Canadian Forest Service
Forest Ecosystem Processes and
Climate Change Networks

The Canadian Intersite Decomposition Experiment (CIDET):

Project and Site Establishment Report

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J.A. Trofymow
and the CIDET Working Group

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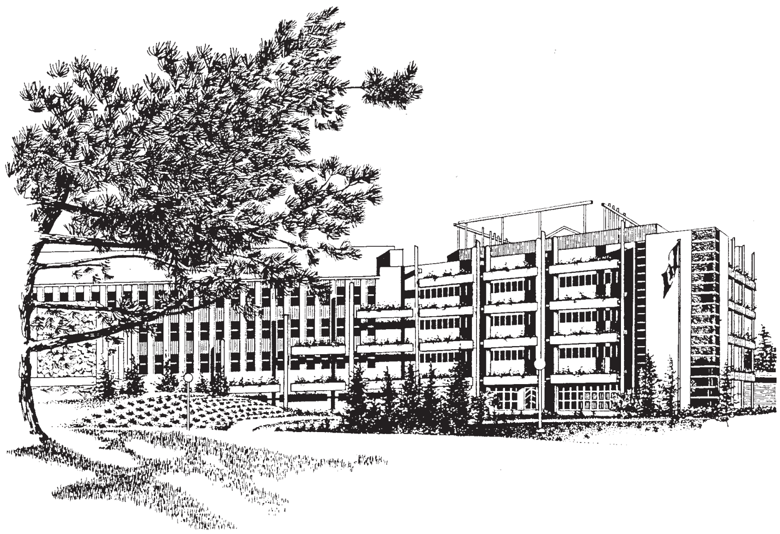

The Pacific Forestry Centre, Victoria, British Columbia

The Pacific Forestry Centre of the Canadian Forest Service undertakes research as part of a national network system responding to the needs of various forest resource managers. The results of this research are distributed in the form of scientific and technical reports and other publications.

Additional information on Natural Resources Canada, the Canadian Forest Service and the Pacific Forestry Centre research and publications is also available on the World Wide Web at http://www.pfc.cfs.nrcan.gc.ca/.

Forest Ecosystem Processes Network

Recent developments and advances by the forest sector in Canada have identified considerable shortfalls in the ecological knowledge base needed for sustainable forest management. This is not surprising when one considers the vastness and diversity of our forests and the complexity of forest ecosystems. However, the ability to forecast the outcomes of management decisions and natural disturbances on the composition and productivity of natural ecosystems is essential.

The Canadian Forest Service (CFS) Forest Ecosystem Process Network (FEPN) will use CFS research centres in Sault Ste. Marie, Ontario and Sainte-Foy, Quebec as lead centres, and will draw upon the talent and expertise of CFS scientists across the country. The network, in collaboration with industry, provinces, and universities, will conduct and coordinate a program of ecological research within forest ecozones of Canada. This program will focus on developing criteria and measurements for sustainable resource utilization and increase our ability to forecast how natural and man-made disturbances will shape the future forest landscape of Canada.

The Climate Change Network

The long-term health and sustainability of Canada's forests depend on a delicate balance of growing conditions. Even small changes in climate could have a significant effect on the growth and ranges of existing species, ecosystem behavior, and patterns of disturbance from fire, insects, and diseases. Separating the effects of natural variability from human-caused change is critical. It is also important to clarify the role of forests in carbon storage, since forest management practices can alter the uptake and storage of carbon. As Canada's major national forest research organization, the Canadian Forest Service has a major role to play in identifying and anticipating the rate, magnitude, and location of climate change impacts and developing strategies for coping. The Climate Change Network has been established to lead this effort.

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Natural Resources Canada
Canadian Forest Service
Climate Change Network
Ecosystem Processes Network

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Abstract

This report details the background to the establishment of the Canadian Intersite Decomposition Experiment (CIDET). The objectives of the study were: (a) to investigate the long-term rates of litter decomposition and nutrient mineralization over a broad range of forested ecoclimatic regions in Canada; (b) to study the relationship between decomposition rates, substrate quality and climate; (c) to assess the relative importance of site factors and microclimate on decomposition rates; (d) to assess the influence of site moisture regimes on decomposition rates; and (e) to test specific hypotheses on the observed pattern of litter decomposition.

The study was established in 1992 and involved the preparation of almost 11 000 litter bags containing samples of sets of 12 standard litter types. Ten sets were placed in each of four replicate plots on 21 sites (18 upland and 3 wetland) representing a range of forested ecoclimatic regions. Each year for ten years, one set of bags is removed per plot and analyzed for mass loss and carbon, nitrogen and phosphorous content.

The 21 sites cover a broad range of conditions from the wet (yearly precipitation 1782 mm), mild (9.3ºC mean annual temperature) Douglas-fir and western hemlock forested sites in the pacific cordilleran ecoclimatic region, to the dry (261 mm), cold (-9.8ºC), black spruce forested sites in the subarctic. Surface soil chemical properties generally reflected soil type, with brunisols and regosols having the lower %C and %N and higher pH’s than podzols. In general sites in the pacific cordilleran or cool temperate were warmer, wetter and had forests with higher basal area, mean DBH, and height that those in the other ecoclimatic regions. Sites in the boreal, subarctic and transitional grassland formed a board group that could be distinguished from the cordilleran which were at a higher elevation and had forests with generally lower stand densities.

CIDET is a cooperative study involving 20 researchers from the Canadian Forest Service, universities and provincial ministries The successful establishment of CIDET complements similar studies underway in the U.S. and Europe. Together these studies will increase our understanding of the relationship between climate, litter quality, and decomposition processes.

Résumé

Le présent rapport expose les circonstances entourant la mise sur pied de l'Expérience canadienne sur la décomposition interstationnelle (CIDET). Cette dernière avait comme objectifs (a) d'étudier les taux de décomposition à long terme de la litière et la minéralisation des éléments nutritifs dans une vaste gamme de régions écoclimatiques boisées du Canada; (b) d'étudier le rapport entre les taux de décomposition, la qualité du substrat et le climat; (c) d'évaluer l'importance relative des facteurs stationnels et du microclimat sur les taux de décomposition; (d) d'évaluer l'influence des régimes hygrométriques des stations sur les taux de décomposition; et (e) devvérifier des hypothèses particulières sur le mode de décomposition de la litière observé.

Mise sur pied en 1992, cette étude a exigé la préparation de près de 11 000 sacs contenant des échantillons de 12 types courants de litière. Dix séries de 12 sacs ont ensuite été placées dans quatre parcelles comparatives établies dans 21 stations (18 en milieu sec et 3 en milieu humide) représentatives d'une vaste gamme de régions écoclimatiques boisées. Chaque année depuis dix ans, on récupère une série de sacs dans chaque parcelle et on analyse la perte de matière ainsi que les teneurs en carbone, en azote et en phosphore.

Les 21 stations sont représentatives d'une vaste gamme de conditions de l'Ouest, allant de peuplements de pruches de l'Ouest et de douglas vert à climat humide (précipitations annuelles de 1 782 mm) et doux (température annuelle moyenne de 9,3° C) de la région écoclimatique de la Cordillère du Pacifique à des peuplements d'épinettes noires à climat sec (261 mm) et froid (-9,8° C) de la région écoclimatique subarctique. Les propriétés chimiques de la couche superficielle du sol reflétaient généralement le type de sol. Les brunisols et les régosols avaient les plus faibles pourcentages de C et de N et un pH supérieur à celui des podzols. En règle générale, les stations de la région de la Cordillère du Pacifique et de la région tempérée froide étaient plus chaudes et plus humides que celles des autres régions écoclimatiques et leurs forêts avaient une surface terrière, un dhp moyen et une hauteur plus élevés. Les stations des régions boréale, subarctique et de prairie de transition forment un large groupe distinct de celles de la Cordillère qui étaient situées à des altitudes plus élevées et étaient composées de forêts à densité généralement plus faible.

La CIDET est une étude conjointe réunissant 20 chercheurs provenant du Service canadien des forêts, des universités et de ministères provinciaux. La CIDET, dont la mise sur pied a été couronnée de succès, complète des études semblables en cours aux États-Unis et en Europe. La conjugaison des résultats de toutes ces études nous permettra de mieux comprendre les rapports entre le climat, la qualité de la litière et les processus de décomposition.

1. Introduction

Carbon dioxide is an important greenhouse gas and increases in its concentration have been linked to global warming and climate change (Houghton et al. [editors] 1996). Climate change may have large impacts upon the continued productivity and health of Canadian forests (Pollard 1985; Kurz and Apps 1994). Current and future forest management practices could influence the course of climate change through their influence on the terrestrial carbon cycle – the sequestration and release of C in forest biomass and soils. For example, changes to the forested land area either through planting, harvest, or control of natural disturbances such as fire would affect the balance between the uptake of carbon from the atmosphere by plants through photosynthesis and release of carbon through fire, respiration, and decomposition. Canadian forests contain large amounts of carbon stored in trees and plants (12 Pg [10^{15} g]); soils and decaying plant litter (76 Pg); and peatlands (135 Pg) (Kurz et al. 1992); our forests may be especially vulnerable to climate change, as several global circulation models predict the largest changes in temperature will occur in northern latitudes. Warmer temperatures could increase decomposition rates, releasing carbon stored in soils and litter, and thus may accelerate the rise in atmospheric carbon dioxide levels.

To understand the potential interactions of climate and forests, several projects are underway to model the dynamics of the various C pools (e.g., FORCYTE, Kimmins et al. 1990; Canadian Forest Sector Carbon Budget Model [CBM-CFS], Kurz et al. 1992; Price and Apps 1993). During the development of the CBM-CFS model it was found that for many of the processes modeled, information was limited. In particular, data on rates of decomposition have been found lacking in extent and length – some forest types have been studied extensively, others not at all, and long-term studies are rare, most less than three years.

Decomposition of detritus and concomitant nutrient mineralization are influenced by many factors including macroclimate, microclimate, substrate quality, litter nutrient concentrations, litter size, decomposer species, and exogenous nutrient availability (Swift et al. 1979). While models of the effects of climate on decomposition have been developed (Bunnell and Tait 1977; Meentenmeyer 1978; Moorehead and Reynolds 1991), much emphasis has recently been placed on measuring of substrate quality as well as climate as the primary predictors of detritus decomposition and nutrient mineralization (Melillo et al. 1982; Coûteaux et al. 1995).

Similar questions regarding decomposition processes have been raised in the United States (Melillo et al. 1989; Harmon and Melillo 1990; LIDET 1995). A 10-year study, funded by the National Science Foundation, has recently been initiated (1) to examine the long-term rates of decay of several litter types on 28 sites covering a range of macroclimatic conditions, and (2) to compare the results with *a priori* predicted decomposition rates from several soil process models. Most of the sites are in grasslands, deserts, and warm temperate and tropical forests (LIDET 1995). Significantly, only one subarctic and one boreal forest site are being used in the U.S. study.

In September 1991 a workshop was held at the University of Saskatchewan, Saskatoon, to develop objectives and a methodology for a long-term intersite decomposition experiment in Canada, similar in design to the U.S. study. The Canadian Intersite Decomposition Experiment (CIDET) was initiated to investigate the long-term rates of litter decomposition and nutrient mineralization over a broad range of forested ecoclimatic regions in Canada using a range of litter types. This cooperative study involves 18 researchers from the Canadian Forest Service, universities, and provincial ministries across Canada. The objectives and methods used are more limited than in the U.S. study because of the cooperative nature of the study and budget constraints.

This report describes the objectives, experimental plan, field and laboratory methods, and responsibilities for the project as developed at the 1991 Saskatoon Workshop, as well as details and summaries of site characteristics including the physiographic, vegetation, soils, and mensuration features of each site.

2. Objectives

CIDET has the following main objectives:

1. To determine the long-term rates of litter decomposition and nutrient mineralization for a range of litter types in major ecoclimatic regions of Canada.
2. To determine the role of substrate quality and climate on long-term litter decomposition rates.
3. To determine the relative importance of microclimate and site factors on litter decomposition rates.
4. To test the influence of site-specific moisture regimes on litter decomposition rates.
5. To test specific hypotheses regarding the observed patterns of litter decomposition.

In addition, data will be available to the wider scientific community for calibrating general process (e.g., CBM-CFS) or for testing specific models of litter decay and nutrient turnover. Other ancillary and related studies suggested during the 1991 Saskatoon Workshop are briefly described in Appendix 1. The following sections describe each main objective in more detail.

2.1 Litter Decomposition in Major Ecoclimatic Regions

Because of the limited number, range, and duration of decomposition studies that have been carried out in Canada, the first objective of the project is to obtain data on decomposition rates for a broad range of ecoclimatic regions using 21 sites (18 upland and 3 wetland sites) (Figure 1). The sites were chosen by (i) being representative of upland forest types for the ecoclimatic region they are within, (ii) proximity (10 km or less) to an AES (Atmospheric Environment Service, Environment Canada) climate station, and (iii) the availability of a cooperator to provide ongoing annual monitoring (Table 1). A 10-year litter bag experiment was established on each site, with collections to be made annually. The results will be used to calculate rates of long-term litter decomposition and nutrient mineralization.

