions of past, present and future logging operations;
- Consult communities on ecological and cultural areas for protection;
- Translate presentations and progress of the General Public Sessions.
- Review Draft Strategy Plan Results.

Ten community consultations have been completed to date. A summary of the Innu Community Consultations is provided in Appendix A.

### **General Public Sessions**

The General Public Sessions began in November 2001 and were held in the communities of Happy-Valley Goose Bay and North West River on a bi-weekly basis. These sessions were open to the public and were advertised via local newspapers, TV classifieds and radio. Once the agenda and schedule were established for these sessions, a website was made available to post information such as plan drafts, session minutes, and other related materials. These sessions were held in English with some limited Innu Aimun translation.

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The Sessions topic agenda was structured from a “workshop approach” facilitation technique, which allowed participants go through a series of brainstorming exercises. The result of these brainstorming exercises was a condensed list of topics which could be covered during future public sessions. This technique allows for the process to be driven by what the participants want to discuss, not on an agenda predetermined by managers and planners. The identified topics were organized in three broad categories: Ecological, Cultural, and Economic, thereby helping to form the structure of this Strategy Plan.

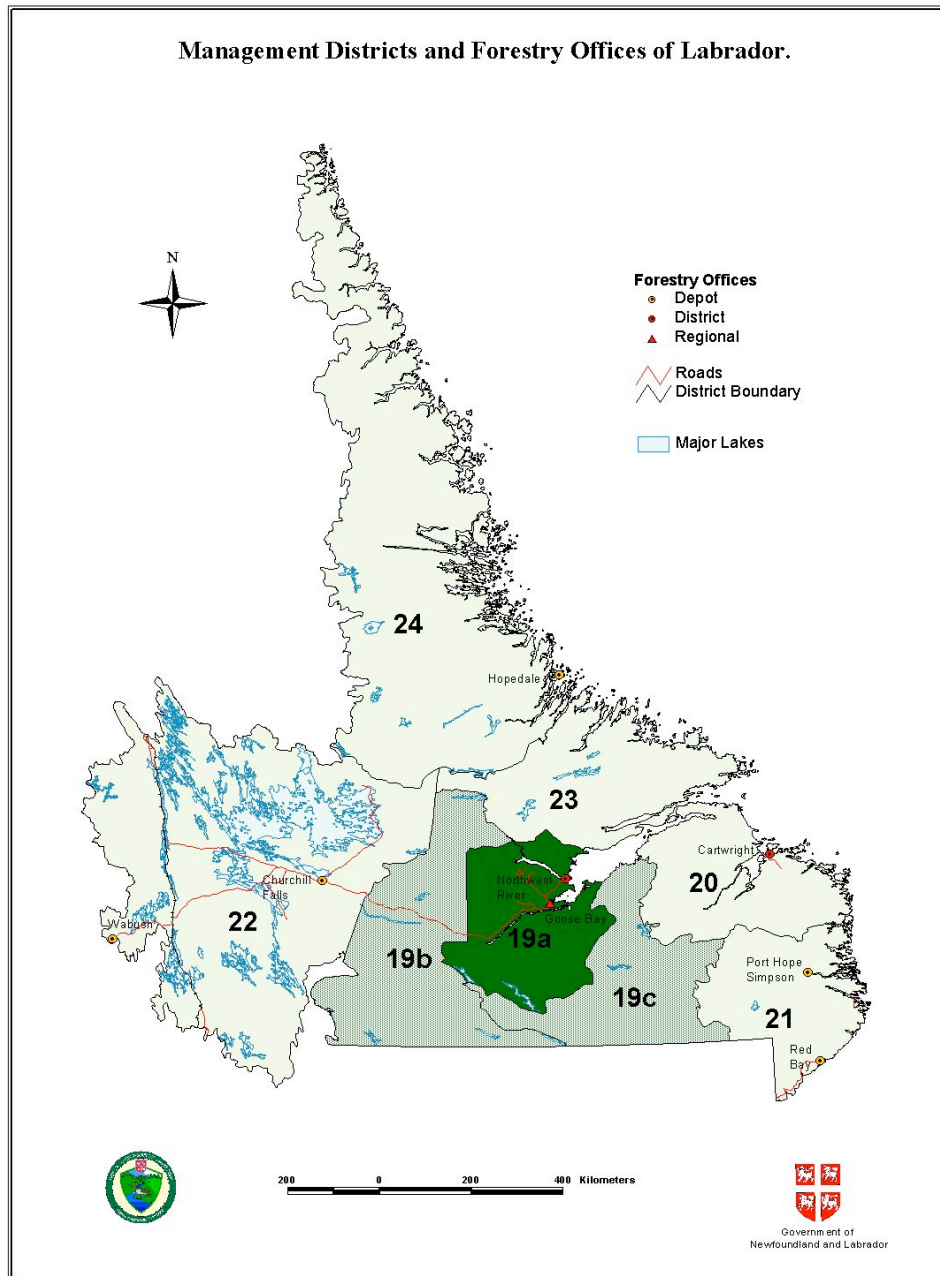
Seventeen Public sessions have been held to date. Minutes from these meetings can be accessed at <http://www.gov.nf.ca/forestry/management/district19a/> A summary of the General Public Sessions and reviews of earlier drafts of this Plan are provided in Appendix A.

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## **CHAPTER 2: THE ECOLOGICAL LANDSCAPE**



## Geographic Setting of Forest Management District 19A



**Figure 1: Forest Management District 19**

Although currently described by the *Forest Management Districts Proclamation* under the *Forestry Act* (1996), Forest Management Districts were initially declared in this Province in 1974. Currently the province is divided into 24 Forest Management Districts (FMD's), with 6 of those being in Labrador.

Forest Management District 19 is 7.1 million hectares in size. The District generally bounded to the north by Seal Lake and Mulligan River, to the east by the Mealy Mountains and Eagle Plateau, to the south by the Quebec border, and to the west by the border of the upper Churchill River Plateau. Figure 1 and Map 1 highlight the size and extent of District 19 and describe the associated vegetation classes with the District.

District 19 has been further subdivided into Sub-Districts 19A, 19B and 19C for management planning purposes. The focus of this Strategy Plan will be on District 19A-*Goose Bay* (Figure 1).

Forest Management District (FMD) 19A is generally bounded to the north by Mulligan and Red Wine Rivers, to the east by the height of land that separates the Kenamu River watershed from those flowing into the Labrador Sea, to the south by the height of land that separates the Gulf Watershed from those flowing into the Labrador Sea, and to the west by a line at longitude 61°45'.

FMD 19A covers an area of approximately 2,270,000 hectares. Four ecoregions are represented in the District as well as 27 primary watersheds including that of the Churchill River, which flows more or less diagonally through the middle of the District. Historically, the land and adjacent marine areas of the District have supplied various resources and benefits to Aboriginal, settled, and transient residents. The District is currently considered a Crown Management District as most land is classified as Crown land, although portions may be allocated to various jurisdictions. It is important to note that the entire area of FMD 19 is currently subject to land claims negotiations with the Innu Nation, which have not yet been resolved.

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## **Ecological Classification Systems and Relevant Inventories**

In order to facilitate more effective decision making on potential land use activities, resource managers utilize ecological land classification systems. Not unlike classification systems used for other purposes, the intent of ecological land classification is to identify areas based on similar characteristics (vegetation type, climatic gradients, etc).

Ecological land classification assists managers to identify ecosystem patterns, assess potential resources, conduct environmental analyses, forecast future conditions, and manage and monitor resources. The ecological classification systems and relevant inventories utilized in this plan are listed below.

### **Canadian Ecological Land Classification System**

The Canadian Ecological Land Classification System provides for seven levels of organization (scales) based on ecological principles (Table 2.1). The Canada Land Inventory and the Forest Regions of Canada (Rowe, 1972) are both examples of large scale ecological land classification systems that are widely used for Canada.

**Table 2.1. The Canadian Ecological Land Classification System**

<b>Level</b>	<b>Description</b>	<b>Common Map Scale</b>
ECOZONE	areas of large land masses representing very generalized ecological units, based on the consideration that the earth's surface is interactive and continuously adjusting to the mix of biotic and abiotic factors that may be present at any given time (e.g. Boreal Shield)	1:50,000,000
ECOPROVINCE	areas of the earth's surface characterized by major structural or surface forms, faunal realms, vegetation, hydrology, soil and climatic zones (e.g. Island of Newfoundland)	1:10,000,000 1:5,000,000
ECOREGION	a part of the ecoprovince characterized by distinctive ecological responses to climate as expressed by vegetation, soil, water, and fauna (e.g. High Subarctic Tundra Ecoregion)	1:3,000,000 1:1,000,000
ECODISTRICT	a part of the ecoregion characterized by a distinctive pattern of relief, geology, geomorphology, vegetation, water, and fauna	1:500,000 1:250,000
ECOSECTION	a part of the ecodistrict throughout which there is a recurring pattern of terrain, soil, vegetation, water bodies, and fauna	1:125,000 1:50,000
ECOSITE	a part of the ecosection having a relatively uniform parent material, soil, hydrology, and chronosequence of vegetation	1:50,000 1:10,000
ECOELEMENT	a part of the ecosite displaying uniform soil, topographical, vegetative, and hydrological characteristics	1:10,000 1:2,500

Ecoregions have been mapped for Newfoundland and Labrador based on distinctive regional climates as expressed primarily by vegetation. Figure 2 shows the extent of these Ecoregions in Labrador as well as the Forest Management District boundaries. There are four Ecoregions represented in District 19A:

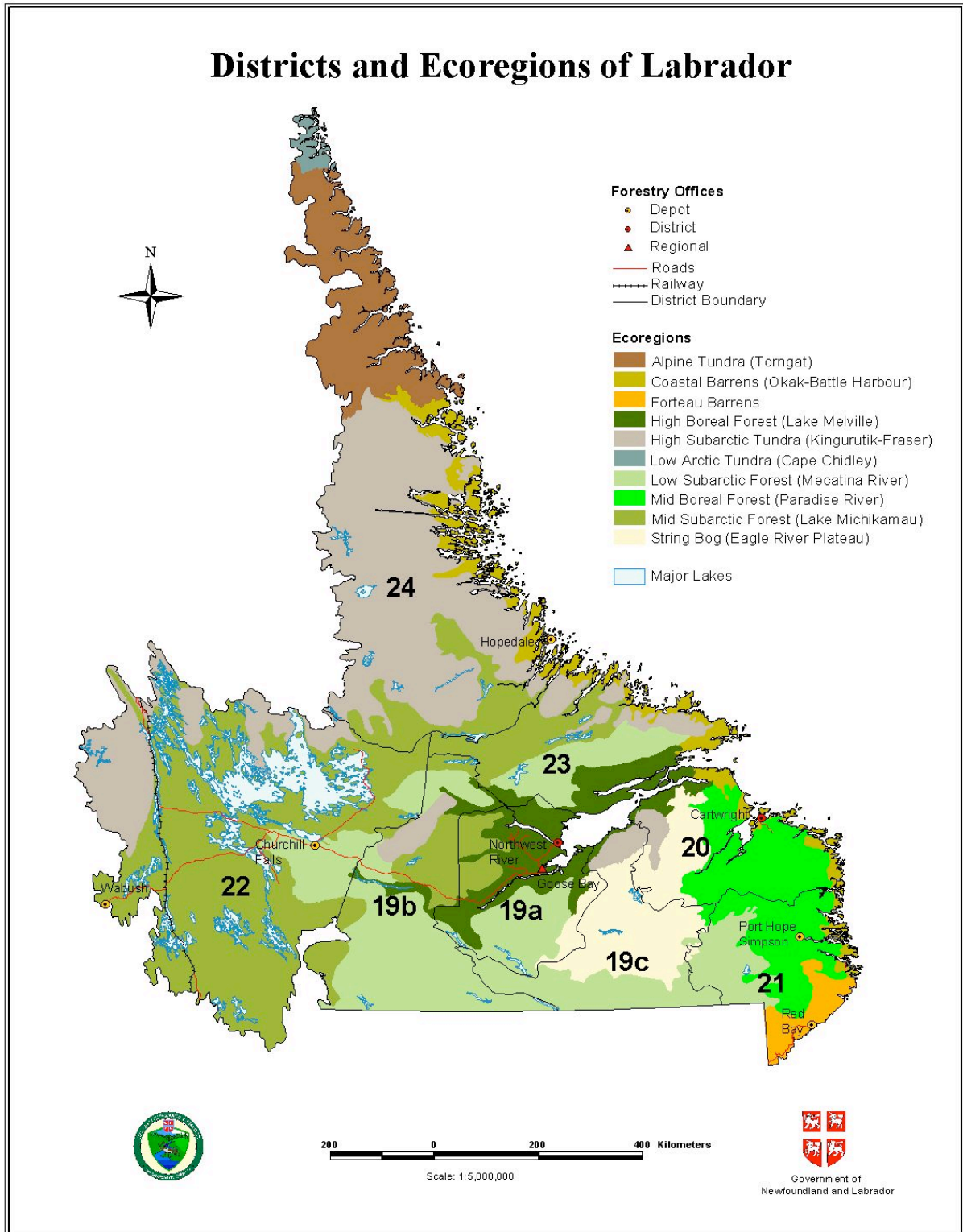


Figure 2: Ecoregions of Labrador

### Mid Subarctic Forest – Michikamau

This ecoregion encompasses the upland plateaus of central and western Labrador. Eskers and drumlin ridges are characteristic. This region has a very continental, subarctic climate with short, cool summers and long, severe, cold winters. The growing season is 100 to 120 days. Black spruce is the dominant trees species, except in the most northern areas, where white spruce dominates. Trembling aspen reaches its northern limit here and the only native population of jack pine occurs in this ecoregion. Open lichen woodlands are characteristic of this ecoregion. Extensive ribbed fen-string bog complexes, bordered by black spruce-sphagnum forest stands, dominate areas with little relief.

### High Boreal Forest – Lake Melville

This ecoregion encompasses the Churchill River Valley and the coastal plain surrounding Lake Melville. River terraces are composed of coarse-textured, alluvial soils, and uplands have shallow, well-drained soils. This region has the most favourable climate in Labrador. Summers are cool and winters cold. The growing season is 120 to 140 days. The forests are closed-canopied and highly productive. Richer slopes are dominated by balsam fir, white birch, and trembling aspen. Black spruce is present in most stands, but only dominates in upland areas and lichen woodlands, which occupy river terraces. Ribbed fens occur in upland depressions; plateau bogs occur on coastal plains.

### Low Subarctic Forest – Mecatina River

The main portion of this ecoregion is located in southern Labrador, with two separate areas to the north of Lake Melville and the Red Wine Mountains. Broad river valleys and rolling hills covered by shallow till, drumlins, and eskers are characteristic of the region. Summers are cool and winters are long. The growing season is 120 to 140 days. Somewhat open black spruce forests are the dominant vegetation, with crown densities greater than 75% on better sites. String bog-ribbed fen complexes cover extensive areas throughout the region.

### String Bog – Eagle River Plateau

The Eagle River Plateau comprises most of this ecoregion. This upland plateau is composed of extensive string bogs with numerous open pools surrounded by fen vegetation. Bog hummocks are dominated by scrub spruce, Labrador tea, and feathermoss. The peatland expanses are occasionally interrupted by only a few conspicuous eskers, which support open, lichen woodland. Alder thickets are common along river banks.