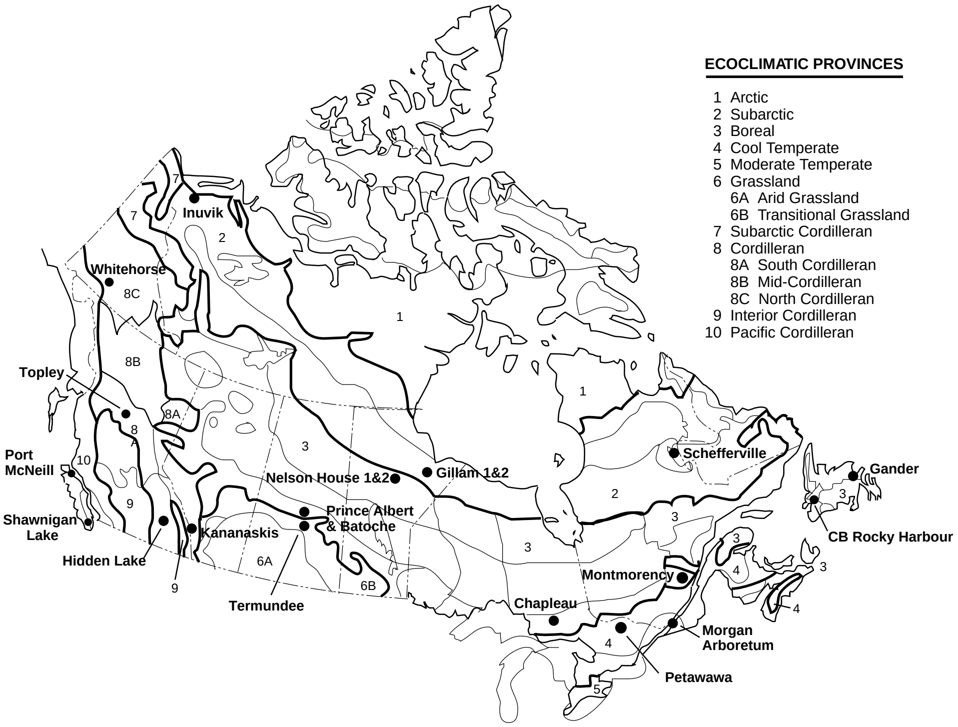

Figure 1. Distribution of CIDET sites across the ecoclimatic provinces and regions of Canada (after Ecoregions Working Group 1989)

Table 1. Location, ecoclimatic region, major tree species, and cooperator(s) for the CIDET sites

Site code	Moist.[a]	Site name	Pr	Latitude	Longitude	Ecoclimatic region	Major tree species	Cooperator
BAT	w	Batoche	SK	52° 43’	106° 07’	Transitional Grassland	*no trees*	Zoltai/Siltanen
CBR	u	CB Rocky Harbour	NF	49° 32’	57° 50’	Maritime Low Boreal	*Abies balsamea*	Titus
CHA	u	Chapleau	ON	47° 38’	83° 14’	Humid Low Boreal	*Pinus banksiana*	Morrison
GAN	u	Gander	NF	48° 55’	54° 34’	Maritime Mid-Boreal	*Abies balsamea*	Titus
GI1	u	Gillam 1	MB	56° 19’	94° 51’	Low Subarctic	*Picea mariana*	Zoltai/Siltanen
GI2	w	Gillam 2	MB	56° 19’	94° 30’	Low Subarctic	*no trees*	Zoltai/Siltanen
HID	u	Hidden Lake	BC	50° 33’	118° 50’	Moist Montane Southern Cordilleran	*T. heterophylla/Thuja plicata*	Prescott
INU	u	Inuvik	NT	68° 19’	133° 32’	High Subarctic	*Picea mariana*	Wein
KAN	u	Kananaskis	AB	51° 00’	115° 00’	Montane Southern Cordilleran	*Pinus contorta*	Visser
MAR	u	Morgan Arboretum	PQ	45° 25’	73° 57’	Humid Mid-Cool Temperate	*Fagus grandifolia*	Fyles
MON	u	Montmorency	PQ	47° 19’	71° 08’	Perhumid Low Boreal	*Abies balsamea*	Camirè
NH1	u	Nelson House 1	MB	55° 55’	98° 37’	Subhumid High Boreal	*Pinus banksiana*	Zoltai/Siltanen
NH2	w	Nelson House 2	MB	55° 55’	98° 25’	Subhumid High Boreal	*no trees*	Zoltai/Siltanen
PAL	u	Prince Albert	SK	53° 13’	105° 58’	Subhumid Low Boreal	*Pinus banksiana*	Zoltai/Siltanen
PET	u	Petawawa	ON	45° 55’	77° 35’	Humid High Cool Temperate	*Pinus banksiana*	Duchesne
PMC	u	Port McNeill	BC	50° 36’	127° 20’	Maritime South Pacific Cordilleran	*Tsuga heterophylla*	Prescott
SCH	u	Schefferville	PQ	54° 52’	66° 39’	Low Subarctic	*Picea mariana*	Moore
SHL	u	Shawnigan Lake	BC	48° 38’	123° 42’	Coastal South Pacific Cordilleran	*Pseudotsuga menziesii*	Trofymow
TER	u	Termundee	SK	51° 50’	104° 55’	Transitional Grassland	*Populus tremuloides*	Anderson/Kozak
TOP	u	Topley	BC	54° 36’	126° 18’	Boreal Southern Cordilleran	*Pinus contorta/Picea glauca*	Kranabetter/Trowbridge
WHI	u	Whitehorse	YT	60° 51’	135° 12’	Boreal Northern Cordilleran	*Pinus contorta*	Smith/White

[a] Upland (u) or wetland (w).

2.2 Litter Quality and Climate

Since the study cannot cover the full range of ecoclimatic regions within Canada, the results can be extended to other regions by relating decomposition rates to climate and litter quality. Previous studies often confounded the effects of climate and litter quality because the number of litter types or sites was limited. By placing a complete range of litter types on all sites, it should be possible to distinguish the effects of climate from those of litter quality. These relationships will be examined using regression models to develop a response surface with measures of litter quality and climate as independent variables.

Eleven litter types were included in CIDET (Table 2) and represent a compromise between species representative of all ecoclimatic regions, species of varying litter qualities, and the logistics of collecting the 10 kg of litter needed for each species for the decomposition study. To compensate for this incomplete range of litter types, small quantities of 26 other litter types which CIDET cooperators were using in independent studies were also collected and characterized.

2.3 Microclimate and Site Factors

General decomposition models based on climate and litter quality alone do not necessarily take into account site-specific factors that may play an equally important role in determining decomposition rates. For example, site microclimate could change decomposition rates by two- to three-fold over those predicted from climate and litter quality alone. Similarly, differences in soils between sites could affect decomposition rates because of differences in the local microenvironment and in exogenous nutrient availability. An additional objective of this project is therefore to examine how important these other factors are in determining decomposition rates. Information on a wide array of site factors (tree species, vegetative cover, slope, aspect, elevation, and surface topography) and soils (type, forest floor thickness, soil depth, pH, cations, and macronutrient contents) was collected for each site. The data could then be used in a multivariate analysis to reduce the residual variation in decomposition rates as predicted from a model using litter quality and climate alone. Microclimate (soil temperature and moisture) and soil nutrient availability (as determined using resin bags) will also be measured on as many sites as possible and the data used in a multivariate analysis.

2.4 Site-specific Moisture Regimes

Soil moisture regimes can greatly affect decomposition rates. Maximum rates of decomposition occur when moisture conditions for microbial growth are optimal, which is at water potentials of about -10 kPa (Paustian and Schnurer 1987). Microbial activity virtually ceases and decomposition rates decline dramatically under saturated or very dry conditions (< -8000 kPa).

While an irrigation treatment could be used to explicitly test the effects of moisture availability on decomposition rates, the design of the overall study does not lend itself to such a treatment. Instead the effects of moisture on decomposition rates will be tested by comparing rates at two spatial levels: (i) at the site level, by comparing decomposition rates for all 11 litter types in three paired lowland and wetland boreal forest sites both with the same macroclimate (Table 1), and (ii) at the microsite level, by comparing the effects of placement (above- or belowground) of wood blocks. Moisture and temperature regimes belowground are generally more moderate than those at the soil surface, experiencing fewer and less extreme wetting/drying cycles.

Table 2. Species code, species binomial, common name, place of collection, and collector of litter types analyzed (after Trofymow et al. 1995)

Species code[a]	Species binomial	Common name	Place of collection	Collector
Ccn	*Chamaecyparis nootkatensis*	Yellow-cedar	Cypress Mt Vancouver BC	Prescott
Cdc	*Pseudotsuga menziesii*	Douglas-fir nw	Northwest Bay BC	Trofymow
Cdc[b]	***Pseudotsuga menziesii***	**Douglas-fir ci**	**Shawnigan Lk BC**	**Trofymow**
Cdi	*Pseudotsuga menziesii*	Douglas-fir in	Beedy Cr McLeese Lk BC	Prescott
Cfa	*Abies amabilis*	Amabilis fir	Cypress Mt Vancouver BC	Prescott
Cfb	*Abies balsamea*	Balsam fir	Rocky Harbour NF	Titus
Cfl	*Abies lasiocarpa*	Alpine fir	Kananaskis Valley AB	Prescott
Chm	*Tsuga mertensiana*	Mountain hemlock n	Cypress Mt Vancouver BC	Prescott
Chw	*Tsuga heterophylla*	Western hemlock n	Maple Ridge UBC Res For BC	Prescott
Cll	***Larix laricina***	**Tamarack s**	**Batoche SK**	**Zoltai**
Cll	*Larix laricina*	Tamarack larch	Dawson Cr BC	Prescott
Clo	*Larix occidentalis*	Western larch	Kimberly BC	Prescott
Cpj	***Pinus banksiana***	**Jack pine**	**Petawawa ON**	**Duchesne**
Cpl	*Pinus contorta*	Lodgepole pine c	Sunday Summit Princeton BC	Prescott
Cpp	*Pinus ponderosa*	Ponderosa pine	Kootenay Lk Creston BC	Prescott
Cpr	*Pinus resinosa*	Red pine	Petawawa ON	Duchesne
Cpw	*Pinus monticola*	Western white pine	Coquihalla Summit BC	Prescott
Csb	*Picea mariana*	Black spruce bc	Dawson Creek BC	Prescott
Csb	***Picea mariana***	**Black spruce s**	**Batoche SK**	**Zoltai**
Cse	*Picea engelmannii*	Engelmann spruce	Kananaskis Valley AB	Prescott
Css	*Picea sitchensis*	Sitka s pruce	Pack Forest Eatonville WA	Prescott
Csw	*Picea glauca*	White spruce	Kananaskis Valley AB	Prescott
Cto	*Thuja occidentalis*	Eastern whitecedar	Morgan Arb St-Anne-Bellevue PQ	Fyles
Ctp	***Thuja plicata***	**Western redcedar**	Maple Ridge UBC Res For BC	**Prescott**
Cyp	*Taxus brevifolia*	Pacific yew l	Thetis Lk Victoria BC	Trofymow
Dba	***Fagus grandifolia***	**American beech**	**Morgan Arb St-Anne-Bellevue PQ**	**Fyles**
Dbw	***Betula papyrifera***	**White birch**	**Badger NF**	**Titus**
Dpt	***Populus tremuloides***	**Trembling aspen**	**Kananaskis Valley AB**	**Visser**
Dro	*Quercus rubra*	Red oak	Petawawa ON	Duchesne
Dsa	*Alnus rugosa*	Speckled alder	Petawawa ON	Weber
Dsm	*Acer saccharum*	Sugar maple	Morgan Arb St-Anne-Bellevue PQ	Fyles
Fbf	***Pteridium aquilinum***	**Bracken fern**	**Petawawa ON**	**Duchesne**
Gfh	***Festuca hallii***	**Plains rough fescue**	**Termundee SK**	**Anderson**
Hea	*Epilobium angustifolium*	Fireweed	Kananaskis Valley AB	Visser
Lcs	*Cladina stellaris*	Reindeer lichen	Schefferville PQ	Moore
Sgs	*Gaultheria shallon*	Salal	Thetis Lk Victoria BC	Trofymow
Whw	***Tsuga heterophylla***	**Western hemlock w**	**Cowichan BC**	**Trofymow**

[a] The species code is made of three letters; the first indicates life-form (Conifer, Deciduous tree, Fern, Grass, Herb, Lichen, Shrub, Wood); the second letter indicates the Latin name or common name of the genus; the third letter indicates the Latin or common name of the species.

[b] Litter types included in CIDET are boldfaced.

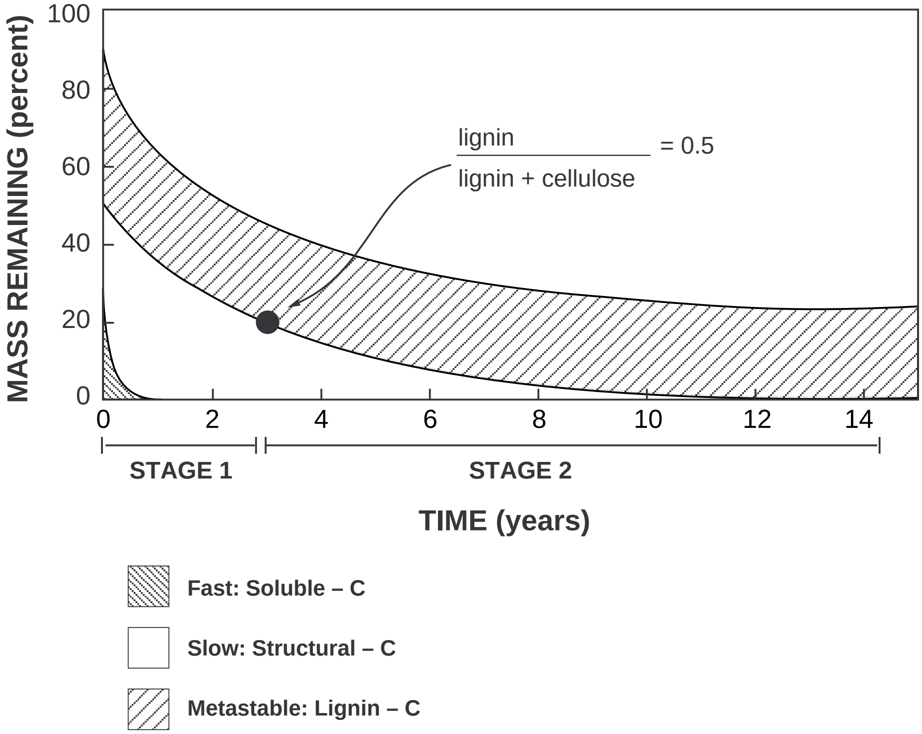

Figure 2. The three phases and two stages of fine litter decomposition (after LIDET 1995).

2.5 Patterns of Litter Decomposition

It has been suggested (LIDET 1995) that the decomposition of fine litter can be divided into three phases (Figure 2), each corresponding to the loss of specific litter fractions. The decomposition rate in the first phase is fast, lasts only few months, and is due to rapid microbial assimilation and leaching of soluble compounds such as sugars. A second slow decomposition phase, lasting a few years, is dominated by the loss of structural carbon from cell walls, including compounds such as cellulose and hemicellulose. During the first two phases, nutrient contents remain constant or may increase as the decay organisms immobilize external sources of nutrients. The third metastable phase, lasting several decades, occurs as lignin and secondary products formed during the initial phases of decomposition are slowly broken down, resulting in a slow net decrease in mass and nitrogen content.

Several workers (Minderman 1968; Paul and Voroney 1980; Parton et al. 1987; LIDET 1995) have suggested that, as a first approximation, long-term decomposition of fine litter can be described as the sum of the exponential decay curves for each different chemical fraction. This relationship is described in the equation:

$$\text{Mass}(T) = \text{Soluble-C} \times e^{-KfT} + \text{Structural-C} \times e^{-KsT} + \text{Lignin-C} \times e^{-KmT,}$$

where: Kf, Ks, and Km are the rate constants for the fast, slow, and metastable fractions, respectively, T is time, and soluble, structural, and lignin are the amounts of C in each of these fractions. On a time scale of 10 years, the rate constant of the metastable fraction can be assumed to approach zero. Temperature and moisture conditions are assumed to influence the rate constants.

The above model generates some specific hypotheses on the patterns of litter decomposition that can be examined within the context of CIDET:

Hypothesis 1

Only two stages of litter decomposition will be observed (Figure 2), and these stages can be distinguished by changes in decay rate. **Rationale**: Since the sampling will occur only annually in this study, it will be difficult to distinguish the first two phases; thus the first and second phases can be combined into a single first (fast + slow phases) stage.

Hypothesis 2

Mass loss and N accumulation during the first (fast + slow phases) stage is determined by both initial litter quality and climate. **Rationale**: Climate is assumed to affect rates of decay of all fractions (Kf, Ks, Km).

Hypothesis 3

Mass loss in the final (metastable) stage is determined primarily by climate. **Rationale**: All of the soluble and structural C is assumed to have been lost during the first (fast + slow phases) stage of decomposition and thus only one substrate type remains.

Hypothesis 4

Mass loss in both stages is significantly affected by microclimate (as determined by stand development and site conditions), especially soil moisture and temperature. **Rationale**: Microclimate within a forest and soil may differ from that measured at screen height in a climate station on site or several kilometres away.

Hypothesis 5

In the first stage (fast + slow phases) of decomposition the availability of exogenous N affects the initial rate of mass loss and amount of N accumulated. **Rationale**: Since litter is rich in C compounds and low in nutrients it is assumed that the availability of external nutrients to decay organisms speeds decay and increases accumulation of N through immobilization.

Hypothesis 6

The final (metastable) stage of decomposition begins as the lignocellulose ratio exceeds 0.5. **Rationale**: As soluble and structural C are lost, the proportion of remaining lignin increases. Melillo et al. (1989) suggest that a specific ratio (lignin/lignin+cellulose = 0.5) marks the transition from the first to last stage of litter decay. While this hypothesis will not be tested as part of CIDET, samples of litter in the final stages of decay could be characterized in an ancillary study (Appendix 1).

3. Methods

3.1 Experimental Design

Three major factors were considered in this experiment: site, litter species, and time. Twenty-one sites (18 upland, 3 wetland), representing a wide array of moisture and temperature conditions from different ecoclimatic regions (Ecoregions Working Group 1989), were chosen in 1991 (Table 1). Eleven “standard” litters (including needles, broadleaves, grasses, ferns, and wood) were collected in the fall of 1991, enclosed in litter bags and sent to each site in 1992 (Table 2). Samples were replicated four times for each site and litter species. Samples and data will be collected annually for 10 years. Regression will be the primary form of statistical analysis used to determine long-term decomposition rates. Dependent variables will include the mass remaining, nitrogen content, and the mass-loss rate constant. Climatic independent variables will include mean annual temperature, degree days, total precipitation, and actual evapotranspiration. The primary independent variable used to characterize litter quality will be the Klason lignin/nitrogen ratio; other variables, such as C/N ratio, C/P ratio, extractive content and fractions of soluble, and structural and phenolic C (determined by chemical analysis and ^{13}C NMR), will be examined as well.

Surface and buried wooden blocks were used as a common substrate on all 21 sites. This method gives a wide range of above- and belowground environments for testing the effect of microenvironment on decomposition. Analysis of covariance will be the main method used to test if above- and belowground rates of wooden block mass loss are similar. Dependent variables will include total mass loss and nitrogen concentration. The covariates used will include climatic and site descriptors used in litter analysis.

Three paired upland and wetland sites will be examined (Batoche and Prince Albert, Nelson House 1 and 2, and Gillam 1 and 2; see Figure 1) to test the effects of site moisture availability on decomposition rates. Analysis of covariance will be the main method used to test if rates of mass loss on upland and wetland sites are similar. Dependent variables will include total and rate of mass loss and nitrogen concentration and content. The covariates used will include climatic and site descriptors used in litter analysis.

3.2 Site Information and Maps

Each site cooperator chose sites, located plots, and described sites according to set guidelines and methods. Site description information (site summary data, site location and plot maps, soil descriptions, surface organics and mineral soil horizon chemistry, mensuration data) provided for individual sites can be found in Appendices 2.1 to 2.21. Summaries of site data measured on all sites are in Tables 4 to 11 in Section 4.

Specific sites that were typical of the major forested ecoclimatic regions (Ecoregions Working Group 1989) were chosen by each site cooperator to be close to and at a similar elevation of nearby AES climate station and in areas protected from disturbances that could destroy the litter bags. For example, sites with frequent fire were to be avoided, but areas prone to grazing would be suitable.

Site summaries

Descriptions included recording the National Topographic Series (NTS) map sheet, latitude, longitude, UTM location and datum, slope, aspect, elevation, macro- and mesosite position, site surface shape, and topography following the methods of Luttmerding et al. (1990) (“Site Description Form” including sections 1–7, 9–11, 13–22, 26–37, 50). If plots varied in elevation and aspect, further notes for each plot were included.

Monthly climate normals for precipitation and air temperature for the period 1951–1980 were obtained from the AES. Soil classification followed the Canadian system of soil classification (Agriculture Canada Expert Committee on Soil Survey 1987) and was based on the soil descriptions of pits in each plot or on one general description for the entire site. Site ecoclimatic region was derived from site location and an ecoclimatic region map (Ecoregions Working Group 1989) while Holdridge life zone was calculated for each site using climate normal data and methods described by Holdridge (1967).

Overstory mensuration data for each site were summarized from measurements made in each plot. Variables included dominant tree species, total number of trees measured, mean density, basal area, mean diameter at breast height, mean height, maximum height, and mean stand age in 1992. Vegetation species were summarized from measurements made in each plot following procedures of Luttmerding et al. (1990) ("Vegetation Description Form") or from a general site description, and include the species of primary, secondary, and tertiary species as ranked by percentage cover and presence amongst the four plots in each of four layers: overstory tree species layer (split into two layers in some cases), shrub and regeneration layer, herbaceous and grass layer, moss and lichen layer. In some cases epiphytes were also noted. Additional notes included information on stand origin and choice of nearest AES weather station.

Site location and plot maps

Two maps were prepared. Site location was marked by a circle on a copy of a section of an NTS 1:50 000 topographic map with annotations such as a mileage description and notes about roads from the closest town to the study site. Plot locations were also indicated on 1:5000 digitized sketch maps of the site with notes on bearings, distances, access trails or roads, plot marker locations, and litter bag string numbers assigned to each plot.

Soil pits

Pits were dug at each site to obtain basic soil descriptive data and samples of surface organic and mineral layers for each of the four replicate plots. A 20 × 20 cm slab of the organic LFH layer (upper 10 cm in organic soils) was taken and the depth of the entire LFH layer recorded from measurements at four corners of the slab. A minimum of 1.0 litre of the A horizon (or top 20 cm of mineral soil) was sampled, or all horizons if possible.

Soil description

Surface organic horizons (upper 10 cm in organic soils) were described following methods of Luttmerding et al. (1990) ("Humus Form and Organic Soil Description Form," omitting columns 13, 14, 18, and 19) to record the type and depths of the organic layers. A composite description for all four plots was prepared, or separate humus descriptions were completed if plots differed significantly from each other. Measurements included bulk density for entire horizon (g cm^{-3}) and depth and physical description of each organic layer, where possible.

Mineral soil horizons were described following methods of Luttmerding et al. (1990) ("Soil Description Form"). A composite description was prepared for the site, or separate descriptions were completed if plots differed significantly from each other. Information recorded included layer type, upper and lower depth, coarse fragment content, soil texture, structure, colour (dry), pH, and features such as rooting depth, and impeding or gleying layers. The bulk density of the field-sieved fraction, with large stones (> 2 cm) excluded, was recorded for some sites.

Surface organics and mineral soil chemistry

All samples were air-dried prior to shipment to the Pacific Forestry Centre (PFC) where they were prepared for chemical analysis. All samples were dried again at 70° C, the total organic or total and < 2 mm sieved mineral soil weights recorded. Organic samples were ground in a Wiley mill to pass through a 0.2 mm mesh screen. Total %N, %C, and %S were determined at PFC by combustion (N by a modified Dumas method on a LECO FP-228 N analyzer, C on a LECO CR-12 carbon system, and S on a LECO SC-132 sulfur system). Total P, Ca, Mg, and K were determined through wet oxidation of the sample in a block digestor (Parkinson and Allen 1975) with the P in the digest measured using a Technicon Autoanalyzer and Ca, Mg, and K measured by atomic absorption (AA) spectroscopy.