More detail on climate, flora, and fauna is available in Meades (1990).

At the next scale down, Ecodistricts have also been mapped for Labrador (Lopoukhine et.al, 1979) based on patterns of relief, geology, geomorphology, and associated regional

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vegetation. Map 3: *District 19A Ecodistricts* depicts the location and extent of these Ecodistricts within District 19A.

### **Labrador Multi-Resource Inventory (Drieman Curtis Inc.)**

This inventory highlights vegetation cover types for District 19 based on satellite imagery. The primary data source for the compilation of this database was from 1:1,000,000 scale Landsat Thematic Mapper colour composite transparencies. A total of 20 images were used to map the forested region of Labrador (North to 56<sup>0</sup>). Vegetation cover was delineated into several forest, disturbance, and wetland types. This information was digitized and is available for use in the GIS. Table 2.2, Map 1 and 2 (Vegetation Cover Types For District 19 and 19A) highlights the results of this inventory.

**Table 2.2. Vegetation Cover Types of District 19A.**

<b>Vegetation Cover Type</b>	<b>Percentage Of Type</b>
Heavy Spruce/Fir Forest	12.8%
Moderate Spruce/Fir Forest	29.3%
Sparse Spruce/Sphagnum Forests	7.8%
Sparse Spruce/Lichen Woodlands	9.8%
Regenerating Forests	1.0%
Mixed Hardwood Forests	1.6%
Soil/Rock Barrens	2.3%
Recent Burns	3.3%
Lichen Scrub/Bog	9.2%
Bog/Wetlands	8.7%
Water Bodies	11.6%
Unclassified	2.6%
<b>Total</b>	<b>100.0%</b>

### **Biophysical Land Cover Types With Initial Forestry Potential Classification**

This classification, developed by Silva Ecosystem Consultants, presents an initial interpretation of land cover types in FMD 19A, with an emphasis on forestry potential. It represents an attempt to delineate substantive forestry-oriented cover types in a very complex and variable landscape. This classification provides an initial analysis of those areas that may be suitable for timber production and is an important interpretation in the process of identifying protected, isolated, and forest management areas. Table 2.3 and Map 4: *Biophysical Land Cover Types With Initial Forestry Potential* highlights the result of this inventory.

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**Table 2.3. Detailed descriptions of initial biophysical land cover types cross-referencing Drieman, Site Class, and topography.**

<b>Land Cover Type</b>	<b>Map Code</b>	<b>Dominant Drieman Vegetation Classifications</b>	<b>Dominant DFRA Site Class</b>	<b>Dominant Topography/Landform<sup>3</sup></b>
<i>Barren Uplands</i>	BAR	Bog, sparse spruce (sphagnum), sparse spruce (lichen), barren	None, Poor	Bedrock plateau
<i>Lichen woodland with very few trees</i>	L	Lichen scrub	None, Poor	River terraces
<i>Mixed scrub and bog with poor forest</i>	SCR	Lichen scrub, bog, sparse spruce (lichen), sparse spruce (sphagnum)	None, Poor	Variable, typically with little relief
<i>Wetlands</i>	WL	Bog	None	Level
<i>Wetlands with poor forest</i>	WL/P	Bog, sparse spruce (sphagnum), moderate spruce/fir	None, Poor	Level with localized low relief
<i>Wetlands with moderate forest</i>	WL/M	Bog, sparse spruce (sphagnum), moderate spruce/fir	None, Medium	Level with localized low relief
<i>Poor forest on all terrain types</i>	P	Moderate spruce/fir, sparse spruce (sphagnum), sparse spruce (lichen)	Poor, None, Medium	Variable
<i>Moderate forest on Eagle plateau</i>	M-PL	Moderate spruce/fir, bog, sparse spruce	Medium, Poor	Plateau
<i>Moderate forest on very rugged terrain</i>	M-R	Moderate spruce/fir, heavy spruce/fir, bog	Medium, Poor, Good	Rugged bedrock-controlled uplands
<i>Moderate forest on undulating terrain</i>	M-U	Moderate spruce/fir, heavy spruce/fir, bog	Medium, Poor, Good	Gentle, undulating uplands
<i>Moderate forest with large lakes</i>	M-LL	Moderate spruce/fir, heavy spruce/fir, bog	Medium, Poor, Good	Rolling uplands
<i>Other Moderate forest</i>	M	Moderate spruce/fir, heavy spruce/fir	Medium, Poor, Good	Variable, but generally uplands with significant relief
<i>Full Forest</i>	F	Heavy spruce/fir	Good, Medium	Moderate valley slopes

<sup>3</sup> General description only, based upon topographic maps and interpretation of 1:50 000 aerial photographs.

### **DFRA Forest Cover Type Inventory**

The Province began its first complete inventory program thirty-five years ago. It encompassed all of the Island portion of Newfoundland and all of Labrador as far north as the 56<sup>th</sup> parallel. The program evolved over the years from a timber inventory to a broader ecosystem inventory, but the underlying focus of providing sound statistical information to ensure sustainable management has remained.

The current Forest Inventory Program in the Province is funded through a cost sharing arrangement between the two pulp and paper companies and the Crown. The program is carried out on a continuous cycle with 10 % of the Province being inventoried in each year. The inventory process is as follows:

- Colour aerial photographs are flown by fixed wing aircraft each year in selected locations throughout the Province. Each photograph partially overlaps the coverage of the previous photo so that interpreters can view ground features in 3-dimensions (3-D). To facilitate this 3-D viewing, an interpreter uses a stereoscope which allows him/her to define the height, species, age, and productivity of the forests. The information derived from photographs is verified and supplemented by measuring a series of ground plots. These ground plots also supply information on wildlife habitat and abundance, timber volumes, soils, ground vegetation, etc.
- The next step in the inventory process is converting the boundaries and information created by the interpreter on the photographs into digital format. This is done by cartographic technicians who trace the boundaries with an electronic mouse and store the information in a Geographic Information System (GIS).
- After the information has been digitized, planners use it to produce theme maps of forest landscapes for planning and other information needs. The information is also used with computer models to determine the Annual Allowable Cuts (AACs) and impacts of fibre management practices on other resource values.

The most current cover-type inventory database for district 19A was digitized between 1990 and 1991 from aerial photos that were taken between 1987 and 1989. Map 4 and Map 5 highlight some of the applications from this inventory.

### **Other Classifications**

Several other classifications have also been developed at various times, scales, locations and for various purposes in Labrador (Hustich, 1949; Allington, 1958; Hare, 1959; Wilton, 1959, 1965; Bajzak, 1973; and Bajzak & Roberts, 1984).

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## **Ecological Character & Condition**

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Describing the character and condition of District 19 ecosystems is the first task in preparing an ecosystem-based forest management plan. The District ecosystems form the basis on which all other activities will depend, therefore understanding the past (*character*) and present (*condition*) of these ecosystems is vital in planning for the future.

The ecological character refers to how the natural ecosystem functioned prior to, or in the absence of human industrial activities. Ecological condition describes the impacts to ecosystem functioning, as a result of human industrial activities.

### ***Character***

As described in the various ecological classifications and inventories outlined in the section above, District 19 has a unique ecological character. Central to this character are the vast, diverse, and relatively undisturbed tracts of boreal forest.

Considering that most of Labrador is only sparsely forested or not forested at all, District 19A contains a majority of Labrador's closed canopy forest. This heavy to moderately stocked spruce-fir forest is mixed within a diverse mosaic of vegetation types such as open sphagnum forest, lichen woodlands, mixed hardwoods (birch, aspen, and poplar), black spruce bogs and a variety of other wetland types (see Map 2 and Table 2.2).

Although frozen most of the year, a significant portion of the landscape (11.6%) is composed of water. The District's numerous lakes, rivers, and streams play a critical role in shaping its ecological character. The result is a unique landscape that highlights an important relationship between climate, topography, hydrology, and vegetation.

Ecosystem diversity is the variety and pattern of animal and vegetation species, communities, and ecosystems across the District. Maintenance and protection of the variety and quality of ecosystems is therefore necessary for the preservation of all species. At the Ecoregion level, diversity is reflected in Damman's classification as determined by soil parent material, topography, and climate. The identified Ecoregions have a variety of different plant and animal communities as well as many differences in dominant ecological features.

There are 4 Ecoregions represented within District 19A. Within each ecoregion, the dominant ecological features and typical associated wildlife (Meades 1990) are:

### ***ECOREGION 5: MID-SUBARCTIC FOREST – MICHIKAMAU***

- Frequent fire contributes to dominance of open lichen woodlands
  - Sphagnum – black spruce forests common
-

- Northern limit of trembling aspen
- Ribbed fens cover extensive areas

### Land Mammals

#### *Barren Habitats:*

Caribou, Arctic Fox

#### *Forest and Shrub Habitats:*

Moose, Caribou, Lynx, Porcupine, Woodchuck, Marten, Mink, Fisher, Red Squirrel, Flying Squirrel, Snowshoe Hare, Heather Vole, Red-backed Vole, Pygmy Shrew, Masked Shrew, Star-nosed Mole, Little Brown Bat, Woodland Jumping Mouse

#### *Wetland Habitats:*

Meadow Vole, Meadow Jumping Mouse, Northern Bog Lemming

#### *Ubiquitous:*

Black Bear, Red Fox, Wolf, Least Weasel, Ermine

#### *Aquatic Habitats:*

Beaver, Muskrat, River Otter, Water Shrew

### Amphibians

American Toad, Wood Frog, Blue-spotted Salamander (2 sightings), Two-lined Salamander (1 sighting)

### Characteristic Birds

#### *Barren Habitats:*

Water Pipit

#### *Forest Habitats:*

Bald Eagle, Osprey, Red-tailed Hawk, Northern Flicker, Merlin, Great Horned Owl, Spruce Grouse, Blackpoll Warbler, Tree Swallow, Swainson's Thrush, Hermit Thrush, Dark-eyed Junco, Northern Hawk-Owl, Three-toed Woodpecker, Black-backed Woodpecker

#### *Shrubby or Thicket Habitats:*

Tree Sparrow, White-throated Sparrow

#### *Wetland Habitats – marshes, peatlands:*

Common Snipe, Short-eared Owl, Lincoln's Sparrow, Rusty Blackbird, Greater Yellowlegs

#### *Aquatic Habitats – freshwater:*

Canada Goose, Common Merganser, Spotter Sandpiper, Solitary Sandpiper, Green – Winged Teal, Belted Kingfisher, Least Sandpiper

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***ECOREGION 6: HIGH BOREAL FOREST – LAKE MELVILLE***

- Very productive closed-crown forest dominates
- Balsam fir, black spruce, white birch, and trembling aspen all common
- Lichen Woodlands dominated in lower river terraces
- Ribbed Fens occupy upland depressions

Land Mammals*Barren Habitats:*

Caribou, Bog Lemming, Arctic Fox

*Forest and Shrub Habitats:*

Moose, Caribou, Lynx, Porcupine, Woodchuck, Marten, Mink, Red Squirrel, Flying Squirrel, Snowshoe Hare, Heather Vole, Black-backed Vole, Pygmy Shrew, Masked Shrew, Star-nosed Mole, Little Brown Bat, Woodland Jumping Mouse

*Wetland Habitats:*

Meadow Vole, Meadow Jumping Mouse

*Ubiquitous:*

Black Bear, Red Fox, Wolf, Least Weasel, Ermine

*Aquatic Habitats:*

Beaver, Muskrat, River Otter, Water Shrew

Amphibians

American Toad, Wood Frog, Northern Leopard Frog, Mink Frog, Blue-spotted Salamander (2 sightings), Two-lined Salamander (1 sighting)

Characteristic Birds*Forest Habitats:*

Bald Eagle, Osprey, Red-tailed Hawk, Goshawk, Merlin, Great Horned Owl, Spruce Grouse, Ruffed Grouse, Boreal Flicker, Tree Swallow, Swainson's Thrush, Hermit Thrush, Dark-eyed Junco, Tennessee Warbler, Blackpoll Warbler, Pine Siskin, Yellow-bellied Sapsucker, Three-toed Woodpecker, Black-backed Woodpecker, Yellow-bellied Flycatcher

*Shrubby or Thicket Habitats:*

Yellow Warbler, Tree Sparrow, White-throated Sparrow

*Wetland Habitats – marshes, peatlands:*

Common Snipe

*Aquatic Habitats – freshwater:*

Canada Goose, Belted Kingfisher, Spotter Sandpiper, Solitary Sandpiper, Semipalmated Plover, Semipalmated Sandpiper

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*Aquatic Habitats – saltwater:*

Gulls, Common Tern, Harlequin Duck

***ECOREGION 8: LOW SUBARCTIC FOREST – MECATINA RIVER***

- Fairly open black spruce forest dominates
- Balsam fir only occurs on moist slopes
- Lichen woodland confined to sandy terraces and other dry sites
- Sphagnum – black spruce forests occupy wet, low areas
- Ribbed fens and string bogs cover extensive areas

Land Mammals*Barren Habitats:*

Caribou, Bog Lemming, Arctic Fox

*Forest and Shrub Habitats:*

Moose, Caribou, Lynx, Porcupine, Woodchuck, Marten, Mink, Red Squirrel, Flying Squirrel, Snowshoe Hare, Heather Vole, Red-backed Vole, Rock Vole, Pygmy Shrew, Masked Shrew, Star-nosed Mole, Woodland Jumping Mouse

*Wetland Habitats:*

Meadow Vole, Meadow Jumping Mouse

*Ubiquitous:*

Black Bear, Red Fox, Wolf, Least Weasel, Ermine

*Aquatic Habitats:*

Beaver, Muskrat, River Otter, Water Shrew

Amphibians: *None observed in this ecoregion*Characteristic Birds*Forest Habitats:*

Great Horned Owl, Northern Hawk-Owl, Spruce Grouse, Ruffed Grouse, Tree Swallow, Swainson's Thrush, Dark-eyed Junco, Boreal Owl, Northern Flicker

*Shrubby or Thicket Habitats:*

Alder Flycatcher, White-throated Sparrow

*Wetland Habitats – marshes, peatlands:*

Common Snipe, Lincoln's Sparrow, Greater Yellowlegs, Rusty Blackbird

*Aquatic Habitats – freshwater:*

Green Winged Teal, Belted Kingfisher, Spotter Sandpiper, Least Sandpiper

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***ECOREGION 9: STRING BOG – EAGLE RIVER PLATEAU***

- Extensive string bogs dominate
- Open pools are surrounded by fen lawn vegetation dominated by sedges (*Carex limosa* and *Carex oligosperma*) and peatmoss (*Sphagnum lindbergii*)
- strands of scrubby Black Spruce forest containing Labrador Tea, and *Pleurozium schreberi* feathermoss, occur on hummocks in bog
- Lichen Woodland occurs on eskers and areas of coarse till
- Alder Swamps common along rivers

Land Mammals*Barren Habitats:*

Caribou, Bog Lemming, Arctic Fox

*Forest and Shrub Habitats:*

Moose, Caribou, Lynx, Porcupine, Woodchuck, Marten, Mink, Red Squirrel, Flying Squirrel, Snowshoe Hare, Heather Vole, Red-backed Vole, Star-nosed Mole, Masked Shrew, Pygmy Shrew, Little Brown Bat, Woodland Jumping Mouse