Sieved mineral soil samples were analyzed by the Agriculture Canada Soil Survey Laboratory at the University of Saskatchewan. Soil pH in H_2O or $CaCl_2$ was measured in 1:2 suspensions (organic horizons 1:10) as outlined by McKeague (editor, 1978). Inorganic C was determined by acid digestion and titration (Tiessen et al. 1983) and organic C by difference from total C determined by combustion at 1100° C in a LECO CR-12 furnace. Total N was determined by semi-micro Kjehldal (McKeague [editor] 1978). Total P and S were determined by nitric acid: perchloric acid digest (APHA method #3030H, Greenberg [editor] 1983) and analyzed by Inductively Coupled Plasma spectroscopy. Acidity and exchangeable cations (Ca, Mg, Na, and K) were measured by saturating with 0.5N $BaCl_2$ buffered with triethanolamine, determining H in the leachate by titration with HCl, and analyzing cations with a Perkin Elmer AA spectrometer. The soil was then saturated with 1N ammonium acetate solution and the cation exchange capacity determined by measuring barium in the ammonium acetate using AA spectrometry (McKeague [editor] 1978).

Mensuration

Mensuration data were gathered to relate the climate conditions from weather stations to the microclimate conditions that the litter bags experience. Mensuration data were gathered from each of the four plots following the procedures outlined in Luttmerding et al. 1990 ("Mensuration Form"). The diameter, species, class, height, and (if possible) crown class of 16 trees greater than 2.0 cm diameter at breast height (DBH) were measured within a fixed radius plot of 3–10 m depending upon stand density, and the plot radius recorded.

3.3 Collection of Macroclimate and Microclimate Data

Macroclimate data

Annual and monthly climate data for each site were derived from daily (or in some cases hourly) weather records for an AES climate station within 10 km of the site. Data[2] for each site include station name; location (lat./long.); elevation; monthly mean, minimum, and maximum daily temperature; monthly total precipitation; monthly total rainfall; and monthly total snow fall (cm of water). The latter two variables were available for all sites except for Schefferville, PQ (SCH). Calculation of monthly means follows rules used by the AES in calculation of the 30-year normals: if more than three consecutive or more than five total days are missing in a month then the value is missing for the month.

Microclimate data

Although it was initially planned that microclimate data (monthly mean, minimum, and maximum temperature at +5 cm (shaded probe), at the LFH/mineral soil interface (or -5 cm in organic soils), and at -30 cm) for a two-year period would be collected for each site, this approach did not prove possible. As an alternative, single channel temperature loggers (StowAway™, Onset Computer Corp., Box 3450, 536 MacArthur Blvd., Pocasset, MA 02559) capable of recording hourly measurements for an 18-month period were put in double plastic bags, enclosed in the same mesh bags used to construct the litter bags, placed out the same way as the litter bags during the 1995 collection and retrieved during the 1996 collection. Because many dataloggers failed in that year because of leakage and battery failure, the dataloggers were rebuilt, put into watertight housings, and placed in the field again in 1997.

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[2] Data are archived on the PFC VAX on [CIDET.CIDET.ANNUAL.OUTPUT] as WEATHyy.lis with supporting metadata in WEATHyy.txt.

3.4 Preparation and Placement of Litter Bags

Litter and wood

Cooperators collected 37 fresh litter types from their sites in 1991 (Table 2). For most sites, litter was collected directly from senescent plants or as newly senescent leaves falling onto mesh traps or traps placed in the forest. All litter was air- or oven-dried at 40ºC to prevent decay prior to shipment to PFC. At PFC each litter type was spread on paper on benches in an empty greenhouse compartment to complete air-drying. Litter was cleaned by removing branches and other materials, and then thoroughly mixed.

Wood blocks were obtained from the lower 5 m of a single western hemlock log about 1 m in diameter harvested on southern Vancouver Island. Blocks were cut from custom milled 5 x 10 cm planks from the clear heartwood of the log. Planks from the centre radius 0–15 cm and the outer 40–50 cm (sapwood) were excluded to avoid branch knots and sapwood. Blocks about 5 cm thick and 50 g in weight were cut from each plank and clear even-grained blocks selected for bagging.

During preparation of the litter bags, subsamples of each litter type were taken to determine the air-dry to oven-dry conversion factor and characterize the initial chemistry of the litter. The dry weight of each wood block was recorded, and a subsample of blocks measured for density, air-dry moisture content, nitrogen content, and carbon chemistry.

Litter bag design and plot layout

Bag construction and placement generally followed that described for the U.S. experiment (LIDET 1995) with some modifications. All litter bags were made from a woven polypropylene pool cover/shade cloth fabric with 0.25 x 0.5 mm openings (Lumite style 6065400, division of Synthetic Industries, 2100 Atlanta Highway, Gainesville, GA 30501). The bags were 20 x 20 cm in size and filled with approximately 10 g air-dry weight of leaves or needles. Wood blocks were placed in similar bags. Each bag was identified with a unique number embossed on an aluminum tag. The bag openings were sealed with six (monel staples ART.130/LM-BIS-A, DuoFast Corp. Eastern Sales Division, 20 Corporate Drive, Orangeburg, NY 10962) staples and the bag tare weight, total initial air-dry weight, adjusted oven-dry weight, species, and site replicate number for each litter bag was recorded prior to placement in the field. A bag with a wood block was tied to the end of a 4 m length of heavy nylon fishing line which was then strung with the bag with the second wood block and randomly selected bags of each of the 10 leaf litter types. Each line was then tied to an aluminum tag with a unique number. Bag numbers and bag position on each string were recorded by string number. Forty consecutively numbered strings of bags were assigned to a single site and then boxed for shipping.

Strings of litter bags were placed in the field during the fall of 1992 by site cooperators (Table 1). Bags were laid out just before or during the autumnal litterfall, but not later than November 1 or the first snowfall, whichever was earlier (dependent on site and phenology). Bags were removed at full calendar year intervals after the time of being laid out. Bags are therefore not collected on the same date for all sites, but retrieved at a common autumnal stage of phenology which differs from site to site.

The following standards were used, although necessary deviations at some sites are noted in Appendix 2:

1. Four separate 5 x 11 m plots were selected within a minimum stand area of 4 ha and at least 30 m from any stand boundary. Plots were at least 20 m apart from each other. These plots were in the same stand if access or space were limited, but preferably in similar stands in a different area to avoid pseudo-replication problems. Identification plot marker plates were placed at the corner of each of the four plots and on an easily relocated benchmark tree or object next to a road or access trail. The corner and benchmark plates were nailed to a tree, flagged, and sprayed with a band of paint. Trees in the other three corners of each plot were also flagged and painted. A plot location map (e.g. Figure 3a) was included with the site description report to facilitate plot relocation.

2. Each set of bags to be collected in a given year was connected by a 4 m string, and each string labeled with a unique number. These sets of bags were laid out in parallel lines approximately 1 m apart in a random order (Figure 3b) and the end of the string pinned with a flag. The string and bag numbers were double-checked against the list of string and bag numbers for the plot. The location and number of each string of bags were noted on the sketch map for each plot.

3. Litter bags were placed so that they were in contact with the underlying litter layer, bag number tag side down (as number tags may be attractive to rodents and birds). Litter bags were placed on visible forest floor (i.e., avoiding visible rocks and logs), no closer than 50 cm to trees. Mosses were not removed, and standing grasses or thick layers of reindeer lichen were displaced or cut so that bags could lay on the organic layers or moss surface. The buried wood blocks were inserted into the upper mineral soil at a depth of 10–30 cm in a vertical cut made with a shovel (10–30 cm deep in organic soils). Another vertical cut was used to press the soil against the bag (Figure 3c).

4. On those sites on which herb or grass growth in subsequent seasons may push up the bags, the bags were pinned down at opposite diagonal corners with aluminum wire or galvanized nails.

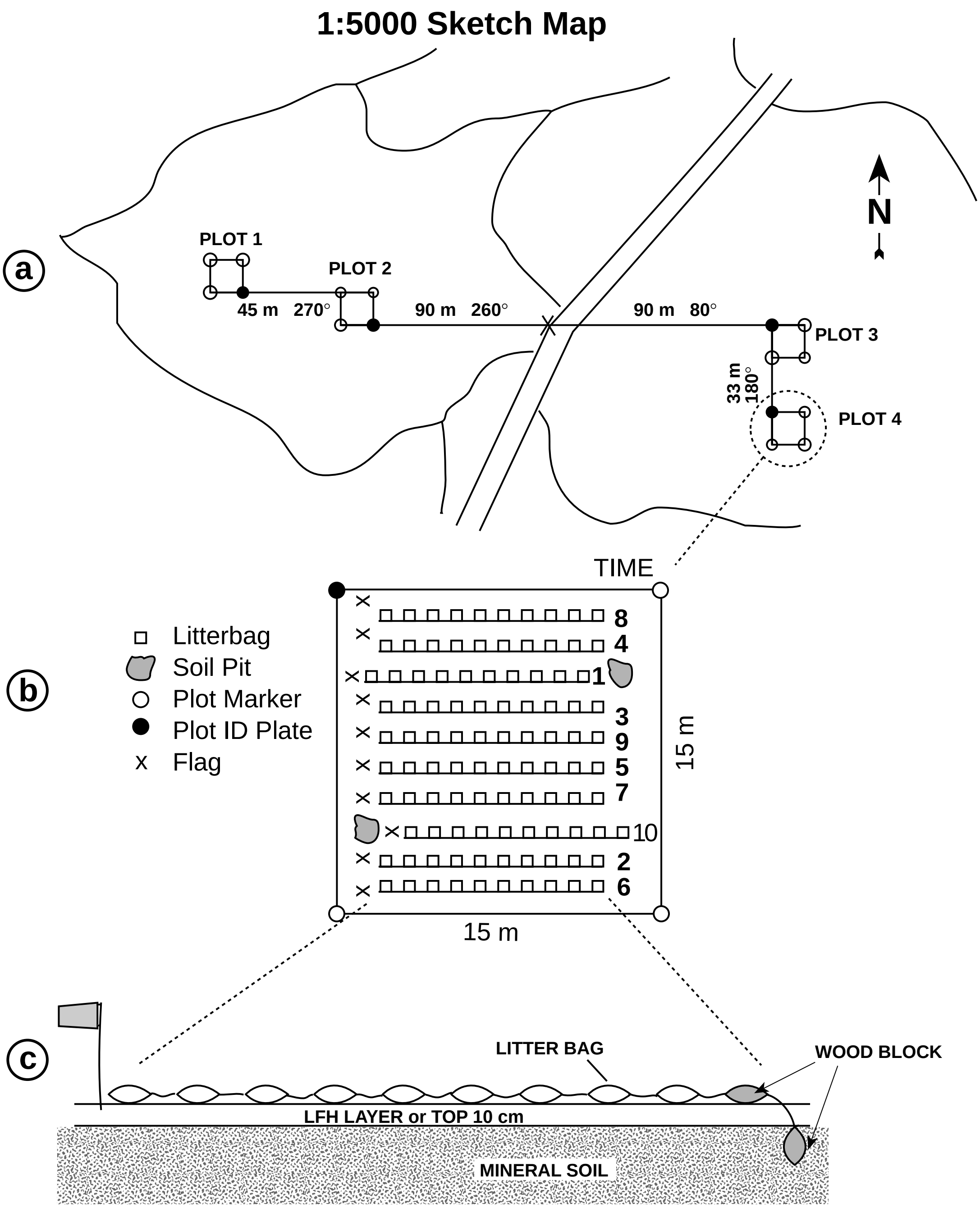

Figure 3. Examples of (a) plot location maps, (b) grid plot of litter bag layout, and (c) arrangement of litter bag strings (after LIDET 1995).

3.5 Initial Litter Characterization

Chemical characterization of the 37 fresh litter types (Table 2) was performed using three methods: total elemental analysis, wet chemical proximate analysis, and ^{13}C CPMAS NMR analysis of C fractions. Composite samples of each litter type collected during litter bag preparation were thoroughly mixed and a subsample ground in a Wiley mill to pass through a 0.2 mm mesh. Samples were further powdered prior to (NMR) analysis. The initial findings from these analyses are summarized in Trofymow et al. (1995) and the elemental and proximate chemical analyses results are shown in Table 3.

Elemental analyses were carried out at the Chemical Services Lab, PFC. Total %N, %C, and %S were determined by combustion (N by a modified Dumas method on a LECO FP-228 N analyzer, C on a LECO CR-12 carbon system, and S on a LECO SC-132 sulfur system). Total P, Ca, Mg, and K were determined through wet oxidation of the sample in a block digestor (Parkinson and Allen 1975) with the P in the digest measured using a Technicon Autoanalyzer and Ca, Mg, and K by atomic absorption spectroscopy. Single composite samples were measured for each litter type along with analytic duplicates and reference standards.

Proximate chemical analyses were at the Forest Services Lab, Oregon State University following the methods of McClaugherty et al. (1985) and Ryan et al. (1990). Non-polar extractables (i.e., soluble fats, waxes, and oils) were removed with dicholormethane (Tappi 1976), water soluble extractables (i.e., simple sugars, water soluble phenolics) were removed with hot water (Tappi 1981), and acid soluble carbohydrates (i.e., cellulose and hemicellulose) were removed by sulfuric acid hydrolysis. The ash content of the initial litter and the remaining mass of acid-insoluble residue, commonly referred to as Klason lignin, were determined by ashing in a muffle furnace at 450° C for eight hours. The amount of each extracted fraction is reported as a percentage of ash-free dry organic matter. Duplicate analysis samples of each composite litter were measured.