*Wetland Habitats:*

Meadow Jumping Mouse

*Ubiquitous:*

Black Bear, Red Fox, Wolf, Least Weasel, Ermine

*Aquatic Habitats:*

Beaver, Muskrat, River Otter, Water Shrew

Characteristic Birds*Forest Habitats:*

Bald Eagle, Osprey, Merlin, Spruce Grouse, Hermit Thrush, Swainson's Thrush, Hermit Thrush, Dark-eyed Junco, Tree Swallow, Northern Flicker, Black-backed Woodpecker, Three-toed Woodpecker, Yellow-bellied Flycatcher

*Shrubby or Thicket Habitats:*

Yellow Warbler, Tree Sparrow

*Wetland Habitats – marshes, peatlands:*

Northern Harrier, Short-eared Owl, Common Snipe, Greater Yellowlegs, Rusty Blackbird, Lincoln's Sparrow

*Aquatic Habitats – freshwater:*

Belted Kingfisher, Spotted Sandpiper, Least Sandpiper, White-rumped Sandpiper



Some important natural characteristics of District 19 ecosystems are listed below<sup>4</sup>. These characteristics indicate some of the ecological limits that serve as the foundation for the development of ecosystem-based forest management and provide a general picture of the unique ecological character of District 19:

1. **Climate:** District 19 forests are limited by cold climate. The growing season in District 19 lasts about 100 days. The cold climate and short growing season lead to a slowing of biological processes, reduced water uptake, and very slow tree growth.
2. **Disturbances:** Disturbance regimes commonly operate at a vast range of spatial scales, from single trees to large-landscapes. The death of individual trees, or small groups of trees, is the most common disturbance type. This continual low-level disturbance maintains the old, uneven-aged, semi-closed, and multi-layered canopy forests in District 19. Fire disturbances vary greatly, burning some areas at relatively low intensity, while occasionally burning some areas at high intensity. Fire is relatively infrequent and patchy, with fire return intervals in the order of 200 to 500 years. Fire, however, plays key roles in nutrient cycling, and in diversifying habitat types and landscape patterns.
3. **Riparian ecosystems:** Extensive networks of riparian ecosystems, often dominated by wetland complexes, are present throughout the landscape. Riparian ecosystems are very sensitive to disturbance, are biological “hot spots,” and are key landscape linkages. Riparian ecosystems concentrate and retain nutrients; they also control water, sediment, and nutrient flows into streams – important factors for fish and other aquatic organisms. Riparian ecosystems support unique ecosystem types that provide important plant communities and wildlife habitats.
4. **Soil Drainage:** Outside of riparian ecosystems, there are many areas, characterized by poor drainage or with a high water table. “Micro-bogs” not mapped at higher scales, exist throughout forest stands. These wet forested areas are sensitive to disturbance as there is a risk of *paludification* in many wet forested areas when trees are removed and the soil impacted. Conversely, there are large areas in District 19 with coarse-textured soils that have rapid drainage and moisture deficit problems.
5. **Soil Nutrients:** District 19 has many areas with nutrient-poor soils that are coarse textured or shallow. Lichen woodlands composed of sparse black spruce are common on these sites, although dense tree cover may eventually develop on these sites over time.
6. **Nutrient Cycling:** District 19 forests have slow nutrient cycling and low nutrient availability because of the young, acidic, poorly developed, and cold soils. Many soil animals, like earthworms and millipedes, that are decomposers in warmer soils cannot survive in the cold, acidic soils that are characteristic of Labrador. In the absence of soil animals to perform the initial breakdown of organic matter, slower-working microorganisms, primarily fungi, are largely responsible for decay. As a result, organic matter tends to accumulate more quickly than it decomposes.

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<sup>4</sup> Hammond, H. 1993.

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7. **Soil Fungi Relationships:** Mycorrhizae are a symbiotic relationship between soil fungi and tree roots, where the fungi provides water, nutrients, and other benefits to the tree, while the tree provides sugars and carbohydrates from photosynthesis to the fungi. This relationship is very important for nutrient cycling, water uptake, and tree growth. Mycorrhizae are diverse and site-specific, and seem to require the continuous presence of residual host trees. Due to the cold climate and slow nutrient cycling of District 19 forests, mycorrhizal fungi are the main mechanism for decomposition of organic matter, and transfer of nutrients to trees and other plants. Different species of mycorrhizal fungi appear to be associated with different species of trees at various ages.
8. **Successional Stages:** The early successional shrub or deciduous phase following a disturbance in District 19 is important. The initial return of alder, birch, poplar and willow species play an important role in providing for biodiversity, soil nutrients, wildlife and may allow mycorrhizae to survive after disturbances.
9. **Patchy Landscape Patterns:** Due to the difficult growing conditions, complex moisture gradients, and diverse disturbance regimes, District 19's landscape is heterogeneous and patchy. There are extensive areas of non-forest and open-canopied forest interspersed with patchy semi-closed canopy (commercial) forest.
10. **Wildlife Habitat:** The patchy and diverse landscape of District 19 provides for a variety of wildlife habitats and species (see wildlife section). The semi-closed canopy forests of District 19 are key wildlife habitats for many species such as woodland caribou, marten, etc., which depend on semi-closed canopy forests for part of their life cycles.
11. **Genetic Variability:** District 19 has few tree species, but significant genetic variability within tree species. Due to the difficult growing conditions on many sites, naturally adapted local genotypes are a natural adaptation for successful regeneration.
12. **Forest Regeneration:** In District 19 natural tree regeneration following disturbances is generally robust on good quality sites, but can be sparse on moisture extreme (too wet or too dry), nutrient poor or intensely burned sites. Layering of residual trees of black spruce and balsam fir is common, and an important evolutionary tool in difficult regeneration conditions.

### ***Condition***

Ecologically, the District has experienced relatively little impact from human industrial activities. The main impacts on terrestrial landscape are concentrated on the north side of the Churchill River, and include: road developments, past timber harvesting activities, and human caused forest fires. There have also been significant impacts associated with changing water levels and flow patterns resulting from the Upper Churchill hydroelectric development. Map 6: *District 19A Disturbances*, describes the terrestrial disturbance history.

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## Ecological Protected Areas Strategy

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*“I applaud the general approach of planning at three spatial scales. I independently have suggested planning at essentially the same three spatial scales. This is the first plan I’ve seen to implement this multi-scale planning effectively.”*

*Reed F. Noss, Ph.D.*

*“I feel the approach used in this design is very well supported by scientific literature from several relevant areas including a) ecosystem structure and function, b) reserve design and conservation, as well as c) the interplay of ecological and economic factors in planning processes.”*

*Robert Otto, Senior Wildlife Biologist (Labrador)*

One of the key principles of Ecosystem-Based Planning is the identification of an Ecological Protected Area Network (EPAN) at different levels of planning. For this Plan the ecological protected areas strategy focused on three distinct levels: Landscape, Watershed, and Stand.

Each level functions as a “filter” to identify and protect ecosystem structure and function at different map scales. Although each level focuses on protecting different features, all levels test for rare, threatened, and endangered species as well as ecosystem types. Table 2.4 describes each level and gives examples of protected features. Figure 3 depicts the Protected Area Networks for District 19 and how they fit within each other.

**Table 2.4: Ecological Protected Area Strategy Levels.**

<b>Level</b>	<b>Map Scale</b>	<b>Plan Terms</b>	<b>Sources</b>	<b>Examples of Protection</b>
<b>Landscape (Coarse filter)</b>	1:500,000 To 1:250,000	District and Sub-District	Satellite information Caribou telemetry	Large Core Reserves for species such caribou. Linkages to ensure landscape connectivity
<b>Watershed (Regular filter)</b>	1:50,000	Management Unit	Aerial Photography and high resolution satellite imagery.	Riparian buffers and major slopes, core habitats, areas with unique ecological features.
<b>Stand (Fine filter)</b>	1: 20,000 To 1: 5,000	Block and Harvest Unit	Ground Surveys	Wildlife dwellings, small streams, bog, isolated slopes, and important micro-habitats

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### ***Landscape Level EPAN***

The landscape level EPAN was initially designed by Silva Ecosystem Consultants and is based upon the principles of landscape ecology and conservation biology. The objective for the development of the EPAN at the landscape scale was to designate both unique and representative core reserve areas in order to ensure broad connectivity linkages in the landscape. This “coarse filter” is intended to allow for the representation of major ecosystem types and habitats.

The EPAN’s were designed at the 1:500,000 map scale for all of District 19 and the 1:250,000 map scale for District 19A. As shown on Maps 7 & 8, the District 19A EPAN is designed to “nest” within the District 19 EPAN, with several of the 19 PAN components forming the framework of the 19A PAN. A similar exercise is anticipated for Districts 19B and 19C in future planning efforts.

The Drieman vegetation inventory (Map 2), Ecodistrict mapping (Map 3), Landsat satellite imagery, and Caribou telemetry location information were used as the primary data sources for the EPAN design. The detailed design methodology and descriptions of Core Reserves and Linkages for District 19 and 19A is found in Appendix B.

### ***Watershed Level EPAN***

At the watershed level a more detailed analysis can take place utilizing aerial photography, Geographic Information System (GIS)-based forest resource inventories, and wildlife information. The watershed level EPAN will primarily result from the following features being “filtered” from the harvest planning landbase:

- Scrub and other non-commercial forest areas
- Ecologically sensitive areas
- Isolated commercial forests stands
- Riparian buffers
- Areas dominated by steep slopes

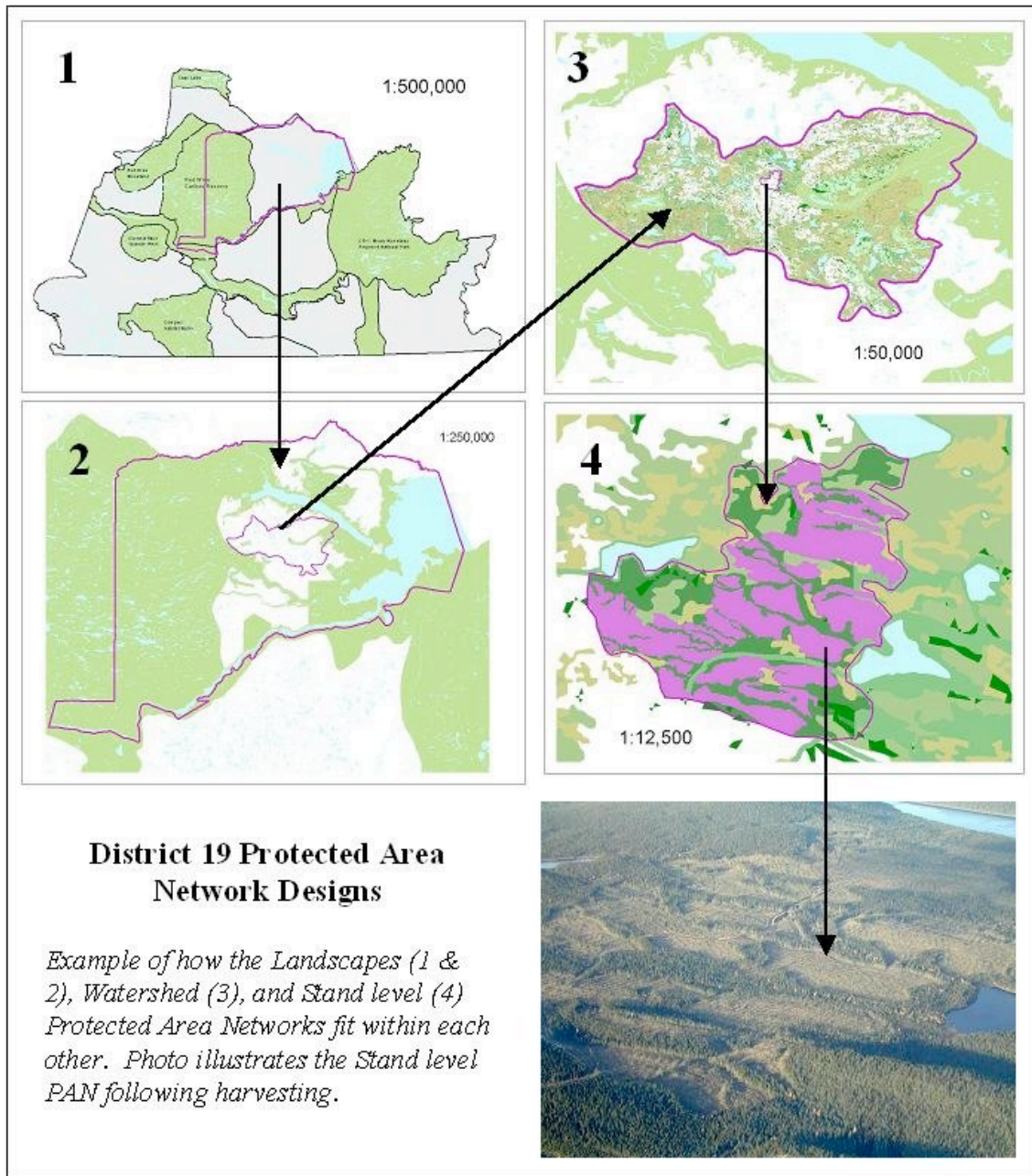
To ensure the EPAN is based on design, and not default, a conceptual EPAN will be created for each watershed. Additional areas that require protection will be assessed on a case-by-case basis and be defined in the stand level EPAN’s prior to harvesting operations. Watershed level EPAN’s will be described on maps accompanying the Five-year Plan.

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### ***Stand Level EPAN***

Stand level EPAN's will be established following on-the-ground forest surveys and application of the *District 19 Environmental Protection Guidelines* (Appendix C). Stand level EPAN's function as the "fine filter" in the protected area strategy. Features such as wildlife dwellings and habitat, isolated slopes, small stream and bog buffers, and priority protection areas form the framework for the stand level EPAN. Areas outside of a stand level EPAN may become Harvest Units. It is estimated that approximately 30% of the timber management landbase will be reserved within stand level EPAN's. Stand level EPAN's will be described on maps accompanying the Annual Work Schedule.

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**Figure 3: District 19 Protected Area Networks**

## **Ecological Landscape: Objectives & Actions**

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### **Objective 1: *Identification Of Species At Risk***

*To recognize the critical importance of identifying species at risk within the District and to ensure that their habitats are protected from disturbance.*

In December 2001 the Province of Newfoundland and Labrador passed an Endangered Species Act that gives special protection to species at risk. Similarly, the Government of Canada has been working for some time to complete a Species At Risk Act for Federal jurisdictions. In Labrador a total of ten species have been listed, with four considered “at risk” and thus requiring the creation of a recovery team. The species, status, and habitat information for species at risk in Labrador is displayed below in Table 2.5

Species that are particularly important for District 19 are the Woodland Caribou and the Harlequin Duck. The core habitat areas of the Redwine Woodland Caribou herd occurs within the District and there has been a sharp population decline since the late 1980’s. Currently a Woodland Caribou Recovery Team is working to stabilize the population and assist this herd in recovery. Although the Harlequin Duck has been recently down-listed from endangered to special concern status, it remains an important species because of the habitat requirement on many of the District’s rivers.

### ***Actions***

The following actions will be taken to meet this objective and ensure plan activities do not adversely affect species at risk and help to build support for habitat protection:

- ❑ *Sensitive habitats of species at risk will be included, where identified, within the District’s Ecological Protected Areas Networks;*
  - ❑ *Creation of the Red Wine Caribou Core Reserve as part of the District Ecological Protected Area Network;*
  - ❑ *The parties responsible for the implementation of the Plan will communicate regularly with the Woodland Caribou Recovery Team. All Annual Work Schedules or harvest block allocations prepared under this plan will be provided to the Woodland Caribou Recovery Team for review;*
  - ❑ *The parties responsible for the implementation of the Plan will communicate and collaborate with Federal and Provincial Endangered Species Programs;*
  - ❑ *The parties responsible for the implementation of the Plan will monitor, review, and support research activities on species at risk that occur within the District.*
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**Table 2.5: Labrador Species At Risk**

<b>Species</b>	<b>Status</b>	<b>Habitat &amp; Traditional Knowledge</b>
Wolverine	<b>Endangered</b>	<i>Wolverines most frequently inhabit the tundra, especially where there are large herds of ungulates, such as Caribou. Innu hunters report once hunting Wolverine in the Grand Lake Area.</i>
Eskimo Curlew	<b>Endangered</b>	<i>A small upland shore bird that utilizes coastal habitat generally not found in this District. Traditionally the curlew was hunted on the coast for meat.</i>
Wood Land Caribou	<b>Threatened</b>	<i>Woodland caribou prefer mature forests which contain large quantities of lichen and are associated with marshes, bogs, lakes and rivers. In mountainous environments, they are found in alpine prairies and valleys. Woodland caribou have traditionally been extremely important to the Innu.</i>
Peregrine Falcon	<b>Threatened</b>	<i>Nests are usually scrapes made on steep cliffs, usually near wetlands. The home range in which the peregrines hunt for food can extend to 27 km from the nest; peregrines prefer open habitats such as tundra, seacoasts and high mountains, but will also hunt over open forest. Traditionally, peregrines were acknowledged for their small game-bird hunting abilities. Sightings in this District include the Redwine Mountains.</i>
Harlequin Duck	<b>Special Concern</b>	<i>Harlequin Ducks spend most of the year in coastal marine environments, but they move inland each spring to breed along fast-flowing turbulent rivers. During the winter, the Harlequin Duck occurs along headlands where the surf breaks against rocks and ice build-up is minimal. These ducks feed close to rocky shorelines or rock skerries. The ducks were traditionally an important food source for the Innu, due to their presence in the region's rivers, and their close proximity to Innu camps..</i>
Barrows Golden-eye	<b>Special Concern</b>	<i>Nests in Quebec, only a small part of the population actually molts in Labrador.</i>
Ivory Gull	<b>Special Concern</b>	<i>Nests in the arctic and winters off the Atlantic coast. Do not seem to be any concerns in this region.</i>
Short Eared Owl	<b>Special Concern</b>	<i>Nests mostly along coastal areas, but have been sighted inland. It nests in high grass or on the edge of a forest or boggy areas.</i>
Polar Bear	<b>Special Concern</b>	<i>The main habitat used by Polar Bears consists of landfast ice and coastal pack ice. Appropriate denning areas and spring feeding areas are crucial components of the habitat. The animal's movements are influenced by climate and ice conditions, and by the presence of prey, especially Ringed Seals.</i>
Fernald's Milk Vetch	<b>Special Concern</b>	<i>Known to occur only in southern Labrador. The species grows strictly in calcium-rich soils where vegetation is sparse or has been removed by natural disturbance, and a calcareous substrate is available.</i>



## **Objective 2: *Wildlife & Habitat Management***

*To ensure all species of wildlife and their associated habitats are maintained throughout the District; to coordinate with other Aboriginal and Government wildlife management initiatives.*

District 19 has a robust and diverse range of wildlife species. Various land mammals, amphibians and bird species flourish in the wide range of habitats this District provides. For a detailed breakdown of the District's wildlife species and associated habitats, refer to the ecological character and condition section.

Management of big game species (moose, caribou and black bear) in the province is accomplished by a planning process in which a *Big Game Management Plan* is prepared annually by the Inland Fish and Wildlife Division of the Department of Tourism Culture and Recreation. Through this process, concerns of the public, as well as Departmental field staff, are taken into consideration. Each year the IFWD reviews all relevant data, such as recent census work, information provided on licence returns, and jawbone or skull data, and makes decisions on types and numbers of licences of each species in each management area. Similar processes are undertaken for management of small game and furbearers. Management of these species in District 19 will continue to be addressed through this process.

While management of habitat for migratory birds is the responsibility of the provincial government, the management of the species themselves is a federal responsibility and is done within the framework of the Convention for the Protection of Migratory Birds. The Convention recognizes that migratory birds, and particularly waterfowl, can only be conserved and managed by the cooperative efforts of all provincial, state, and federal governments through which the birds move.

### ***Actions:***

- ❑ *Protection of key Landscape level wildlife habitats in the District Ecological Protected Area Network;*
  - ❑ *Protection of stand level wildlife habitats through the Stand Level Ecological Protected Area Networks;*
  - ❑ *Protection of identified wildlife dwellings and nests through the application of the District 19 Environmental Protection Guidelines;*
  - ❑ *Coordinate with Government agencies such as Inland Fish and Wildlife Division to assess wildlife conditions and concerns;*
  - ❑ *Coordinate with Aboriginal elders and hunters to assess wildlife conditions and concerns.*
-

### **Objective 3: *Ecosystem Health & Water Quality***

*To ensure the health and integrity of the District's ecosystems and water quality is maintained during management activities*

*Ecosystem* can be defined as a complex interacting system that includes all plants, animals and their environment within a particular area. *Health* can be described as the overall condition of an organism at a given time. A healthy organism is often characterized by its freedom from disease or abnormality. Because of the difficulties in establishing boundaries for ecosystems, defining Ecosystem Health has been subject to widespread debate both within and among various disciplines.

*Ecosystem Distress Syndrome* is characterized by reduction in vigor, resilience, organization, ecosystem services, and management options. An ecological system is healthy and free from distress syndrome if it is stable and sustainable, if it is active and maintains its organization and autonomy over time, and if it is resilient to stress. *Ecosystem Health* is thus closely linked to the idea of sustainability, which is seen to be a comprehensive, multiscale, dynamic measure of system resilience, organization, and vigor (Costanza et.al. 1992). A healthy ecosystem has the capacity across the landscape for renewal, for recovery from a wide range of disturbances and retention of its resiliency, while meeting current and future needs of people for desired levels of values, uses, products, and services (USFS, 1997).

Incidence of disturbance and stress refers to the frequency/severity of major biotic stresses. Depending on the particulars of the disturbance, stress negatively or positively affects forest conditions over time.

Extant biomass is an integrating measure of forest ecosystem condition. Biomass represents the mass of living organisms inherent in an ecosystem, and the ecosystem serves as a repository for animal, plant, and microbial biomass. Accordingly, biomass is a measure of forest ecosystem condition and productivity. It refers to the condition of the forest in terms of organic matter production of all species and types.

Aquatic ecosystems within forest ecosystems integrate the overall watershed condition and thus provide an important measure of forest ecosystem condition and productivity. Elevated nutrient levels and flow rates in forest streams sustained over a long period clearly indicate a major forest ecosystem malfunction. In these situations, water and nutrients that should be utilized in forest growth are moving rapidly into drainage systems. This threatens the sustainability of the forest as well as the aquatic systems through eutrophication and flooding of downstream areas.

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**Actions:**

- *During the management planning period, the following indicators will be measured for assessment of disturbance and stress on forest condition and productivity:*
  - *area and severity of fire disturbances;*
  - *area and severity of small-scale disturbances such as blow-down;*
  - *area and severity of timber harvesting.*
- *Indicators to measure forest ecosystem extant biomass during the planning period include:*
  - *mean annual increment (m<sup>3</sup>/ha/yr) by forest type and age class;*
  - *frequency and occurrence within selected indicator species;*
  - *coarse woody debris surveys.*
- *Indicators to measure changes in water quality and quantity during the planning period are:*
  - *water quality as measured by water chemistry, turbidity, contaminants, and other parameters for selected waterways;*
  - *trends and timing of events in stream flows from forest catchments for selected waterway.*

*Information collected on all indicators will be used to assess forest ecosystem condition and productivity change (if any) during the planning period based on the management actions of the plan as well as natural disturbances that will occur.*

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#### **Objective 4: Global Implications**

*To recognize and respect the global importance of the District's intact boreal forest; to assist in the implementation of Canada's obligations under international agreements (biodiversity, climate change, etc.)*

From the creation of regional employment, to the development of national parks, to the international marketing of forest products, it is clear that this plan will have impacts that reach beyond the local communities. The Planning Team recognizes that this plan will not exist in isolation, and that activities proposed in the plan need to be evaluated in terms of their interaction with national and global interests.

“Frontier forests” are defined as the world’s remaining large intact natural forest ecosystems – undisturbed industrially and large enough to maintain all of their biodiversity. The Planning Team recognizes that Labrador’s forests represent some of the last frontier forests left in the world. This situation creates unique opportunities, as well as imposing unique obligations for planning. The value of Labrador’s forests are also recognized as an important part of the Labradorian identity and heritage. Planning participants from Aboriginal and non-aboriginal communities alike highlighted the need for protection of intact forests as an important objective in the plan.

The Government of Canada has been a key participant in several important international agreements such as:

- Kyoto Protocol
- Convention On Biodiversity
- Migratory Bird Act
- North American Free Trade Agreement

These agreements spell out and set guidelines for how the international community can work together on environmental and economic issues.

#### ***Actions:***

- ❑ *The Core Reserves developed under the District Ecological Protected Area Network will reflect the value of intact frontier forests by protecting representative ecosystems at the District scale.*
  - ❑ *Over the course of this Plan, attention will be paid to newly ratified international agreements as well as Canada's obligations under existing agreements.*
-

- *The Innu Nation and the Department of Forestry and Agrifoods will engage other partners in research on the role of FMD 19 forests in global carbon storage and cycling.*
  - *The Innu Nation and the Department of Forestry and Agrifoods will support efforts to protect endangered species and their habitats under federal and provincial endangered species legislation.*
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## **CHAPTER 3: THE CULTURAL LANDSCAPE**

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## **Cultural Character & Condition Of The District**

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### *Character*

The cultural character of District 19 is a diverse blend of Aboriginal and non-aboriginal peoples. These groups have historically interacted with the land, plants, animals, and with each other. The District's unique climate, vegetation, wildlife, and other ecological characteristics (described in Section 1) have shaped the people who call this land home. Like ecosystems, cultural processes are also dynamic and continuously changing, but have meaningful patterns which emerge over time.

Much of the District was still covered with glaciers 7000 years ago, when the archaeological record begins to provide evidence of human occupation in Labrador. Excavations of these "Maritime Archaic" Indian sites show tools and other materials which suggest that the people of that time were adapted to a life which relied on both the forests and the sea. Several tool types from this period were crafted from Ramah chert, a stone unique to Labrador. The distribution patterns of these tools have provided evidence that a complex network of trade and communications existed as far south as New England and as far west as James Bay<sup>5</sup>. The later pre-historic Indian groups, notably the Intermediate Indian and Point Revenge peoples, maintained a seasonal adaptation to both forest and coastal regions which continues to typify the traditional uses of these areas by the Innu people today: nomadic hunting in small family groups in the interior during the fall through the spring, and gathering in larger groups on the coast for fishing and other coastal harvesting activities during the summer months.<sup>6</sup>

Inuit have also had a long history in the region. Early Dorset Inuit occupation of Hamilton Inlet and Groswater Bay has been established and dated to approximately 2200 years before present. Inuit culture was highly reliant on maritime resources, harvesting seal, walrus, and seabirds extensively. Later migrations of Thule Inuit from the north supplanted the Dorset culture approximately 800 years ago. The Thule Inuit, the ancestors of the Labrador Inuit of today, moved into the Hamilton Inlet area by 1500 AD, and by 1600 AD, had established permanent settlements.<sup>7</sup>

The European history in the District begins with the arrival of the Vikings, 1000 years before present. Approximately 600 years later, English explorer John Davis met Innu and Inuit peoples on his travels along the Labrador coast in 1586 and 1587. These were brief incursions. Significant interaction with Europeans did not begin until the 1700s, when European whalers and merchants established a presence in Hamilton Inlet, but as

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<sup>5</sup> Mailhot, J. p. 6.

<sup>6</sup> Fitzhugh, William. 1972. Environmental Archaeology and Cultural Systems in Hamilton Inlet, Labrador. *Smithsonian Contributions to Anthropology*. v. 16 Washington DC

<sup>7</sup> Brice-Bennett, Carol (ed). 1977. *Our Footprints are Everywhere: Inuit Land Use and Occupancy in Labrador*. Nain: LIA

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historical evidence shows, Innu and Inuit trade with Europeans started in the early 1500's. In fact, when French merchant Louis Fornel set out to established the very first fur trading post at North West River in 1743, the Innu he met already had axes, knives and even French caps<sup>8</sup>.

Travel and trade has been a fundamental cultural characteristic of all the District's cultural groups. The numerous lakes, rivers, and the rich forest ecosystems that surround them formed the foundation for a vibrant traditional economy. Trapping became the economic mainstay, and trade goods from around the world soon became an important part of Innu and Inuit life. Upper Lake Melville became an important crossroads, and North West River and Sheshatshiu became the hub of a complex social and trading network that continues to exist today.

The establishment of the fur trade in the district was also the birth of Labrador's settler peoples. These descendents of European and mixed race peoples established permanent residence in Labrador in order to carry on the fur trade, and fishing enterprises were at the heart of the settler way of life. Like neighbouring Innu and Inuit peoples, the newcomers had to quickly learn how to adapt to the land to ensure their survival. Unlike the nomadic Innu peoples, settlers tended to be more stationary. They developed trap-lines and gardens, and established small but permanent communities.

However, the European presence had a marked and negative effect on the Innu and Inuit cultures. The introduction of trade goods and the inculcation of the Innu and Inuit into the fur trade created new dependencies, such as alcohol and tobacco, and occasionally resulted in starvation when supplies failed to last a hard winter season. Contagious diseases, including the Spanish Flu epidemic of 1919, decimated the Innu and Inuit populations. By the mid 1900's Aboriginal cultures in Labrador were struggling to survive.

While there were early attempts at a modern industrial economy in the region, most notably an early logging enterprise established at Mud Lake in 1901, the harsh climate and remoteness of the region destined most such efforts to fail. However, the District changed forever with the establishment of the air base at Goose Bay in 1941. The fur trade economy was replaced by modern waged labour associated with the base. Subsequently, the construction of iron ore mines in Labrador City and Wabush in the 1950s and the Churchill Falls hydroelectric mega-project in the 1960s and 70s brought incredible change, not only to the people of Labrador, but to the land itself. These large-scale industrial developments sharply increased the region's population and facilitated the infrastructure to open the land to further development. In a short period of time, Happy Valley-Goose Bay replaced North West River as the regional administrative and service centre.

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<sup>8</sup> Mailhot, J. p 11.