Solid state ^{13}C CPMAS NMR characterizes the specific chemical types of C in a material and has recently been applied to litter and forest floor materials (Norden and Berg 1990; Preston et al. 1994; Baldock and Preston 1995). NMR has been extensively used to characterize humus layers, soil organic matter, litter, and wood (e.g. Krosshavn et al. 1990; Preston et al. 1987; Hempfling et al. 1987; Preston et al. 1990). There has been considerable effort to develop methodology for lignins (Hatcher 1987) and tannins (Morgan and Newman 1986), two components of particular interest for their role in controlling decomposition. One composite sample of each litter type was analyzed in the Department of Chemistry, McMaster University, on a Bruker MSL 100 spectrometer operating at 25.18 MHz for ^{13}C at 2.35 Tesla. Spectra were divided into chemical shift regions (Baldock and Preston 1995) according to the chemical type of C as follows: alkyl (fats and waxes) at 0–50 ppm; methoxyl (side chains of guaiacyl lignin, C2 and C3 of condensed tannins) at 50–60 ppm; O-alkyl (cellulose and sugars) at 60–92 ppm; aromatic (lignin and condensed tannins) at 92–140 ppm; phenolic (tanins and lignin) at 140–163 ppm; and carboxyl (hemicelluose, amino acids) at 163–185 ppm. The relative area of the total spectra in each region were determined by cutting and weighing the plotted spectra.

3.6 Collection and Analysis of Litter Bags

Litter bag collection

The litter and wood blocks will be collected annually for a 10-year period. A list of string numbers and litter bags to be collected, and pre-labeled envelopes for each plot are sent to each site cooperator in July, prior to fall sample collection. Immediately after collection, site cooperators air- or oven-dry (55°C) the intact litter bags to stabilize the samples and prevent further microbial growth. Buried wood blocks are rinsed with distilled water to remove adhering soil. Mosses, lichens, fine roots, or other plant parts growing into the bags are also removed prior to drying. The weight of the entire bag is recorded and copies of the data are sent to PFC, separately as well as with the bags, in case samples are lost in transit.

Table 3. Initial litter elemental concentrations (mg g^{-1}) and proximate chemical analysis fractions (mg g^{-1}) of total dry litter mass (from Trofymow et al. 1995).

Species code	Common name	C	N	P	S	Ca	Mg	K	Proximate chemical fractions: Non-polar extractable	Water-soluble extractable	Acid soluble	Klason lignin	Ash
Ccn	Yellow-cedar	487.90	5.60	0.41	1.97	29.236	0.805	0.478	154.58	247.06	308.60	222.17	72.60
Cdc	Douglas-fir nw	493.50	5.70	0.81	2.13	14.426	0.950	1.349	117.92	122.15	391.51	307.30	65.10
Cdc[a]	**Douglas-fir ci**	**496.10**	**7.00**	**1.05**	**2.65**	**12.774**	**1.088**	**1.551**	**102.68**	**114.76**	**416.34**	**303.26**	**67.40**
Cdi	Douglas-fir in	476.50	5.00	0.87	1.94	22.256	1.112	2.046	91.04	328.84	316.78	212.64	53.40
Cfa	Amabilis fir	558.80	3.90	0.65	1.74	12.876	0.539	0.540	127.56	302.82	281.77	253.57	35.60
Cfb	Balsam fir	554.90	5.30	0.31	1.77	9.712	0.934	1.305	132.17	264.63	301.50	272.20	30.50
Cfl	Alpine fir	502.90	4.40	0.75	2.18	18.241	1.256	2.393	139.18	340.18	253.17	214.45	56.20
Chm	Mountain hemlock n	507.30	4.20	0.67	2.04	6.582	0.808	0.733	92.48	261.52	292.38	330.37	24.00
Chw	Western hemlock n	503.20	7.60	0.91	1.49	7.488	1.138	0.958	84.65	259.10	290.04	339.27	27.80
Cll	**Tamarack s**	**487.50**	**5.90**	**0.23**	**3.15**	**6.564**	**2.484**	**3.092**	**93.49**	**310.98**	**300.50**	**239.59**	**58.90**
Cll	Tamarack larch	474.70	7.60	2.32	2.10	8.342	2.444	2.860	126.49	281.81	288.23	261.79	43.60
Clo	Western larch	456.80	3.90	2.03	1.61	4.176	1.312	4.116	95.08	321.00	325.14	200.23	62.30
Cpj	**Jack pine**	**497.20**	**12.80**	**1.27**	**1.37**	**45.533**	**1.231**	**2.657**	**69.65**	**152.36**	**424.35**	**327.91**	**26.50**
Cpl	Lodgepole pine c	490.30	4.70	0.39	2.21	8.434	1.506	0.482	163.53	258.59	330.52	207.80	41.40
Cpp	Ponderosa pine	483.80	6.00	0.96	1.94	4.498	1.349	1.679	112.45	265.64	315.22	276.90	30.70
Cpr	Red pine	501.40	4.30	0.41	1.64	4.496	1.142	1.575	140.04	159.58	400.57	281.94	18.30
Cpw	Western white pine	506.20	5.50	0.38	1.87	11.992	1.469	0.839	87.85	314.70	324.93	237.96	35.90
Csb	Black spruce bc	478.00	3.40	0.63	1.67	18.597	0.570	1.499	134.52	365.90	287.55	156.14	59.30
Csb	**Black spruce s**	**494.70**	**7.30**	**0.79**	**2.83**	**6.620**	**0.894**	**2.182**	**109.16**	**198.54**	**369.91**	**282.55**	**41.60**
Cse	Engelmann spruce	473.70	5.80	0.64	1.65	17.373	0.599	2.336	132.31	345.10	274.32	172.32	82.30
Css	Sitka spruce	491.00	8.40	0.87	1.69	14.920	1.250	2.120	100.01	190.99	380.56	269.45	62.90
Csw	White spruce	464.40	7.70	1.28	1.67	19.721	0.688	2.868	81.32	297.30	347.28	209.99	68.60
Cto	Eastern whitecedar	520.20	6.00	0.34	1.50	19.690	2.360	0.910	112.78	167.09	377.33	289.05	56.90
Ctp	**Western redcedar**	**496.70**	**6.40**	**0.47**	**1.20**	**16.838**	**0.895**	**1.093**	**107.18**	**105.13**	**365.11**	**355.50**	**72.00**
Cyp	Pacific yew l	512.00	9.50	1.13	1.65	13.888	1.435	1.766	93.23	156.96	308.79	392.41	51.20
Dba	**American beech**	**470.00**	**7.10**	**0.36**	**2.03**	**9.887**	**2.523**	**0.820**	**72.49**	**129.01**	**452.87**	**279.87**	**70.50**
Dbw	**White birch**	**480.00**	**7.20**	**0.38**	**0.99**	**8.504**	**2.440**	**2.623**	**65.20**	**359.35**	**303.25**	**239.60**	**33.80**
Dpt	**Trembling aspen**	**468.30**	**6.70**	**1.27**	**1.55**	**20.515**	**1.553**	**12.344**	**87.47**	**354.22**	**337.42**	**143.66**	**83.80**
Dro	Red oak	488.40	6.20	0.99	1.15	10.414	2.062	1.745	56.01	234.80	392.58	275.85	42.60
Dsa	Speckled alder	480.70	25.30	1.50	1.30	15.180	1.788	6.720	80.12	302.01	362.81	197.95	60.90
Dsm	Sugar maple	441.90	7.70	1.16	1.37	21.985	2.727	2.456	88.86	316.98	377.19	123.76	102.90
Fbf	**Bracken fern**	**463.30**	**8.80**	**0.66**	**1.15**	**7.716**	**3.104**	**4.287**	**22.57**	**90.38**	**491.00**	**328.89**	**72.10**
Gfh	**Plains rough fescue**	**437.90**	**7.10**	**0.58**	**1.51**	**3.693**	**1.268**	**5.039**	**90.55**	**128.64**	**584.87**	**111.61**	**92.20**
Hea	Fireweed	452.20	4.90	1.15	1.13	22.794	4.099	4.799	81.01	596.62	263.76	24.47	66.50
Lcs	Reindeer lichen	464.50	3.90	0.30	2.97	0.314	0.187	0.737	48.66	69.18	828.94	44.90	9.00
Sgs	Salal	486.80	4.90	0.32	2.00	19.774	4.282	2.663	80.14	258.64	340.85	259.96	64.40
Whw	**Western hemlock w**	**473.30**	**2.40**	**0.05**	**2.76**	**1.130**	**0.227**	**0.322**	**16.53**	**29.18**	**656.08**	**294.32**	**4.00**

[a] Litter types included in CIDET are boldfaced.

[b] Letters following some common names indicate source of litter materials.

Litter bag chemical analyses

At each sampling time 840 litter bags and 168 wood blocks are collected. At PFC the litter or blocks are removed from the bag and carefully cleaned of any soil or roots, placed in an envelope, oven-dried (55°C for four days), weighed, and ground in a Wiley mill to pass through a 0.2 mm mesh screen. A weighted composite sample from the four replicates for each litter type for each site is prepared, this process reduces the number of samples for chemical analysis to 210 litter and 42 wood block samples in each collection year. A subset of unpooled samples is also retained to determine within litter and within site variability of pooled samples.

Each pooled sample from each species, site, and collection time are analyzed for total C (for ash correction), total N, total P, and total S using combustion and wet chemical methods as previously described. NMR and proximate analysis are not being carried out on collected litter samples because of budget constraints, but stored samples may be analyzed later as part of an ancillary study (see Appendix 1).

Sample archiving

At least 10 g of ground, dried material from each species, site, and time are stored in sealed vials at room temperature at PFC. These archived samples will be used to repeat questionable analyses and made available to other researchers conditional on a review by the CIDET Working Group of their proposed study.

3.7 Organization of Experiment

Responsibilities

Site cooperators laid out the experiment on their sites, obtained initial soil samples, provided the soils and descriptive data for the sites, and measured microclimate and available N, where possible. In some cases, people may be approached to pick up litter bags, but will not be considered cooperators. Each site cooperator retrieves litter bags annually and prepares the samples for shipment to PFC.

Determining dry weight, grinding, and archiving of litter samples are done at PFC. Other responsibilities include conducting chemical analyses; sending samples to the appropriate laboratories for analysis; and entering, storing, and distributing individual site data to participating site cooperators.

Chemical analysis cooperators carried out the initial characterization of the litter and/or conducted the ongoing chemical analyses. Annual chemical analysis of litter will be made at PFC. Initial organic layer soil analyses were done at PFC (A. van Niekerk) and mineral soils at the University of Saskatchewan (D. Anderson and B. Goetz). Initial litter characterization was done at three separate labs: elemental analyses at the Chemical Services Lab, PFC (A. van Niekerk); proximate chemical analyses at the Forest Services Lab, Oregon State University (M. Harmon); and NMR analysis at PFC (C. Preston) and Dept. of Chemistry, McMaster University (B. Sayer).

Data storage and publication

All information concerning this project is stored at the PFC on the VAX computer system, including the data, an abstract describing the experiment, the formats and variable definitions of the data, and the programs used to process the data. Files are stored in an ASCII format and backed up weekly. Hard copies of all data are also stored.

Guidelines for the sharing of data and publication credit were agreed upon at the initial CIDET Working Group meeting in 1991. Each year, each site cooperator will receive a current proofed copy of the data for their site(s) for the life of the project, which they may then use to prepare site-specific manuscripts. Site cooperators will have exclusive use of their data for one year from when they receive the data, after which time these data become available to the CIDET Working Group as a whole. The chemical analysis cooperators may also report methodological results individually or as a group. The entire CIDET data set can be used for intersite syntheses to be published under group authorship as the Canadian Intersite Decomposition Experiment (CIDET) Working Group. Specific studies, may be published as multiple authorship papers, upon agreement by the CIDET Working Group. Wider access to the data by those not in the CIDET Working Group will require approval by the CIDET Working Group.

4. Site Characterization Summaries

The following section summarizes the environmental, vegetation, soils, and mensurational characteristics presented in more detail for each site in Appendices 2.1 to 2.21.

4.1 General Site Characteristics

General information describing the location (latitude, longitude, and UTM coordinate), general site conditions (slope, aspect, elevation, and surface topography), and 30-year climate normals for each site is summarized in Table 4. Although sites varied in aspect and elevation, most had slopes from 0 to 10%. Yearly precipitation for AES weather stations near these sites ranged from 261 mm for Whitehorse (WHI) to 1782 mm for Port McNeill (PMC). The highest precipitation normals were generally for sites near coastal locations and lowest in the continental locations. Mean annual temperatures ranged from -9.8^{o}C for Inuvik (INU) to 9.3^{o}C for Shawnigan Lake (SHL). Both temperature and precipitation were negatively correlated with latitude (Pearson's r = -0.64 and -0.59, respectively) but less so with site elevation (Pearson's r = -0.40 and -0.17, respectively).

4.2 Climate Stations

Choice of site location was influenced by proximity to a nearby long-term AES climate station. Table 5 shows the CIDET site locations and the location and number of corresponding AES climate sites. Since the study was first established AES stations for Rocky Harbour, Hidden Lake, Schefferville, and Termundee (CBR, HID, SCH, TER) have been discontinued or moved. Therefore, it was necessary to locate additional stations. Those AES stations with 30-year normals chosen to represent CIDET sites are indicated, and monthly mean total precipitation and temperature for those stations are presented in Table 6. Further analysis of monthly weather data for all sites revealed a weak but significant correlation between annual total precipitation and mean temperature (Pearson's r = 0.57). This result is mostly due to high precipitation and temperatures at the west coast sites (average of two sites: 1500 mm and 8.6^{o}C) and lower precipitation in the subarctic (average of three sites: 506 mm and -6.6^{o}C) and transitional grassland (377 mm and 1.4^{o}C) sites.

Table 4. CIDET site locations and general environmental conditions.

Site	Moist.	Map	Dat	CYR	Latitude	Longitude	UTM	East	North	Aspect	Slope	Elev.	Mac	Mes	Surf	Mic	30-yr normals Precipitation	Temp.
											(%)	(m)					(mm)	(ºC)
BAT	w	73B09	27	1977	52º 43' 41.0"	106º 7' 52.0"	13	423613	5842402	40.0	20.00	472.0	g	d	c	c	398.4	0.1
CBR	u	12H12	27	1990	49º 32' 47.0"	57º 50' 13.0"	21	439400	5488400	270.0	41.00	50.0	d	c	c	d	1199.7	4.2
CHA	u	41O11	27	1977	47˚ 38' 10.0"	83º 14' 32.0"	17	331500	5277900	-1.0	0.00	460.0	g	g	c	b	834.0	1.1
GAN	u	02D15	27	1987	48º 55' 8.0"	54º 34' 28.0"	21	677800	5421050	215.0	10.00	115.0	d	c	c	cd	1130.1	4.3
GI1	w	54D07	27	1973	56º 19' 28.0"	94º 51' 28.0"	15	385111	6243527	90.0	1.00	140.0	g	g	c	e	484.8	-5.2
GI2	u	54D07	27	1973	56º 19' 54.0"	94º 30' 45.0"	15	406479	6243808	-1.0	0.00	125.0	g	g	c	d	484.8	-5.2
HID	u	82L10	27	1974	50º 33' 54.0"	118º 50' 20.0"	11	369800	5602700	-1.0	0.00	650.0	e	e	c	b	547.4	6.3
INU	u	107B7	27	1992	68º 19' 10.0"	133º 32' 13.0"	8	560300	7578900	220.0	5.00	73.0	e	d	c	f	266.1	-9.8
KAN	u	82O03	27	1990	51º 0' 48.0"	115º 0' 10.0"	11	640100	5653000	80.0	0.00	1530.0	d	g	c	c	657.4	2.8
MAR	u	31H05	27	1988	45º 25' 55.7"	73º 57' 0.0"	18	582200	5030900	-1.0	0.00	48.0	a	a	b	c	863.3	6.1
MON	u	21M06	27	1978	47º 19' 10.0"	71º 8' 30.0"	19	338250	5242500	232.0	8.00	670.0	e	c	a	b	1494.2	0.6
NH1	w	63O15	27	1981	55º 55' 51.0"	98º 37' 4.0"	14	523882	6198234	5.0	5.00	288.0	g	g	c	a	542.4	-3.9
NH2	u	63O16	27	1980	55º 55' 6.0"	98º 25' 32.0"	14	535903	6196925	-1.0	0.00	260.0	g	g	c	c	542.4	-3.9
PAL	u	73H04	27	1987	53º 13' 34.0"	105º 58' 41.0"	13	434704	5897653	90.0	5.00	476.0	g	c	c	a	398.4	0.1
PET	u	31F13	27	1975	45º 55' 30.0"	77º 35' 5.0"	18	299700	5088700	-1.0	0.00	173.0	g	g	c	a	821.7	4.3
PMC	u	92L11	27	1976	50º 36' 35.0"	127º 20' 35.0"	9	617300	5607500	-1.0	3.50	100.0	g	g	c	e	1782.8	7.9
SCH	u	23J15	27	1979	54º 52' 37.0"	66º 39' 0.0"	19	650700	6083400	-1.0	0.00	500.0	a	g	c	c	768.7	-4.8
SHL	u	92B12	27	1980	48º 38' 8.1"	123º 42' 40.1"	10	447000	5387000	360.0	5.00	355.0	d	c	b	b	1215.3	9.3
TER	u	72P15	83	1993	51º 50' 39.0"	104º 55' 3.0"	13	505722	5743437	152.5	3.25	536.5	g	d	c	b	370.5	1.8
TOP	u	93L09	27	1975	54º 36' 20.0"	126º 18' 40.0"	9	673500	6054100	315.0	7.00	1100.0	f	e	c	a	512.9	2.5
WHI	u	105D14	27	1984	60º 51' 10.0"	135º 12' 50.0"	8	488600	6746500	185.0	2.00	667.0	f	g	c	a	261.2	-1.2

Heading notes: Moist. - upland (u) or wetland (w) Map - NTS sheet number; Dat - Datum of map; CYR - Copyright year of map; UTM - UTM zone; East - UTM Easting; North - UTM Northing; Aspect (note: -1° aspect is none);
Mac - macro site position codes: a -apex; b - face; c - upper slope; d - middle slope; e - lower slope; f - valley floor; g - plain
Meso - meso site position codes: a - crest; b - upper slope; c - middle slope; d - lower slope; e - toe; f - depression; g - level
Surf - site surface shape codes: a - concave; b - convex; c - straight
Micro - site microtopography codes: a - smooth; b - micro mounded; c - slightly mounded; d - moderately mounded; e - strongly mounded; f - severely mounded; g - extremely mounded; h - ultra mounded.

Table 5. Locations of nearest AES weather stations to CIDET sites[a]

CIDET site locations							AES weather station locations				
Site code	Moist.[b]	Site name	Latitude	Longitude	Elevation (m)	P[c]	Station number	Station name	Latitude	Longitude	Elevation (m)
BAT	w	Batoche	52º 43’	106º 7’	472	*	4056240	Prince Albert Airport	53º 13’	105º 41’	428
CBR	u	CB Rocky Harbour	49º 32’	57º 50’	50	*	8403096	Rocky Harbour	49º 35’	57º 54’	40
CBR	u	CB Rocky Harbour	49º 32’	57º 50’	50	-	8403097	Rocky Harbour	49º 34’	57º 55’	40
CHA	u	Chapleau	47º 38’	83º 14’	460	*	6061361	Chapleau Airport	47º 49’	83º 21’	446
GAN	u	Gander	48º 55’	54º 34’	115	*	8401700	Gander Int’l Airport	48º 57’	54º 34’	151
GI1	u	Gillam 1	56º 19’	94º 51’	140	*	5061001	Gillam Airport	56º 21’	94º 42’	145
GI2	w	Gillam 2	56º 19’	94º 30’	125	*	5061001	Gillam Airport	56º 21’	94º 42’	145
HID	u	Hidden Lake	50º 33’	118º 50’	650	*	1164730	Lumby Sigalet Rd	50º 22’	118º 46’	560
HID	u	Hidden Lake	50º 33’	118º 50’	650	-	1160483	Armstrong Hullcar	50º 30’	119º 13’	505
INU	u	Inuvik	68º 19’	133º 32’	73	*	2202570	Inuvik Airport	68º 18’	133º 29’	68
KAN	u	Kananaskis	51º 0’	115º 0’	1530	*	3053600	Kananaskis	51º 02’	115º 02’	1391
MAR	u	Morgan Arboretum	45º 25’	73º 57’	48	*	7027280	Ste Genevieve	45º 30’	73º 51’	23
MON	u	Montmorency	47º 19’	71º 8’	670	*	7042388	Foret Montmorency	47º 19’	71º 09’	790
NH1	u	Nelson House1	55º 55’	98º 37’	288	*	5062922	Thompson Airport	55º 48’	97º 52’	215
NH2	w	Nelson House2	55º 55’	98º 25’	260	*	5062922	Thompson Airport	55º 48’	97º 52’	215
PAL	u	Prince Albert	53º 13’	105º 58’	476	*	4056240	Prince Albert Airport	53º 13’	105º 41’	428
PET	u	Petawawa	45º 55’	77º 35’	173	*	6106400	Petawawa Nat Forestry	46º 00’	77º 26’	168
PMC	u	Port McNeill	50º 36’	127º 20’	100	*	1026270	Port Hardy Airport	50º 41’	127º 22’	22
SCH	u	Schefferville	54º 52’	66º 39’	500	*	7117825	Schefferville Airport	54º 48’	66º 49’	522
SCH	u	Schefferville	54º 52’	66º 39’	500		7093GJ3	La Grande IV A	53º 45’	73º 40’	306
SHL	u	Shawnigan lake	48º 38’	123º 42’	355	*	1017230	Shawnigan Lake	48º 39’	123º 37’	137
TER	u	Termundee	51º 50’	104º 55’	536	*	4057180	Saskatoon SRC	52º 09’	106º 36’	497
TER	u	Termundee	51º 50’	104º 55’	536	-	4057202	Saskatoon Water TP	52º 07’	106º 41’	483
TOP	u	Topley	54º 36’	126º 18’	1100	*	1078209	Topley Landing	54º 49’	126º 10’	722
WHI	u	Whitehorse	60º 51’	135º 12’	667	*	2101300	Whitehorse Airport	60º 43’	135º 04’	703

[a] Batoche (BAT) uses the same values as Prince Albert (PAL). Earlier versions of the CIDET weather data (to 1995) used means of Prince Albert and Termundee. Termundee (TER) uses data from Saskatoon Water TP, as data from Saskatoon SRC are no longer available.
CB Rocky Harbour (CBR) uses data from station# 8403096 for 1992; this station was moved slightly and renumbered as 8403097, and data from this station are used for subsequent years.
Prior to 1993, station# 7117825 (Shefferville Airport, used for site Schefferville, SCH) provided daily data, then the station was automated, providing hourly data, though the station# was not changed. The hourly temperature data are used for 1992, and the present hourly data are processed to provide equivalent values for subsequent years. Precipitation values for Schefferville are taken from the La Grande IV A station; these precipitation values are also used for 1992.
Station# 1164730 (Lumby Sigalet Rd, used for site Hidden Lake, HID) closed in 1995. Data for this site are from this station for 1992–1994, data for 1995 and subsequent years are from station# 1160483, Armstrong Hullcar.

[b] Upland (u) or wetland (w).

[c] P indicates primary station used.