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In response to these new challenges, the Innu and Inuit began to organize themselves politically in the mid-1970s. Both groups filed land claims with the governments of Canada and Newfoundland, and began their long struggle for self-determination. Further, in the mid-1980s, the Labrador Metis Nation organized and has subsequently filed its own comprehensive land claim.

### ***Condition***

The current cultural condition of District 19 remains as complex and dynamic as ever. Local communities maintain strong ties to their cultural heritages and to the traditional Labrador ways of life, while looking to the future for new opportunities and developments. Labradorian culture continues to be vibrant and distinct, and Labradorians maintain a fierce pride in their self-reliant history.

The Innu and Inuit have made significant progress in resolving land claims and asserting traditional rights over lands and resources. The conclusion of final land claims agreements between the governments of Canada and Newfoundland and Labrador, the Innu Nation and the Labrador Inuit Association is expected to occur over the life of this Plan. However, at a community level, many Innu and Inuit are still struggling to find their place in the changing cultural and economic landscapes of Labrador.

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## **Cultural Protected Areas Strategy**

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District 19 has a diverse blend of Aboriginal and non-aboriginal communities, all of which hold a strong importance to cultural heritage. For over two thousand years the people of Labrador have been “living off the land” and thus a fundamental requirement of protecting cultural heritage values means protecting the land itself.

The Innu believe the foundations of Innu culture and the natural economy are the ecosystems of *Nitassinan*, “our land.” The Innu believe that “everything depends on everything,” an insight that inter-related forest ecosystems support wildlife, fish, plants, fresh water, and air. From an Innu perspective, protecting the natural composition, structure, and function of forest ecosystems is the highest priority.

DFRA acknowledges the impact that cultural and community values can have on forest management decisions (and vice versa) and further recognizes that these values are vital to both Aboriginal and non-aboriginal communities alike. While sound environmental practices are paramount, both protection (for ecological and cultural values) and economic development are required to sustain the communities in the District.

### *Cultural Heritage and Land-Use Priorities*

This Plan recognizes the critical importance of protecting and respecting Aboriginal and non-aboriginal cultural heritage and land-use priorities across the District. A cultural protected areas strategy was developed to ensure that sensitive cultural areas and values are protected under this Plan. The Planning Team identified these areas and values through:

- Public participation and consultation processes with local communities;
- Discussions with heritage, community, and recreational organizations;
- Analysis of Innu land use and occupancy data and maps;
- Discussions with Innu land use experts.

The identified sensitive cultural areas and values were mapped at 1:250,000 and analyzed in order to derive a District 19A Cultural Protected Area Network (Map 9). The primary themes considered in the development of the Cultural Use Network included:

- Cultural Heritage Values
  - Landscape Aesthetics
  - Domestic Forest Harvesting Activities
  - Hunting, Trapping, and Gathering
  - Tourism & Recreation
-

- Traditional Travel Routes
  - Camp Locations
  - Small-Scale Selective Harvesting Activities
  - Crown Land Reserves
-

## Cultural Landscape: Objectives & Actions

### Objective 5: *Cultural Heritage Values*

*To identify, respect, and protect the diverse range of Aboriginal and non-aboriginal cultural heritage values across the District.*

Participants in the public planning sessions agreed that the future of all Labradorians is inextricably linked to the future of Labrador's forests, which are both home and the foundation of the natural economy.

Traditionally and today, Labrador people use many parts of the forest, including trees and other plants, fish, wildlife, and water. Fir and spruce branches are used for shelter and flooring, and spruce and fir are cut for firewood and sawlogs. The forest also provides materials for traditional tools and equipment: canoes and paddles, toboggans, sleds, snowshoes, fishing poles and floats, and frames for tanning. The traditional Labrador diet of meat and fish, supplemented by edible forest plants, requires natural, healthy forests. Many traditional medicines such as Labrador tea, balsam resin, and beaver castor also come directly from the forest. Participants also recognize that commercial harvesting is also culturally significant to the communities in this district, with a history dating back nearly 100 years.

The following cultural heritage values were identified and mapped by planning participants as high priorities for protection:

- Archaeological sites
  - Homesteads and gravesites
  - Edible and medicinal plant picking areas (berries, mushrooms, etc.)
  - Traditional and active trap lines
  - Hunting areas
  - Wildlife habitats (eg moose yards) and game trails
  - Fishing areas
  - Traditional and active tenting areas
  - Cabin areas
  - Boating and canoeing routes
  - Travel routes and their associated view sheds
  - Major river valleys and shorelines
  - Areas adjacent to Grand Lake
  - Traditional domestic timber and firewood harvest areas (to preclude commercial harvesting)
  - Recreational activity areas
  - Scenic values along the Trans-Labrador Highway.
-

***Actions:***

- *The District Protected Area Network (Maps 7-10) will ensure protection for a number of identified cultural heritage values, such as major river valleys and shorelines, at the large landscape scale;*
  - *All forestry-related activities (eg access roads and timber harvesting activities) will comply with the District 19 Environmental Protection Guidelines (Appendix C);*
  - *The Planning Team will continue to solicit input from individuals and interest groups and will continue to build a database on culturally significant areas for input into future management plans.*
-

### **Objective 6: *Landscape Aesthetics***

*To recognize the cultural and economic importance of landscape aesthetics in the District and strive to protect, maintain, or enhance landscape aesthetics where possible.*

Landscape aesthetics refers to the visual quality and appreciation of the land. During public sessions, significant concern was expressed concerning the impacts of timber harvesting on landscape aesthetics, particularly in tourism and recreation areas, as well as traditional travel routes and scenic viewscapes.

Through the public and community consultation process the following locations were highlighted as priority areas for maintenance of aesthetic qualities.

- Grand Lake
- Churchill River
- Shores of Lake Melville
- Trans Labrador Highway
- Sunday Hill
- Labrador Winter Trails
- Birch Brook Nordic Ski Area
- Muskrat Falls
- Outfitter Lodges and Cabins
- Traditional travel and tenting areas

Other areas may be identified as priorities for maintaining or protecting landscape aesthetics through further public consultations or in response to requests from tourism operators or other interests in the District.

#### ***Actions:***

- *Utilizing GIS software, derive and map viewshed<sup>9</sup> boundaries of the following identified priority areas:*
  - ***Grand Lake:*** *The identified core viewshed is protected from all harvesting activities. Fringes of the viewshed will permit timber harvesting with a priority consideration given to visual quality objectives.*
  - ***Mulligan Bay Trail:*** *The majority of this viewshed will be protected from commercial harvest and designated as a Domestic Reserve Area<sup>10</sup>. Other portions of the viewshed will permit timber harvesting. Harvesting activities will consider visual quality objectives and modify accordingly.*

<sup>9</sup> *Viewshed* is the total area visible from a specific location, such as a lake, lookout or road.

<sup>10</sup> *Domestic Reserve Area* is an area that is limited to domestic only harvesting activities.

- ***Trans Labrador Highway:*** Significant portions of this viewshed are protected under a Crown Lands Reserve. Other portions of the viewshed will permit timber harvesting. Harvesting activities will consider visual quality objectives and will be conducted accordingly.
  - Provide a No Harvest Buffer of 30m along all roads (with the exception of forest access roads) and recreational trails;
  - A minimum 50-metre, no-cut buffer is to be left between operations and approved cabins. Planners will consult with cabin owners and make best efforts to modify operations in order to achieve an outcome acceptable to the parties involved.;
  - The parties responsible for the implementation of the Plan will establish a process to respond to future requests for visual management or protection of landscape aesthetics in areas within the District which are subject to timber harvesting.
-

**Objective 7: *Hunting and Trapping***

*To identify, respect, and protect both Aboriginal and non-aboriginal hunting and trapping activities within the District.*

Hunting and trapping for subsistence purposes is an important part of the lives of many residents of the communities in this district. For the Innu, hunting barren ground caribou, partridge, porcupine, geese, and duck remains an integral part of their lifestyle and an important food source.

While trapping of furbearers as a sole source livelihood is no longer very common, hunting of both big game and small game, as well as upland and migratory birds still remains a very common subsistence activity for all cultures.

***Actions:***

- ❑ *To ensure protection of wildlife habitat, Environmental Protection Guidelines will be strictly adhered to;*
  - ❑ *Annual work schedules will be provided to the Inland Fish and Wildlife Division to ensure compliance with their management activities;*
  - ❑ *The Planning Team will continue to receive and implement information from local trappers pertaining to the locations of their activities.*
-



**Objective 8: *Non-Timber Forest Products (NTFP)***

*To recognize and identify the economic potential and cultural importance of NTFP in the District, and to ensure appropriate areas are reserved for NTFP harvesting activities.*

Non-Timber Forest Products refer to all non-timber products and services that are collected in natural forests and from indigenous plant and tree species. NTFP have been given a special designation because of the recognized emphasis placed on timber resources during forest management.

Derived from various trees, plants, and animals, NTFP are used in medicines, extracts, foods, crafts, and art. They often include uses of barks, saps, foliage, roots, berries, and shrubs. These products tend to be harvested from a wide range of site types including both undisturbed and disturbed (harvested and/or burned) areas and in many areas of the district. Permitting is generally not required for harvesting of these products.

NTFP are both an integral part of the regional culture and a future opportunity for appropriate economic developments. They also represent significant cultural and spiritual values for Aboriginal people. NTFP represent an interesting juncture where the local cultures utilize the forest and interact with other management values, especially issues of timber management, road access and recreational activities. Further, the availability of and access to NTFP are good indicators of the subsistence activities of Aboriginal and non-aboriginal people.

***Actions:***

- ❑ *Create **Ecological and Cultural Protected Areas Networks** (Map 6) in which NTFP harvesting will continue to be permitted while commercial timber harvesting is excluded;*
  - ❑ *Create **Domestic Reserves** (Map 9), in which only domestic timber and non-timber harvesting is permitted;*
  - ❑ *Develop a database of potential NTFP, processing ideas and market information for the District.*
-

**Objective 9: Socio-Economic Factors**

*To identify critical socio-economic factors in the District and work towards enhancing local employment from forest-based industries.*

In considering the implications that potential forest management developments might have on the cultural landscape of District 19a it is important to understand some of the socio-economic projections of the region.

There are currently four communities within the region that have a collective population of approximately 10,000 as described on Table 3.1.

**Table 3.1: Communities in District 19A with respective populations.**

<b>Community</b>	<b>Population</b>
Happy Valley – Goose Bay	8000
Sheshatshiu	1700
Northwest River	450
Mud Lake	150

Although some of these communities have seen population decline over the past census period, the population is generally young and vibrant. The communities of Happy Valley-Goose Bay and Sheshatshiu have significantly younger populations than the national average, with 42% of HV-GB under 25 years and over 50% of Sheshatshiu under 18 years. This represents an urgent need for future training and youth employment opportunities within the region.

The major sources of employment in the region include military base services, government services, education services, and the retail/wholesale trade. The majority of employment opportunities and industries are based in the town of Happy Valley-Goose Bay.

The main forest-based industries in this region include forestry and tourism. The forest harvesting and saw milling industry currently employs approximately 60 people. None of the current forest industry workforce are members of the Innu Nation, and only 2% are women. Considering that currently over 85% of harvested timber is exported as round logs, there is significant potential for future employment in the sawmilling and value-added sectors.

With approximately 46 Labrador outfitter businesses offering fishing, hunting, and wilderness adventure trips, the tourism and related spin-off industries are showing signs of significant growth.

***Actions:***

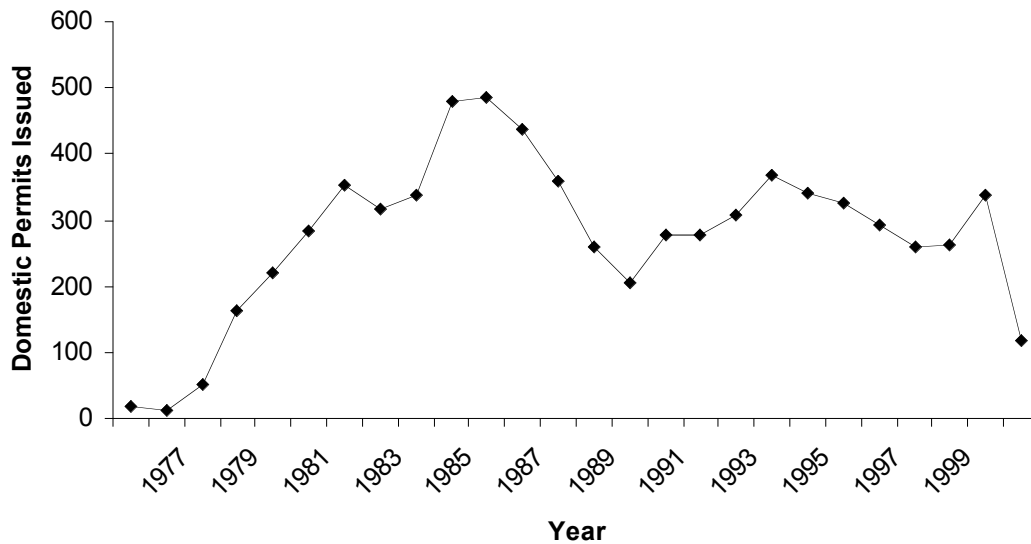
- *Identify specific initiatives and targets to increase the number of local jobs per cubic meter of timber harvested within the District;*
  - *Give priority to proposals for new forest-based activities which contribute to increased employment and/or skills-development and diversification within the forest sector. This priority will be considered in any new harvesting permit allocations;*
  - *Identify specific initiatives and targets to increase the participation by Innu Nation members within the forest sector;*
  - *Develop specific initiatives and targets to increase the level of participation of women within the forest sector;*
  - *Incorporate socio-economic factors and targets into research and monitoring for both the cultural and economic landscapes;*
  - *Report on the results of any socio-economic research and monitoring on an annual basis.*
-

### Objective 10: Domestic Forest Products

*To ensure that the sustainability of resources which provide for domestic forest products are not to be compromised under any circumstances. Acknowledge the cultural significance of domestic forest products and related activities to both Aboriginal and non-aboriginal people.*

Many residents of the district are highly dependent on both timber and non-timber forest products to sustain themselves. Locally harvested wood has been used to construct and heat homes, to make boats, snowshoes, komatics, and many other things made from wood that people use on a daily basis. Traditionally, domestic wood requirements in the district have not exceeded 7,000 m<sup>3</sup>. The conditions for domestic wood harvesters are outlined in Appendix D.

Figure 3 illustrates the history of domestic forest use since 1976 (note that domestic permits and returns were not regulated prior to 1975). The increasing trend up to 1985 is due in part to an increase in compliance activities. Although consumption decreased as electricity became more economical in the area, the decline in permit issuance after 1985 is also partly attributable to people harvesting domestic fuelwood from the Grand Lake burn site (where permits for dry wood were not enforced). Since 1991, the average number of domestic permits issued was about 300 per year (with a corresponding allocation of about 6800 m<sup>3</sup>). It is expected that this level of harvesting will continue throughout this Plan.



**Figure 4. Domestic permit issuance in District 19A from 1976 – 2000.**

***Actions:***

- *Domestic fibre requirements will be met and will be monitored and evaluated at the end of each permit season;*
  - *Domestic timber harvesting reserves (Traditional domestic harvesting areas) will be excluded from commercial harvesting activities (see map 9);*
  - *Domestic timber harvesting will be permitted in identified commercial harvesting areas but not on active harvest blocks.*
-

## **CHAPTER 4: THE ECONOMIC LANDSCAPE**

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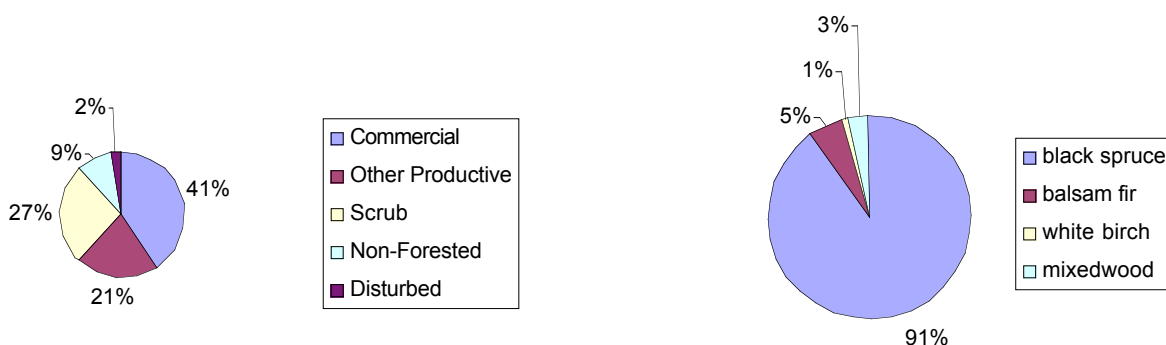
## Timber Resources Character & Condition

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The boreal forests of Labrador are characterized by old, semi-closed canopy forests. Among the factors that limit stand density and thus crown cover are severe climatic conditions, soils with restricted or excessive drainage, and a relatively short growing season.

Closed canopy forests occur only on rich, moist, mid to lower slopes. They contain a mixture of spruce, fir, and hardwood tree species, and a well developed ground layer of feather mosses. On coarse-textured soils (typical of river terraces and eskers), the dominant forest type is lichen woodland, which is characterized by an open canopy of black spruce and a well developed lichen layer.

Black spruce is the most common tree species in the management district (approximately 91% of productive forest area). Balsam fir constitutes 5% of the area, while other softwoods and hardwoods make up the balance. The general characteristics of forest stands in District 19a (land class and working group from the DFRA forest inventory) are illustrated in Figures 4 & 5. These characteristics define the limits within which commercial forest development must occur. Stands greater than 140 years form the dominant age class structure in this forest. Silvicultural intervention may enhance future productivity on some sites, but how such treatments will affect the long rotation period (tentatively 120 years) of forest stands in this district has yet to be quantified.



**Figures 5 & 6: Land classes and productive species distribution in Forest Management District 19A.**

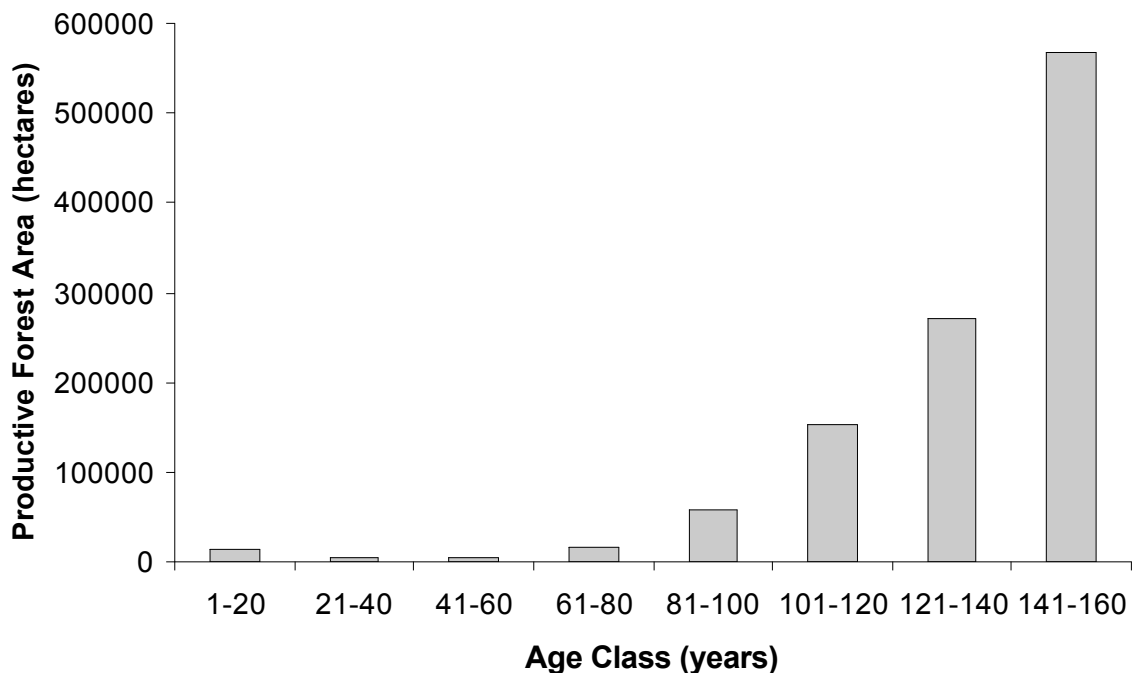
Continual low-level disturbances have maintained the old, semi-closed, multi-layered canopy forests in District 19. Fires have been a significant ecological disturbance in this

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district, but vary greatly, burning some areas at relatively low intensity, while occasionally burning some areas at high intensity. Fire is relatively infrequent and patchy, with fire return intervals in the order of 200 to 500 years.

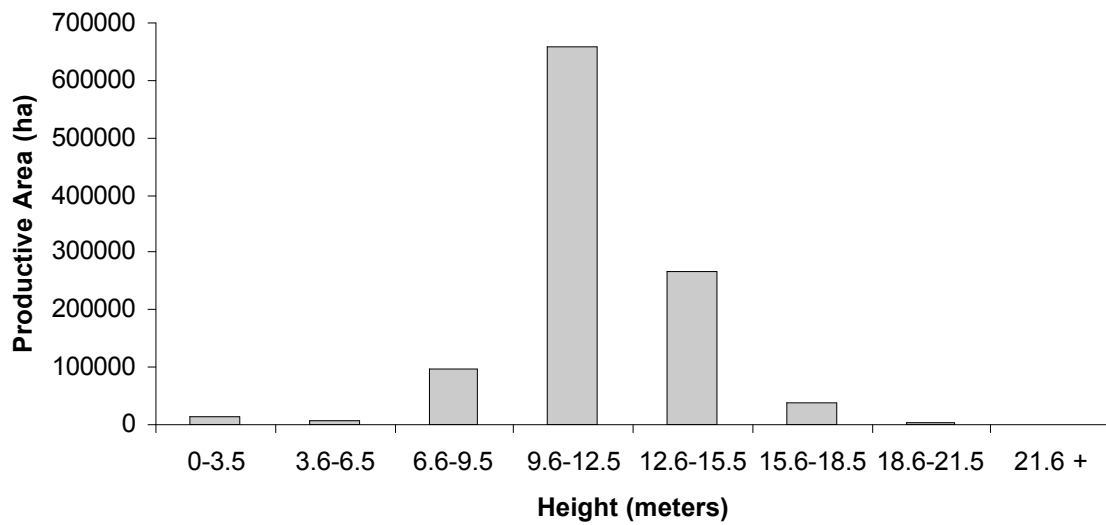
A varied history of commercial timber harvesting has had a lesser impact, accounting for approximately 18,000 ha (9%) of the productive landbase for the North side of the District. Map 5 describes the total disturbance history. This disturbance history, coupled with harsh environmental factors, has led to a skewed age class (the age class distribution for productive forests is illustrated in Figure 6). Approximately 4 % of the District's commercial forested landbase is in immature age classes with 77% in overmature age classes.

Figures 7 to 9 outline the height class distribution, crown closure and site quality for productive forest stands in District 19A. As the figures show, a majority of the productive stands are between 10 – 15 meters in height, have 51-75% crown density and occupy medium and poor quality sites. These characters, combined with those outlined in the section on ecological character and condition (p.18), as well as the limits of existing harvesting and processing technologies will define the limits within which commercial forest development must function. Map 8 shows the location of this commercial forest.

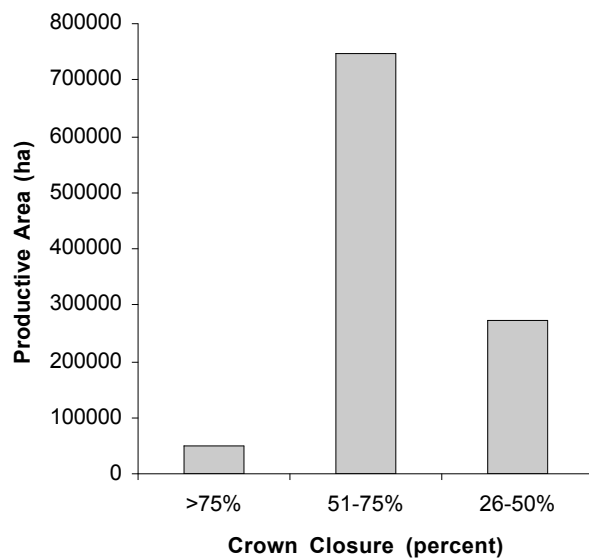


**Figure 7: Age class distribution on productive sites in District 19A.**





**Figure 8. Height class distribution on productive sites in District 19A.**



**Figure 9. Crown closure distribution on productive sites in District 19A.**

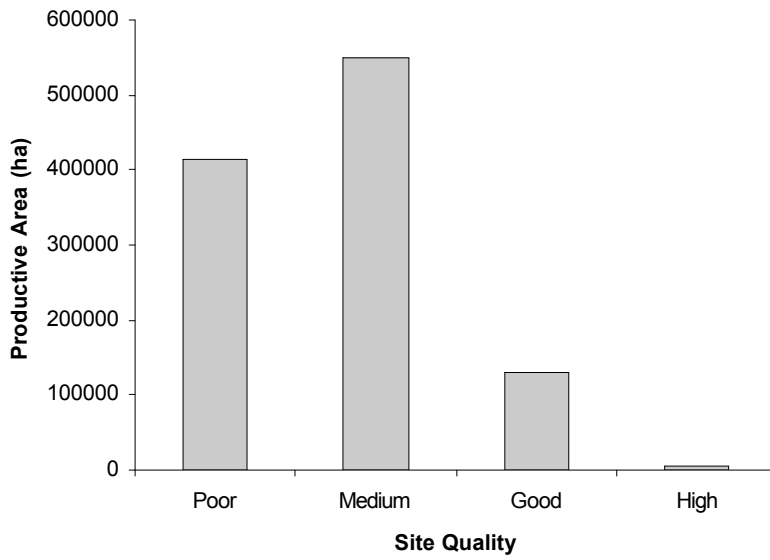
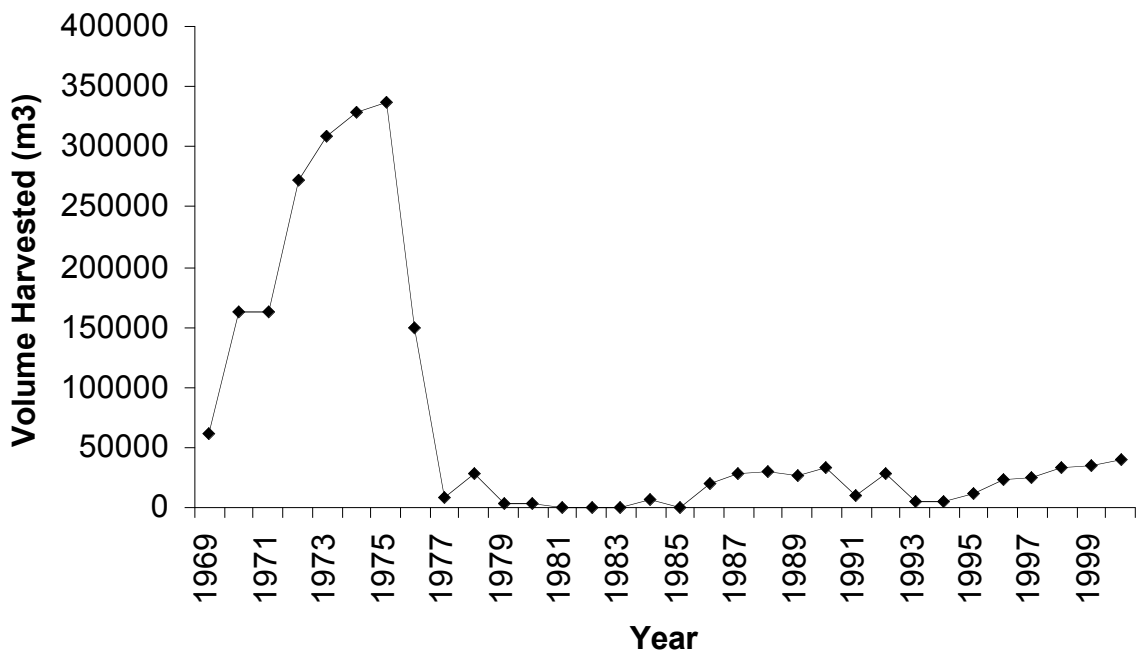


Figure 10. Site quality distribution on productive sites in District 19A.

Figure 11. Volume of Commercially Harvested Timber (m<sup>3</sup>) in District 19A from 1969 to 1999.



## **Forest Management Classifications**

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An ecosystem-based planning approach requires careful consideration and appropriate balance of ecological, cultural, and economic values. This balance not only provides for the designation of ecosystem-based management areas and protected areas for human and non-human uses of the forest, but also provides balance between timber and non-timber values. In addition, the planning approach of priority decision-making ensures that ecological and cultural values are considered first, forming a protected areas framework. Outside of the protected areas framework, ecosystem-based management areas are identified for commercial timber harvesting and other extractive resource-based activities.

The resulting landbase framework is described on Maps 7-11. These maps highlight the total landbase within the planning area that will be designated as “alienated or protected,” and the forested landbase that is available for timber harvesting. The landbase analysis was generated through a priority decision-making approach and several technical exercises. Appendix E explains the detailed methodology and process involved to derive this landbase analysis and calculate the rate of annual harvest.