Table 6. Thirty-year (1951–1980) AES normals for monthly temperature and precipitation[a]

Site code	Moist.[b]	Average of mean daily temperature (°C) for the month												
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
BAT	w	-21.5	-16.5	-10.3	1.9	10.0	14.6	17.4	15.9	9.9	3.7	-7.2	-16.5	0.1
CBR	u	-5.7	-7.2	-3.4	1.3	6.2	11.6	15.7	15.4	11.2	6.4	2.3	-3.0	4.2
CHA	u	-16.9	-15.8	-8.6	0.6	8.6	14.3	16.8	15.4	10.4	4.9	-3.5	-12.8	1.1
GAN	u	-6.2	-6.8	-3.5	0.9	6.2	11.8	16.5	15.6	11.4	6.0	1.8	-3.8	4.3
GI1	u	-28.0	-23.9	-17.2	-6.6	2.7	10.3	15.0	13.8	6.6	-0.4	-12.1	-22.8	-5.2
GI2	w	-28.0	-23.9	-17.2	-6.6	2.7	10.3	15.0	13.8	6.6	-0.4	-12.1	-22.8	-5.2
HID	u	-5.7	-2.3	0.8	6.7	11.6	14.9	18.1	17.2	12.3	6.1	0.1	-3.7	6.3
INU	u	-29.6	-28.9	-25.0	-14.3	-0.8	10.1	13.6	10.7	3.1	-8.1	-20.7	-27.2	-9.8
KAN	u	-10.2	-5.6	-3.8	1.9	7.1	11.1	14.1	13.2	9.2	5.0	-2.1	-6.2	2.8
MAR	u	-10.6	-9.3	-2.9	5.4	13.0	18.3	21.0	19.6	14.9	8.9	2.1	-6.9	6.1
MON	u	-14.7	-13.6	-7.8	-0.6	6.4	12.6	14.7	13.5	9.1	2.9	-3.9	-11.7	0.6
NH1	u	-26.6	-22.3	-14.9	-3.7	5.0	12.2	15.6	13.9	6.9	0.2	-11.9	-21.7	-3.9
NH2	w	-26.6	-22.3	-14.9	-3.7	5.0	12.2	15.6	13.9	6.9	0.2	-11.9	-21.7	-3.9
PAL	u	-21.5	-16.5	-10.3	1.9	10.0	14.6	17.4	15.9	9.9	3.7	-7.2	-16.5	0.1
PET	u	-12.9	-11.0	-4.0	4.3	11.6	16.6	19.0	17.7	13.0	7.0	0.0	-9.6	4.3
PMC	u	2.4	3.9	4.4	6.6	9.3	11.8	13.6	13.8	11.8	8.7	5.3	3.5	7.9
SCH	u	-22.8	-21.2	-15.1	-7.2	1.2	8.6	12.6	10.8	5.2	-1.4	-9.0	-19.0	-4.8
SHL	u	1.8	3.8	4.9	7.9	11.6	14.6	17.1	17.0	14.3	9.7	5.2	3.1	9.3
TER	u	-19.1	-14.5	-8.5	3.4	11.2	15.6	18.4	17.2	11.5	5.2	-5.5	-13.9	1.8
TOP	u	-12.3	-7.1	-3.0	2.5	7.7	11.8	14.1	13.4	9.4	3.8	-2.9	-8.0	2.5
WHI	u	-20.7	-13.2	-8.2	0.3	6.7	12.0	14.1	12.5	7.5	0.6	-8.8	-16.6	-1.2

Site code	Moist.[b]	Average of total precipitation (mm) for the month												
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
BAT	w	16.6	14.9	19.2	22.0	39.4	69.1	65.3	52.1	39.4	21.6	17.0	21.8	398.4
CBR	u	129.4	78.9	91.2	64.1	74.1	82.7	93.4	106.4	99.9	116.0	130.9	132.7	1199.7
CHA	u	46.9	34.5	56.2	59.3	73.8	100.4	81.8	86.2	101.5	75.7	64.2	53.5	834.0
GAN	u	109.1	99.7	110.1	93.2	70.0	80.3	69.0	97.3	81.2	104.7	107.3	108.2	1130.1
GI1	u	21.1	18.5	29.5	37.1	33.5	30.6	93.4	60.9	51.2	32.6	34.3	42.1	484.8
GI2	w	21.1	18.5	29.5	37.1	33.5	30.6	93.4	60.9	51.2	32.6	34.3	42.1	484.8
HID	u	61.3	32.5	29.8	27.0	50.1	63.1	42.9	50.6	41.6	37.1	47.0	64.4	547.4
INU	u	17.9	10.5	12.0	14.8	17.6	23.5	33.6	43.6	23.9	33.4	17.9	17.4	266.1
KAN	u	34.5	36.0	39.2	73.9	79.2	99.9	59.9	71.0	57.3	40.5	29.1	36.9	657.4
MAR	u	60.1	57.2	71.6	66.3	64.8	71.8	82.0	82.8	82.6	69.8	73.4	80.9	863.3
MON	u	109.8	96.5	101.0	95.4	90.3	156.4	171.3	170.5	137.9	114.1	126.4	124.6	1494.2
NH1	u	21.7	9.7	29.0	33.5	43.7	57.5	93.1	71.9	64.1	48.6	31.1	38.5	542.4
NH2	w	21.7	9.7	29.0	33.5	43.7	57.5	93.1	71.9	64.1	48.6	31.1	38.5	542.4
PAL	u	16.6	14.9	19.2	22.0	39.4	69.1	65.3	52.1	39.4	21.6	17.0	21.8	398.4
PET	u	48.8	48.6	55.2	61.5	67.3	88.6	76.5	83.2	79.6	71.6	71.5	69.3	821.7
PMC	u	211.2	159.4	141.8	107.5	68.6	70.7	52.0	69.0	136.2	244.8	244.7	276.9	1782.8
SCH	u	46.9	43.0	41.6	45.4	49.4	73.7	96.8	98.2	83.4	75.6	65.7	49.0	768.7
SHL	u	213.3	139.5	113.2	57.3	34.5	33.3	22.6	28.7	50.7	109.4	179.9	232.9	1215.3
TER	u	22.6	21.9	22.3	21.4	39.6	59.9	56.2	35.1	32.2	17.5	16.0	25.8	370.5
TOP	u	62.5	30.3	22.5	16.5	35.8	50.9	55.4	48.3	32.7	40.6	59.7	57.7	512.9
WHI	u	17.7	13.3	13.5	9.5	12.9	30.7	33.9	37.9	30.3	21.5	19.8	20.2	261.2

[a] All 30-yr normals cover the period 1951–1980, and are taken from the listings for the primary station used for each site. Batoche and Prince Albert values are both from station# 4056240, Prince Albert Airport.

[b] Upland (u) or wetland (w).

4.3 Ecoclimate Provinces and Soil Types

The 21 CIDET sites are distributed across a range of ecoclimatic provinces and soil types (Table 7), with seven sites in the boreal forest, six in the cordilleran, four in the subarctic, two in the temperate, and two in transitional grasslands. Most upland boreal and temperate sites were found on Podzols (some plots on a site were Gleysols) with one site on a Regosol. Soils on cordilleran sites varied, with two on Podzols, two on Brunisols, and one on Luvisols. Upland subarctic sites were found on Cryosols, Gleysols and Brunisols. The three paired wetland sites ranged from a Mesisol on the transitional grassland to Fibrisols on the boreal and subarctic sites. Holdridge life zones (Holdridge 1967) were calculated using mean annual temperature for those periods of the year when $0^oC < T < 30^oC$, total annual precipitation, and elevation. Almost all of the life zones for CIDET sites are in the cool temperate regions including many classified as boreal under the ecoclimatic region system (Ecoregions Working Group 1989). Also, none of the sites in the subarctic ecoclimatic provinces were classed in the subpolar life zone. This lack of differentiation in life zones and lack of correspondence with ecoclimatic provinces may simply reflect the limitations in the northern latitudes of the life zone approach, which was developed in the tropics (Holdridge 1967).

Table 7. Ecoclimatic region, soil type, and Holdridge life zone of CIDET sites

Site code	Ecoclimatic region	Soil classification	Holdridge life zone
BAT	Transitional Grassland	Limno Mesisol	Cool Temperate Steppe
CBR	Maritime Low Boreal	Podzol/(Gleysol)	Cool Temperate Subalpine Wet Forest
CBR1	Maritime Low Boreal	Gleyed Humo-Ferric Podzol	Cool Temperate Subalpine Wet Forest
CBR2	Maritime Low Boreal	Orthic Humic Podzol	Cool Temperate Subalpine Wet Forest
CBR3	Maritime Low Boreal	Orthic Gleysol	Cool Temperate Subalpine Wet Forest
CBR4	Maritime Low Boreal	Orthic Humo-Ferric Podzol	Cool Temperate Subalpine Wet Forest
CHA	Humid Low Boreal	Orthic Dystric Brunisol	Cool Temperate Subalpine Wet Forest
GAN	Maritime Mid-Boreal	Gleyed Ferro-humic Podzol	Cool Temperate Subalpine Wet Forest
GI1	Low Subarctic	Brunisolic Static Cryosol	Boreal Moist/Wet Forest
GI2	Low Subarctic	Typic Fibrisol	Boreal Moist/Wet Forest
HID	Moist Montane Southern Cordilleran	Orthic Humo-Ferric Podzol	Cool Temperate Moist Forest
INU	High Subarctic	Cryic Gleysol	Boreal Moist Forest
KAN	Montane Southern Cordilleran	Orthic Eutric Brunisol	Warm Temperate Subalpine Wet Forest
MAR	Humid Mid-Cool Temperate	Orthic Ferro-Humic Podzol	Cool Temperate Moist Forest
MON	Perhumid Low Boreal	Orthic Ferro-Humic Podzol	Cool Temperate Subalpine Rain Forest
NH1	Subhumid High Boreal	Orthic Dystric Brunisol	Cool Temperate Subalpine Moist/Wet Forest
NH2	Subhumid High Boreal	Typic Fibrisol	Cool Temperate Subalpine Moist/Wet Forest
PAL	Subhumid Low Boreal	Orthic Regosol	Cool Temperate Moist Forest
PET	Humid High Cool Temperate	Humo-Ferric Podzol	Cool Temperate Moist Forest
PMC	Maritime South Pacific Cordilleran	Humo-Ferric Podzol	Cool Temperate Wet Forest
SCH	Low Subarctic	Gleyed Dystric Brunisol	Cool Temperate Subalpine Rain Tundra/Wet Forest
SHL	Coastal South Pacific Cordilleran	Orthic Dystric Brunisol	Cool Temperate Wet Forest
TER	Transitional Grassland	Chernozem/Gleysol	Cool Temperate Steppe
TER1	Transitional Grassland	Orthic Black Chernozem	Cool Temperate Steppe
TER2	Transitional Grassland	Eluviated Black Chernozem	Cool Temperate Steppe
TER3	Transitional Grassland	Humic Luvic Gleysol	Cool Temperate Steppe
TER4	Transitional Grassland	Orthic Humic Gleysol	Cool Temperate Steppe
TOP	Boreal Southern Cordilleran	Hemimor/Orthic Gray Luvisol	Cool Temperate Subalpine Moist Forest
WHI	Boreal Northern Cordilleran	Orthic Eutric Brunisol	Cool Temperate Subalpine Moist Forest/(Dry Scrub)

4.4 Chemical Properties of Surface Organic Horizons

Chemical properties of the surface organic layers (Table 8) at the 21 CIDET sites varied greatly and reflected the range in soil fertility of the sites. Other than the wetland sites, the thickness of the upper surface organic layer was less than 15 cm (except Port McNeill (PMC) which had a surface organic horizon > 30 cm). As a consequence, the upper 10 cm, primarily LF material from PMC, was reported as the surface organic layer and the remaining 20 cm of H was sampled separately and reported with the "surface soil layer." Correlation and principal component analysis of the data demonstrated a strong correlation amongst concentrations of Ca and Mg and CEC (Pearson's r = 0.83 and 0.77, respectively), with all three heavily contributing (eigenvector = 0.58, 0.55, and 0.54, respectively) to the first principal component (eigenvalue = 2.8) which accounted for 35% of the total variance. Carbon and macronutrient concentrations (N, P, K) were weakly correlated with each other (Pearson's r ranged from 0.24 to 0.37); however, all elements contributed about equally (eigenvector = 0.46, 0.54, 0.50, and 0.48, respectively) to the second principal component (eigenvalue = 1.9) which accounted for 24% of the total variance. The third principal component (eigenvalue = 1.2) was almost solely due to Na (eigenvector = 0.87) and accounted for 15% of the total variance. Sites with the lowest cation and macronutrient concentrations tended to be found in the subarctic and boreal ecoclimatic regions, and on Podzolic or Brunisolic soils, though the latter relationship was not as strong. Major exceptions were Gillam 1 (GI1) which had the highest CEC and cation levels of all sites, and the upland and wetland transitional grassland sites, Batoche (BAT) and Termundee (TER), which had high cation and CEC levels but low C and macronutrient levels. All cordilleran sites except Port McNeill (PMC) tended to have higher cation and macronutrient levels than the boreal or subarctic sites. Sites with the highest Na levels were two of the wetlands, Gillam 2 (GI2) and Batoche (BAT), although Petawawa (PET), Rocky Harbour (CBR), and Hidden Lake (HID) had high levels as well.