### **Classifications**

The forest landbase available for timber harvesting has been divided into five different management classifications and is depicted on Map 11: *District 19A Forest Management Classifications*:

1. **Domestic Reserves:** Areas provided for domestic harvest permits only.
  2. **Selective-Commercial Reserve:** Area provided for small-scale commercial operations that utilize a selective harvest approach (see the example of *Selective Commercial Harvest Permit* conditions in Appendix D).
  3. **Commercial:** Areas provided for commercial harvesting permits. Domestic and Selective-commercial harvesting will also be permitted in these areas. All commercial harvesting activities will comply with the *District 19 Environmental Protection Guidelines* defined in Appendix C.
  4. **Visual Management:** Areas provided for all harvesting activities, but subject to visual management objectives (to be developed).
  5. **Conservation Emphasis:** Area provided to apply a conservation emphasis management regime, using a Landscape Design approach. Protection for Innu cultural values will be an important part of the Landscape Design approach.
-

## **Rationale For The Rate Of Annual Harvest**

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The rate of annual harvest, or Annual Allowable Cut (AAC), is an important calculation that defines the scale at which harvesting occurs over time. In Ecosystem-Based Planning, this calculation must follow the ecological and cultural priorities described in the previous chapters. Since the necessary growth and yield data required for running linear wood supply models (such as FORMAN +1) does not exist for this District, the AAC was calculated using a basic Area/Volume formula. This approach will provide a ‘go-forward’ AAC estimation that will be revised, as appropriate data is available. The area formula utilized is as follows:

$$\frac{[\textit{Net Operable Area} \text{ (ha)} \times \textit{Net Volume} \text{ (m}^3\text{/ha)}]}{\textit{Rotation Age} \text{ (years)}} = \textit{AAC} \text{ (m}^3\text{/year)}$$

Therefore, the estimate of the potential AAC for management areas in District 19A requires primarily three key inputs:

- Quantification of the timber management landbase. (*Net Operable Area*)
- Estimate of the timber volumes on that landbase with expected losses for natural disturbance, waste and retention. (*Net Volume*)
- Length of time allowed for a forest ecosystem to recover to a mature condition following a harvesting disturbance. (*Rotation Age*)

The details, assumptions and general methodology for how these inputs were determined are provided in Appendix E. The AAC ummary results are provided in Table 4.1.

The District AAC is divided into two distinct management areas: north and south of the Churchill River (“Northside” and “Southside,” respectively). The majority of management activities and all commercial harvesting allocations are proposed to take place on the Northside. A Southside allocation will also be implemented when access issues are resolved, the final alignment of Phase III of the Trans-Labrador Highway is determined and appropriate provisions for secondary processing within the District are met. Southside allocations will require an amendment to this Operating Plan and be contingent on the following conditions:

1. Approval of Phase III of the Trans-Labrador Highway (Goose Bay to Cartwright Junction) following Environmental Assessment;
  2. Bridge access across the Churchill River being constructed within the life of this Operating Plan.
  3. Construction of required roads to provide access to proposed Southside Management Units
  4. Investment in local capacity to harvest and process the majority of Southside timber allocations.
-

**Table 4.1: Breakdown of District 19A Annual Allowable Cut**

Management Class	AAC Contribution (m <sup>3</sup> /year)	% of A AC
Commercial Areas	53,700	27%
Domestic Reserves	3,000	2%
<b>Northside Total</b>	<b>56,700</b>	<b>29%</b>
Commercial Areas	127,400	64%
Domestic Reserves	10,500	5%
Selective Reserves	4,000	2%
<b>Southside Total</b>	<b>141,900</b>	<b>71%</b>
<b>District 19A Total</b>	<b>198,600</b>	<b>100%</b>

Within the Northside and Southside areas, Management Units have been designated according to road system, ecological boundaries, and management classification. Map 10 describes the location of the Management Units within District 19A, and Appendix E summarizes Management Units by contribution to the District commercial landbase. The proportion of commercial landbase indicated for each Management Unit serves as a guide for timber supply sustainability in each unit, not as a prescriptive partition.

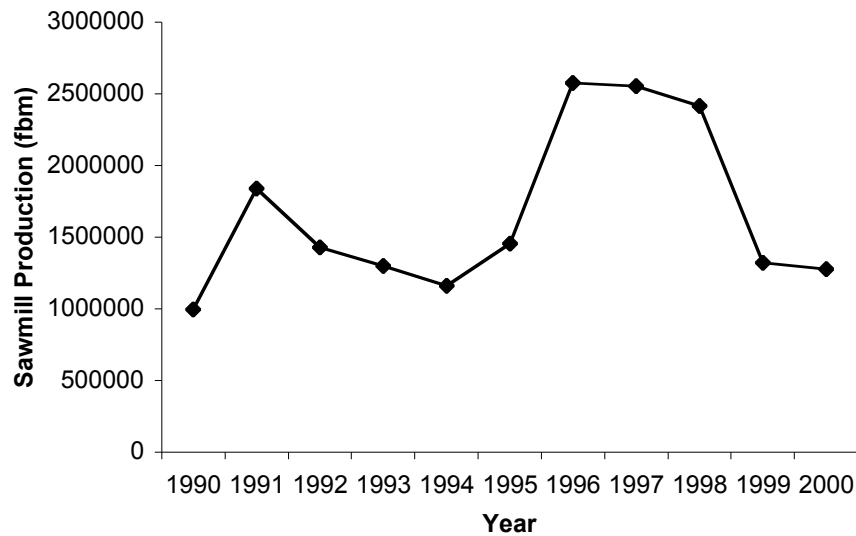
As described in Table 4.1, the total AAC for District 19A is **198,600 m<sup>3</sup>**. This represents a significant reduction from the previous (2000) analysis, which set the AAC at 400,000 m<sup>3</sup>. The primary reason for this 50% reduction in the AAC was due to the major shift in planning emphasis under the Forest Process Agreement and through the incorporation of public values and concerns raised during the consultation process. This resulted in a significant change to how the timber management landbase was determined. The incorporation of ecological and cultural priorities in conjunction with changes in stand level harvesting practices resulted in a significantly reduced commercial harvesting area, but far greater ecological and cultural protection.

## Forest Product Processing and Marketing

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The Province's forest products sector consists of the newsprint industry, the lumber industry, and a small number of value-added industries. These industries utilize approximately 2.5 million m<sup>3</sup> of timber, and provide more than 3500 person years of direct employment resulting in 10,000 or more direct and indirect part-time and full-time jobs. These industries also produce newsprint and solid wood products valued at \$600-\$700 million.†

The sawmill industry in District 19A currently consists of 10 commercially licensed sawmills ranging in output size from a few thousand board feet per year to the largest one at over 1 million board feet (fbm). Sawmill production since 1990 in this District is illustrated in Figure 11. As the graph illustrates, production has fluctuated between 1 million and 2.6 million fbm (average production has been approximately 1.7 million fbm). Two of the 10 commercially licensed mills are considered class 6 mills (producing in excess of 500,000 fbm per year) and their combined capacity has the potential to reach in excess 10,000,000 fbm per year.



**Figure 12. Commercial sawmill production in District 19A (1990-2000)**

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Transporting forest products to outside markets has always been challenging for commercial operators in this district. There is no rail link to the area, marine shipments are only possible for six months of the year and the current road link is considered expensive to operate on. While the completion of the Trans-Labrador Highway from Cartwright to Goose Bay would eliminate some of these problems, improvements in the abilities of local processors to carry inventories and increase production (and ultimately add more value to the resource) would also help to overcome these marketing issues. It is clearly understood that local stakeholders wish to see local benefits from the forest resource maximized.

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## **Economic Landscape: Objectives & Actions**

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### **Objective 11: *Forest Product Processing & Value Added Industry***

*To acknowledge the importance of developing a viable forest product processing and value added industry within the District and highlight options that will support, promote, and facilitate forest product processing and value added industries within the District.*

The process of describing where and how timber harvesting will take place in the District has been an important consideration in this Plan. Effectively, after trees are harvested, de-limbed and cut to appropriate dimensions, the tree has become a forest product. The next critical issue is to then decide what to do with these forest products. Currently and historically the vast majority of forest products (over 85% of the harvested volume) is shipped out of the region in raw log form for processing elsewhere. The 15% that remains is divided up among the local competing sawmills, all of which consistently run at under-capacity. This situation is an issue that public participants feel extremely passionate about, and they have made strong demands for change.

Local forest product processing and the development of value added industries are considered a viable solution to this dilemma. Forest product processing refers to primary manufacturing of raw logs into traditional lumber products. Value added refers to any use of timber that generates more economic value than dimension lumber alone. Value added is a secondary manufacturing process that leads to a higher value product such as; flooring, paneling, musical instruments, furniture and cabinets, log homes, gardening products, mouldings, solid doors, pre-engineered wood products etc. Value added industries may include several manufacturing processes, such as kiln drying, shaping, wood treatments, packaging and storage.

Considering the available wood supply for this District, forest product processing and value added represents a significant economic opportunity to this region. However, several challenges need to be overcome in developing this industry. A number of questions remain to be answered, and there is an urgent need for the following:

- Timber quality assessments
  - Potential products assessments
  - Marketing assessments
  - Current financial capacity
  - Skills development
  - Detailed cost analysis
-



***Actions:***

Although the details of manufacturing forest products are outside of the scope of this Plan, the following options will be evaluated in order to develop an action plan which will support, promote, and facilitate forest product processing and value added industries within the District:

- ❑ *Creating a processing and value added committee to research, monitor, and provide recommendations to the Planning Team on how to maximize timber resources locally;*
  - ❑ *Participate in and provide support to feasibility studies on local processing and value-added facilities;*
  - ❑ *Study the feasibility of providing support in the form of rotating loans in order to enable local saw-milling facilities to purchase wood in advance of harvesting (this would ensure adequate cash-flow for both harvesting operations and sawmill facilities);*
  - ❑ *Establishing a wood purchasing agency or cooperative to operate a sort yard, in order to create a viable market for local harvesting and value-added operations;*
  - ❑ *Ensure any new harvesting allocations are tied to investment in local capacity building for harvesting and processing.*
-

### **Objective 12: *Timber Harvesting & Sustainability***

*Ensure that all timber harvesting activities are ecologically responsible and sustainable over the rotation period.*

Timber harvesting represents one of the key components of this forest management plan. Timber harvesting occurs at a variety of scales in this District, from small-scale domestic harvesters with chainsaws and pickup trucks, to commercial operators using mechanical harvesters. Regardless of the scale, harvesting activities will follow specific standards to ensure ecological responsibility and sustainability.

As discussed in several other sections of this Plan, timber harvesting can have an impact on other forest values if not properly managed. Past harvesting activities in this District have resulted in a variety of lessons learned, some of which include:

- Pre-operational planning is required in order to identify sensitive features before harvesting commences.
- Moist or wet timber management areas require harvesting activities to take place in the winter season.
- Reduction of harvest block size is required to provide for stand level protected area networks.
- Watershed level planning is required to avoid concentration of harvest blocks and to design conceptual protected area networks.
- The quality of forest sites harvested must reflect the proportion in which they occur in the management areas to avoid high-grading the best timber sites.
- Harvest-blocks need to be driven by area available, not expected volume yields.

#### ***Actions:***

- ❑ *Timber harvesting operations will be subject to the District 19 Environmental Protection Standards (Appendix C);*
  - ❑ *Pre-operational planning is required to identify sensitive features before harvesting commences;*
  - ❑ *Moist or wet timber management areas require harvesting activities to take place in the winter season;*
  - ❑ *Type of timber harvesting operation will be constrained to specific management zones, as defined in Chapter 3 and Map 11;*
  - ❑ *Forest site quality proportions will be determined for each management area and harvesting activities will reflect these proportions;*
-

- *Proposed harvest areas will be driven by area available for harvest, not expected volume yields;*
  - *Harvest blocks will be designed using natural features as boundaries. These features will limit the size and shape of harvest blocks.*
-

### **Objective 13: *Timber Resource Utilization***

*To minimize merchantable wood wastage during timber harvesting operations, while providing for adequate retention of forest structure for natural habitat and ecosystem function requirements*

Good utilization is about minimizing wood wastage in the forest. Surveys of tops, stumps, cull, felled trees, pieces left, or standing trees are measured to find the net volume left in a cutting area after harvest. Although this coarse woody debris and other material left on site after harvest provides for natural habitat and ecosystem function requirements, it is very important to reduce the amount of merchantable timber left on the ground following harvest.

With reference to standing trees, it is important to leave snags and other trees on the site for nesting and perching sites and to maintain forest structure. Seed trees and other leave trees should not be left haphazardly in a cutting area but rather within a planned distribution or in patches which would give the greatest benefit for current wildlife use, as well as for regeneration and future development of the site. Standing trees retained after harvesting should not be considered in utilization surveys. Proper design of harvest units on the landscape and identification of trees to be left within harvest units will help guide utilization of areas.

Utilization surveys will continue in the District in order to quantify timber volumes left after harvest, but surveys will be expanded to take into account other attributes, particularly as they relate to habitat and other conditions following harvest. Public information and education (regarding wood species, gains in heating value from seasoning of wood, burning techniques, as well as the condition of the resource and desired condition of blocks following harvest) need to be expanded to improve utilization of the resource now and into the future.

#### ***Actions:***

- ❑ *A general harvest strategy of harvesting the oldest forest stands first will be followed;*
  - ❑ *Immature stands will not be harvested;*
  - ❑ *In an effort to refine the wood supply analysis, regular utilization surveys will be conducted and closely monitored;*
  - ❑ *Operators will be expected to utilize all merchantable portions of trees;*
  - ❑ *Sawlogs must be utilized as sawlogs and cut to the maximum length possible. A minimum of 20% of all commercially harvested timber will be made available to local sawmills.*
-

### **Objective 14: *Forest Access Roads***

*To develop a forest access road strategy for the district that balances the short and long-term access needs with other ecological and cultural objectives.*

Forest access roads are required for timber harvesting operations, silviculture, research projects, domestic harvesting, and general public use. The Department of Forest Resources and Agrifoods constructs four classes of access roads (see Appendix F for standards) and the Environmental Protection Plan of 1994 provides explicit guidelines for forest road construction. Further, the *FMD 19 Environmental Protection Guidelines* (Appendix C) outline specifications for forest access road construction and maintenance.

Forest harvesting by commercial operators (and subsequent silviculture work) has generally been concentrated in areas accessed by the existing network of forest access roads. Operational roads have been constructed from existing access roads. The existing network of forest access roads is shown on Map 9.

It is recognized that new road networks will have to be constructed to accommodate harvesting operations and other forest management activities. It is also expected that public highways and roads for agriculture and cottage development, as well as private roads, will continue to be planned and built through areas of productive forest in the district.

#### ***Actions:***

- ❑ *All roads will be constructed to approved environmental standards (as stated in Appendix F and Appendix C);*
  - ❑ *In areas where there are no ecological protection issues or public objection to road construction, and where desirable from a timber supply management point of view, (i.e. silviculture) roads will be maintained;*
  - ❑ *Where there are sensitivities, access from a main road would be restricted while forest operations in the areas are ongoing. After forest operations in the area are completed (either temporarily or permanently), access to the road would be denied to vehicular traffic by decommissioning (i.e., the removal of bridges and culverts or by the addition of barriers);*
  - ❑ *No main forest resource road would run on a continuous course parallel to the main channel of a scheduled salmon river within two kilometers of the salmon river;*
-

- *Temporary extraction routes less than 2 km in length will be constructed by commercial operators to a standard that is environmentally acceptable and, provided they have no further utility (i.e. for harvesting or silviculture), they will be decommissioned immediately after satisfactory inspection of the harvesting areas;*
  - *In order to minimize ground disturbance, extraction routes will be pre-planned in each operating block, and will target stable terrain. Where this disturbance exceeds 10%, reclamation of the trail has to be undertaken by the operator;*
  - *Permanent road construction should be conducted during the summer months or generally dry periods. Road use should be similarly restricted. In particular, road use and construction should be restricted during periods of road weakness, fire hazard or wildlife vulnerability.*
-

### **Objective 15: *Forest Resource Protection***

*To develop mechanisms for forest resource protection against disturbance, such as fire and insect outbreaks, which consider the risks to human life, property, commercial timber, and ecological health.*

On a large scale, ecosystems require protection to ensure their representation and to ensure that land use activities do not negatively impact on them. On a smaller scale, mechanisms for resource protection must also be considered in order to safeguard human life, property, commercial timber supplies, and other factors. In this context, the term “resource protection” is usually used to describe fire control and pest control activities.

Over the years, the DFRA has greatly improved its ability to suppress wildfires in the province. The provincial government took the lead role in forest fire management and suppression in 1975, making significant purchases of new equipment, technology, and aircraft. The Forest Service operates six CL-215 Air Tankers along with a Cessna spotter. Four long ranger helicopters are on full time standby and others are hired as needed. This equipment is used for initial attack along with ground crews who are scattered throughout the province in twenty-six depots (seven in Labrador). Fire co-ordination is handled by a Duty Officer for each region who oversees the initial attacks and deploys equipment as required. There is a modern new Provincial Forest Fire Equipment and Maintenance Facility in Gander and in 1996 a state-of-the art hose drying, testing, and repair facility was opened adjacent to the Forest Protection Centre.

Healthy forests have an increased resistance to insects and disease. Forest management techniques will be used as far as possible to maintain healthy forests and thus reduce the risk and severity of insect epidemics.

#### ***Actions:***

- ❑ *Fire protection activities in District 19 will be coordinated from the District Office in Northwest River;*
  - ❑ *All reported fires will be evaluated according to their risk to human life, property, ecological value, and commercial resources. Map 12 outlines the fire suppression priority map for this district;*
  - ❑ *The timber harvesting strategy (to harvest the oldest stands first) reduces the proportion of senescent or weakened trees in the forest;*
  - ❑ *A fire protection strategy will be developed for the four communities in the District which will include provisions for physical fire breaks where necessary;*
  - ❑ *Where planting is conducted, use of native species which are less susceptible to major defoliators will offer the forest a greater degree of protection;*
-

- *Protection of fish, wildlife, water, and other forest resource values in forestry operations will be accomplished through adherence to the Ecological Protected Areas Strategy, the Environmental Protection Plan, and any revisions made to it;*
  - *Protection of the forest landbase will also be ensured through refusal of Crown Lands applications for non-compatible use and through delineation or recommendation of areas for reserve status;*
  - *A community forest fire protection plan will be created for the towns of North West River and Sheshatshiu.*
-



### **Objective 16: Silviculture & Restoration**

*To develop a silviculture & restoration strategy which fits the unique ecological characteristics of the District and strives to re-establish pre-disturbance species distributions to disturbed or degraded sites.*

The study of *silvics* deals with the principles underlying the growth and development of single trees and of the forest as a biological unit. The practice of *silviculture* applies the knowledge of silvics to maintain and enhance the utility of forest stands for any given purpose (Smith, 1986). It is defined by Forestry Canada as “the theory and practice of controlling the establishment, composition, growth and quality of forest stands to achieve the biological and economic objectives of forest management.” Further, silviculture methods can also be utilized for restoration of degraded sites such as borrows pits, stream banks, roadways, or skid trails.

However, a recent Senate subcommittee report on the boreal forest found that adequate silvicultural methods have not been developed for the northern boreal forest, and that current research suggests intensive silviculture, such as planting, has had little success due to the ecological limits of the boreal forest (L. Bouthillier, 1999).

The Province of Newfoundland and Labrador has a silviculture program consisting of two related components: Operational Treatments and Research and Development. Under this Plan these activities will be monitored and adapted as new information on effective silviculture methods for this District and the boreal forest become available.

#### **Actions**

- ❑ *Regeneration surveys will be conducted at various intervals on harvested and disturbed areas to assess silvicultural requirements, ecosystem productivity, and site disturbance. Natural regeneration is preferred and will be promoted throughout the harvesting and silviculture strategies;*
  - ❑ *Planted species will attempt to re-establish pre-disturbance species distribution*
  - ❑ *Seedlings will be grown from local seed sources;*
  - ❑ *Thinnings will attempt to re-establish pre-disturbance species distribution;*
  - ❑ *Research will focus on growth and yield in both treated and non-treated stands so that a more refined wood supply analysis can be produced.*
-

**Objective 17: *Tourism and Recreation***

*To acknowledge the economic and cultural importance of tourism and recreation in the District. All forest-based activities will consider mutual impacts and aim to coordinate economic and cultural benefits.*

The tourism industry in Newfoundland and Labrador makes a significant contribution to the provincial economy. The industry employs 25,000 people, both directly and indirectly, and generates revenue in excess of \$600 million annually (based on the most current data available including both resident and non-resident visitation statistics). The non-resident tourism market has grown significantly in recent years (37% between 1996 and 2000) and this trend is expected to continue. The Lake Melville area is considered to be an emerging destination within this market and has the potential to realize significant development in the tourism industry.

As is the case in other parts of the province (Labrador in particular), the appeal of the tourism industry in this district is based on our natural resources. Non-resident visitors to the area have generally been drawn by world-class opportunities in fishing, hunting, wilderness adventure, and winter sports. Potential increases to these markets will likely emerge as a result of increased access (i.e. completion of the Trans Labrador Highway), an increase in tourism-related opportunities (i.e. Mealy Mountains National Park), and an increase in development of other non-related industries. Operational activities in this plan will aim to minimize the impact on the resources on which these tourism opportunities are dependent.

Outdoor recreational activities for local residents also often take the form of the tourism opportunities outlined above. While snowmobiling, skiing (Nordic and alpine), and snowshoing are common pastimes in the winter, boating, camping, and hiking are common in the spring and summer. It should be noted that domestic hunting and fishing, while properly classified as a subsistence harvesting activity, rather than a recreational activity, is a significant outdoor activity for a majority of local residents in this district. Many local residents also maintain and spend a considerable amount of time throughout the year at private cabins in the area.

***Actions:***

- *The Planning Team will continue to work with local stakeholders and operators to delineate areas which have high tourism and recreational use or potential use;*
-

- *Critical viewsheds will be delineated for high potential areas (i.e. Grand Lake, Trans-Labrador Highway, Snowmobile Trail), and commercial forestry activities within these areas will be limited or designed to minimize the impact to visual sensitivity;*
  - *Where commercial forestry activities are planned in areas adjacent to recreational areas, efforts will be made to execute those operations during “low season” (i.e. summer operations in close proximity to winter activities and vice versa);*
  - *Firm establishment of Mealy Mountain National Park boundaries (and options for connectivity with this Plan’s Protected Area Network) will continue to be supported by the Planning Team;*
  - *Visual sensitivity will be evaluated around cabin development areas and harvesting activities will be planned to minimize this impact. A minimum 50 meter “no harvest” buffer will also be maintained around registered cabins.*
-

**Objective 18: *Future Economic Developments***

*To recognize the importance of potential economic developments in the region and consider how all developments will interact with the goals, objectives, and principles of this plan.*

Several significant economic developments are proposed for the central Labrador region. Proposed developments which may influence forest activities in District 19 include:

- Lower Churchill Hydroelectric Project
- Trans Labrador Highway Phase III
- An aluminium production facility
- Mealy Mountains/Akamiupishku National Park
- Voisey's Bay Nickel Project<sup>11</sup>

These proposed economic developments are independent of this Plan. However, due to the fact that economic developments within a region are interlinked, developments in other sectors will have an influence on the forest-based economic developments described in this Plan. Therefore, future developments need to be considered in relation to the goals and objectives outlined in this Plan.

***Actions:***

- ❑ *Organizations responsible for the implementation of this Plan will provide input as requested at regional economic forums or seminars, and to boards or agencies regarding the goals and objectives of the Plan;*
- ❑ *Organizations responsible for this Plan will provide comments and information to any environmental assessments as required;*
- ❑ *Impacts of potential economic developments will be assessed within the ecological, cultural, and economic frameworks of this Plan;*
- ❑ *The Plan will be adapted, where necessary, to accommodate other approved economic developments.*

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<sup>11</sup> Although this project is located out of the District, it is anticipated the central Labrador region would realize significant economic spin-offs.

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## **CHAPTER 5: RESEARCH & MONITORING**

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## **Ecological Research & Monitoring**

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As discussed in Chapter 1, an Ecosystem-Based Planning approach to forest management is founded upon protecting, maintaining, or where necessary, restoring fully functioning ecosystems over a range of spatial scales over long timeframes. In order to realize this goal, specific ecological criteria and indicators need to be developed, and an active research and monitoring program must be in place.

From 1996 to 1998 several public stakeholder meetings in this District focused on this issue. As a result of this work, there was general consensus to adopt a criteria and indicators system as outlined by the Canadian Council of Forest Ministers (CCFM). This system has evolved from several international efforts that were initiated to develop criteria and indicators for sustainable forest management following the 1992 United Nations Conference on Environment and Development.

These criteria and indicators move beyond a narrowly defined focus on the productivity of timber and other commercial forest products to incorporate ecological and social dimensions of sustainability. For example, the broad forest values developed as criteria under the Montreal Process for the conservation and sustainable management of boreal and temperate forests includes the following priorities (see Appendix I for detailed descriptions):

1. Conservation of biological diversity;
2. Maintenance of the productive capacity of forest ecosystems;
3. Maintenance of forest ecosystem health and vitality;
4. Conservation and maintenance of soil and water resources;
5. Maintenance of forest contribution to global carbon cycles;
6. Maintenance and enhancement of long-term multiple socio-economic benefits to meet societal needs;
7. Effective legal, institutional, and economic frameworks for forest conservation and sustainable management.

Further, the developments of national and international standards in the form of forest certification systems are also an important indicator for this Plan.

### ***Actions:***

The parties responsible for the implementation of this Plan will undertake an ecological research and monitoring program through collaboration and consultation with local stakeholders, research organizations, and other institutions. The parties responsible for creating this plan have identified several “go forward” planning issues that require further research, monitoring and action to resolve.

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Work undertaken by the Parties responsible for implementing the ecological research and monitoring program will accomplish the following priorities:

- ❑ *Complete the landscape level EPAN for the remainder of FMD 19, with an emphasis on areas south of the Churchill River;*
  - ❑ *Consult and collaborate with Parks Canada and the Mealy Mountains/Akamuiupishku National Park Steering Committee on the feasibility study for the proposed Mealy Mountains/Akamuiupishku National Park;*
  - ❑ *Research and monitor ecological components of the criteria and indicators set out by the CCFM (Appendix I);*
  - ❑ *Research, monitor and participate in new criteria and indicator programs;*
  - ❑ *Design and implement a monitoring strategy to ensure that the District protected area strategy maintains viable populations of key indicator species for each of the three scales;*
  - ❑ *Research and monitor stream, river, and lake water quality, and aquatic indicator species such as fish;*
  - ❑ *Work to refine and develop at the landscape and watershed level an ecosystem classification system based on high-resolution satellite imagery and change detection;*
  - ❑ *Work to develop a site level ecosystem classification system based on indicator plants, soil nutrients, and moisture regimes;*
  - ❑ *Research and monitor natural disturbance regimes at multiple spatial scales;*
  - ❑ *Research and monitor the effectiveness of the Ecological Protected Area Networks at all spatial scales to protect and maintain ecological structure and function;*
  - ❑ *Research and monitor specific ecological impacts of timber harvesting as identified in Annual Work Schedules such as forest regeneration, site disturbance, and alternative logging methods;*
  - ❑ *Research and monitor forest stand dynamics over time. Particular attention will be given to ecosystem productivity, composition, structure, and function;*
  - ❑ *Report annually on the status of “go-forward” planning issues, research, and monitoring results.*
-

## **Cultural Research & Monitoring**

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As discussed in the section above, an active research and monitoring program must be put in place, and specific criteria and indicators need to be developed in order to achieve the ecological objectives and goals of this Plan. A similar framework must also be developed and implemented for research and monitoring with respect to cultural objectives and goals.

Although the Canadian Council of Forest Ministers criteria and indicators program addresses some cultural values, additional indicators are required to address the cultural values encompassed in this plan. The Centre For International Forestry Research (CIFOR) has developed a set of criteria and indicators for sustainable forest management specifically focusing on Aboriginal and rural communities which place a high cultural value on forests. Similarly, several of the FSC principles and criteria encompass a broad social spectrum with particular attention paid to the rights of indigenous peoples. A summary of the CIFOR criteria and indicators for human well-being and the FSC Principles & Criteria are provided in Appendix I.

### ***Actions:***

The Parties responsible for the implementation of this Plan will undertake a cultural research and monitoring program through collaboration and consultation with local stakeholders, research organizations, and other institutions. The research and monitoring program will strive to address the following priorities:

- *Research and monitor cultural components of the criteria and indicators programs set out by FSC and CIFOR (Appendix I);*
  - *Research, monitor and participate in cultural criteria and indicator developments such as those outlined in the various certification standards;*
  - *Research on non-Innu land use and occupancy information and mapping;*
  - *Assess cultural protection measures of the Plan with Aboriginal and non-aboriginal communities;*
  - *Aboriginal and non-aboriginal assessments of stand level timber harvesting practices;*
  - *Impacts of timber management activities on Aboriginal and non-aboriginal cultural values;*
  - *The results of the cultural research and monitoring program will be reported annually.*
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## **Economic Research & Monitoring**

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Specific criteria and indicators and an active research and monitoring framework must be applied for the economic objectives and goals identified in this Plan. There are several overlaps between ecological, cultural, and economic research and monitoring components. For the purpose of this Plan, components which have a direct link to economic activities, such as timber harvesting, management zoning, and annual rate of harvest are addressed in this section.

### ***Actions:***

The Parties responsible for the implementation of this Plan will undertake an economic research and monitoring program through collaboration and consultation with local stakeholders, research organizations and other institutions. Further, it is recognized that the Parties responsible for creating this plan have identified several “go forward” planning issues that require further research and monitoring to resolve. In doing so, this research and monitoring program will strive to address the following priorities:

- *Research, monitor and review the following “go forward” issues:*
    - *Ecological and operational implications of harvesting in proximity to the lower Goose River linkage;*
    - *Ecological and operational implications and patterns associated with harvesting poor sites;*
    - *Review isolation analysis with air-photo interpretation on a management unit basis;*
    - *Buffer size and function for riparian features;*
    - *Percentage of area required for stand level EPAN's;*
    - *Percentage of volume required for block retention;*
    - *Utilization, cull, and waste levels;*
    - *Derived ecosystem productivity and growth and yield information for regenerating stands.*
  - *Research and monitor economic components of the criteria and indicators programs set out by CCFM (Appendix I);*
  - *Participate and provide input into economic criteria and indicator development for boreal certification;*
  - *Research and monitor economic productivity of all forest-based industries;*
  - *Research and monitor training and employment opportunities / developments in all forest-based industries;*
  - *Monitor timber harvest block volumes and areas against estimations;*
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- *Create a processing and value added committee to research, monitor, and provide recommendations to the Planning Team on how to maximize local utilization of timber resources;*
  - *Create a database of potential forest product developments and market information;*
  - *Report annually on the status of research and monitoring programs and results.*
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