Table 8. Chemical properties of surface organic horizons of CIDET sites

Site code	Moist.[a]	Horizon[b]	Depth (cm)	C (%)	N (%)	P (%)	Ca ($mg\ kg^{-1}$)	Mg ($mg\ kg^{-1}$)	Na ($mg\ kg^{-1}$)	K ($mg\ kg^{-1}$)	CEC[c] ($cmol\ kg^{-1}$)
BAT	w	LF(H)	10.0	24.35	0.8063	0.0690	6302.5	1051.25	65.88	164.50	48.91
CBR	u	LFH	8.2	43.20	1.2038	0.1067	2148.8	436.88	54.69	212.50	39.11
CHA	u	LFH	8.5	35.72	1.0238	0.0860	1072.5	151.38	7.38	248.25	19.81
GAN	u	LFH	9.5	45.77	0.7369	0.0675	634.4	257.88	4.38	175.44	25.40
GI1	u	H	.	34.09	1.1025	0.0780	10000.0	1298.00	5.00	46.00	144.75
GI1	u	LFH	15.0	38.33	1.0525	0.0673	7733.3	1022.08	5.92	147.33	103.56
GI2	w	Of	10.0	42.05	1.0350	0.0644	3359.4	425.00	133.98	211.88	16.95
HID	u	LFH	11.0	38.76	1.1213	0.0977	3945.0	332.13	51.36	341.00	49.39
INU	u	O	6.1	41.69	0.9752	0.1511	2000.0	478.63	29.13	222.25	38.58
KAN	u	LFH	6.0	38.30	1.1625	0.1035	3610.0	442.75	8.29	309.63	49.80
MAR	u	LFH	4.6	31.59	1.1331	0.0802	1715.6	210.21	15.20	239.45	25.24
MON	u	H	2.3	41.95	0.8944	0.1500	476.3	102.25	26.00	155.00	23.25
MON	u	LF	3.8	43.60	0.9338	0.1508	966.3	161.63	32.25	318.25	27.60
NH1	u	LF	1.0	30.66	0.5265	0.0570	780.0	103.60	8.80	149.30	22.08
NH2	w	Of	10.0	43.37	0.8531	0.1054	3013.1	809.50	10.38	617.13	45.33
PAL	u	LFH	2.5	28.12	0.5955	0.0572	2259.0	315.90	31.69	157.00	26.71
PET	u	LFH	5.5	41.88	1.2175	0.1019	2868.6	327.47	64.25	709.47	30.75
PMC	u	LF	9.3	46.99	1.1156	0.0655	748.4	298.25	35.13	134.00	30.79
SCH	u	LFH	4.3	36.64	0.7594	0.0788	198.8	107.13	1.88	152.88	12.10
SHL	u	LFH	5.1	41.24	0.8450	0.1181	4313.3	365.33	18.65	462.73	38.71
TER	u	LFH	5.8	15.04	0.9038	0.0968	3785.0	818.50	33.34	267.13	45.88
TOP	u	LF	8.0	39.65	1.0538	0.1560	2315.0	364.63	8.17	300.75	23.48
WHI	u	LFq	5.0	33.03	1.1513	0.1369	3901.3	447.13	12.70	224.88	44.96

[a] Upland (u) or wetland (w).
[b] Horizon - General horizon name for site, plot variations in ( ).
[c] CEC - cation exchange capacity.

4.5 Chemical Properties of Surface Soil Horizons

Although data for all mineral soil layers and the chemistries for all layers are reported for some sites in Appendix 2, only the upper soil layer can be compared between all sites. For most sites the upper soil layer was an A, Ae, or Ah layer (Table 9). The exceptions were Schefferville (SCH), which had a Bm layer at the surface, and Port McNeill (PMC), where the upper soil layer was actually the lower 20 cm portion of the > 30 cm surface organic layer. Variation in soil chemical properties generally reflected the degree of soil development and soil fertility.

Correlation and principal component analysis demonstrated strong correlations of exchangeable acidity with CEC, exchangeable Na, and total %C, %N, and %S (Pearson's r = 0.58, 0.91, 0.91, 0.87 and 0.80, respectively). All five properties contributed about equally (eigenvector = 0.38, 0.39, 0.40, 0.39, and 0.36, respectively) to the first principal component (eigenvalue = 6.03) which accounted for 50% of the total variance. The exchangeable cations (Ca, Mg, and K) and pH contributed (eigenvector = 0.48, 0.41, 0.42, and 0.38, respectively) to the second principal component (eigenvalue = 3.80) which accounted for an additional 32% of the total variance. The third principal component (eigenvalue = 1.24) also accounted for a significant amount of the variance (10%) and was almost entirely the result of total P (eigenvector = 0.86).

Generally, those sites with Brunisols or Regosols (Chapleau (CHA), Kananaskis (KAN), Nelson House 1 (NH1), Schefferville (SCH), Shawnigan Lake (SHL), Whitehorse (WHI), Prince Albert (PAB)) had surface soils with the lowest %C (0.55–3.3%) and %N (0.026–0.091%) of all sites. Exchangeable Ca (0.02–5.5 cmol kg^{-1}), Mg (0.01–1.0 cmol kg^{-1}), and K (< 0.01–0.17 cmol kg^{-1}) levels for these sites were similar or slightly higher than those sites with Podzols (Gander (GAN), Morgan Arboretum (MAR), Hidden Lake (HID), Rocky Harbour (CBR), Montmorency (MON), Petawawa (PET), Port McNeill (PMC)). Acidity was half a pH unit higher on Brunisolic versus Podzolic sites ($CaCl_2$ pH = 4.3 vs 3.8, respectively). The remaining sites with Chernozems (Termundee (TER)), Cryosols (Gillam1 (GI1)), or Luvisols (Topley (TOP)) tended to have the highest pH values (4.3–6.1), CEC (21–61 cmol kg^{-1}), and higher levels of exchangeable Ca, Mg, and K, and %C and %N than the Brunisolic or Podzolic soils. An exception was Port McNeill (PMC) which had a low pH but high CEC, exchangeable cations, %C, and %N, however, this result was probably due the high organic content as the "soil" was the lower portion of the surface organic layer.

Total P levels did not appear to be associated with any specific soil type and sites with the highest P levels (3265, 1490, and 940 cmol kg^{-1} for INU, HID, and SHL, respectively) were found on a Cryic Gleysol, Podzol, and Brunisol, although two sites with the lowest P levels (99 and 65 cmol kg^{-1} for MON and GAN, respectively) were both Podzols.

Table 9. Chemical properties of surface soil horizons of CIDET sites.

Site	Moist.[a]	Horizon	Upper (cm)	Lower (cm)	pH $CaCl_2$	pH H_20	Organic C (%)	Inorganic C (%)	Total N (%)	Total P (mg kg^{-1})	Total S (mg kg^{-1})	CEC (cmol kg^{-1})	Acidity code (cmol kg^{-1})	Exchangeable cations: Ca	Mg (cmol kg^{-1})	Na (cmol kg^{-1})	K (cmol kg^{-1})
CBR	u	Ae(h)	0	6	3.6	4.3	5.49	0	0.206	400.8	208.3	20.45	23.6	3.03	0.86	0.18	0.12
CHA	u	Ae	0	2	3.6	4.3	1.70	0	0.073	223.3	65.0	9.43	11.9	0.64	0.06	0.04	0.04
GAN	u	Ae	0	8	2.9	3.8	1.89	0	0.059	65.3	19.8	14.32	18.4	0.12	0.29	0.06	0.08
GI1	u	Ah&Bm	0	20	6.0	6.6	4.55	0	0.206	526.0	263.0	60.95	14.6	43.80	9.09	0.03	0.50
HID	u	Ae&Bf	0	10	5.3	5.9	1.99	0	0.070	1490.0	68.0	14.11	13.2	3.96	0.35	0.04	0.46
INU	u	A	0	13	4.3	5.2	2.71	0	0.157	3264.0	816.0	20.60	18.8	6.41	0.43	0.08	0.15
KAN	u	A	0	10	4.3	5.0	1.32	0	0.066	226.8	61.5	10.89	6.54	5.13	0.95	0.01	0.22
MAR	u	Ahe	0	10	3.4	4.0	4.42	0	0.171	202.0	154.0	14.65	18.5	0.61	0.12	0.03	0.05
MON	u	Ae	0	4	3.5	4.1	1.15	0	0.076	98.5	39.8	4.15	4.85	0.08	0.01	0.02	0.01
NH1	u	Aej	0	7	4.2	4.8	0.55	0	0.026	91.8	27.8	2.62	3.25	0.34	0.03	0.00	0.00
PAL	u	Ahe	0	4	5.5	6.2	1.82	0	0.085	206.8	53.5	9.30	5.49	6.91	0.67	0.00	0.10
PET	u	Ae	0	2	3.3	4.1	3.56	0	0.099	242.0	139.4	5.93	10.1	1.22	0.28	0.00	0.14
PMC[b]	u	H	15	0	3.0	3.5	40.71	0	0.919	507.8	1166.3	46.13	56.1	2.30	5.87	0.66	0.24
SCH	u	Bm	0	10	4.1	4.9	1.88	0	0.091	368.3	117.5	12.58	16.5	0.02	0.01	0.01	0.00
SHL	u	Ae&Bh	0	10	4.6	5.1	3.35	0	0.087	939.8	117.8	13.79	18.3	3.71	0.43	0.02	0.14
TER	u	Ah	0	12	6.1	7.0	4.10	0	0.328	506.8	320.5	27.55	8.88	18.30	6.72	0.05	1.16
TOP	u	Ae&Bm	0	10	4.3	4.8	2.69	0	0.114	685.5	89.5	21.48	17.2	6.13	2.32	0.07	0.14
WHI	u	ASH	0	5	4.9	5.6	1.94	0	0.068	647.5	63.5	10.61	7.91	5.50	0.77	0.04	0.17

[a] Moist. - upland (u) or wetland (w); Horizon - General horizon name for site surface mineral soil, plot variations in ( ); Upper - mean upper depth; Lower - mean lower depth; pH $CaCl_2$ - mean pH in 0.01 m $CaCl_2$; pH H_2O - mean pH in water; CEC - mean buffered cation exchange capacity [illegible]

4.6 Mensuration

Mensurational variables (Table 10) for the sites reflected the strong influence of climate and ecoclimatic province. Basal area was correlated with mean DBH and height (Pearson's r = 0.52 and 0.61) and with mean annual temperature and total precipitation (Pearson's r = 0.60 and 0.69, respectively) and all five variables contributed (eigenvector = 0.40, 0.43, 0.43, 0.38 and 0.42, respectively) about equally to the first principal component (eigenvalue = 3.85) which accounted for 48% of the total variance. Stand density and elevation contributed (eigenvector = -0.57 and 0.46, respectively) to the second principal component (eigenvalue = 1.93) which accounted for 25% of the total variance. In general, sites in the pacific cordilleran or cool temperate were warmer, wetter and had forests with higher basal area, mean DBH, and height than those in the other ecoclimatic province. Sites in the boreal, subarctic, and transitional grassland formed a broad group but one which could be distinguished from sites in the cordilleran which were at higher elevation (805 m, 343 m, 140 m, and 536 m for cordilleran, boreal, subarctic, and transitional grassland sites, respectively) and had forests with generally lower stand densities (1010, 3680, 5054, and 5658 stems ha^{-1}, for cordilleran, boreal, subarctic, and transitional grassland sites, respectively).

Table 10. Dominant tree species and mean mensuration data of CIDET sites

Site code	Moist.[a]	Species 1[b]	Species 2[b]	Species 3[b]	Stand density (trees ha^{-1})	Basal area (m^2 ha^{-1})	DBH[c] (cm)	Mean height (m)	Maximum height (m)	Mean age (yr)
BAT	w	no trees	-	-	.	.	.	.	.	.
CBR	u	Abiebals	Betupapy	Piceglau	6271	18.2	5.3	9.0	11.8	35
CHA	u	Pinubank	Picemari	-	1902	41.9	16.1	15.8	21.0	70
GAN	u	Abiebals	Betupapy	Picemari	6914	63.2	10.0	10.6	13.8	85
GI1	u	Picemari	Larilari	-	5055	12.1	7.3	5.8	9.8	94
GI2	w	no trees	-	-	.	.	.	.	.	.
HID	u	Tsughete	Thujplic	Betupapy	600	45.1	26.0	18.1	28.8	101
INU	u	Picemari	Betupapy	Piceglau	3300	3.5	3.8	3.1	8.0	160
KAN	u	Pinucont	Piceglau	Popubals	1716	30.5	14.4	15.0	.	90
MAR	u	Fagugran	Acerrubr	-	256	26.0	33.5	25.0	34.0	150
MON	u	Abiebals	Betupapy	Piceglau	3549	60.5	14.3	8.9	13.8	39
NH1	u	Pinubank	-	-	2477	14.9	9.9	10.1	13.4	60
NH2	w	no trees	-	-	.	.	.	.	.	.
PAL	u	Pinubank	-	-	966	14.1	15.2	12.0	14.6	65
PET	u	Pinubank	Pinustro	Pinuresi	1370	17.5	16.9	13.7	19.0	53
PMC	u	Tsughete	Abieamab	-	484	86.9	40.0	42.5	137.1	85
SCH	u	Picemari	Piceglau	Larilari	614	99.8	12.2	6.8	10.6	78
SHL	u	Pseumenz	-	-	2080	48.6	16.4	18.2	23.5	42
TER	u	Poputrem	-	-	5659	35.0	8.5	8.7	11.6	37
TOP	u	Pinucont	Abielasi	Piceglau	634	27.4	23.5	21.8	28.0	5
WHI	u	Pinucont	Piceglau	Poputrem	1198	17.9	12.0	10.3	20.2	103

[a] Upland (u) or wetland (w).

[b] Species - refer to Table 12 for full species names.

[c] DBH - diameter at breast height.

4.7 Species

The species found on each site were generally related to the ecoclimatic region in which the site was located. Species found in the tree, shrub, herb, moss, and epiphyte lichen layers at each site are reported in Table 11, sorted by vegetation layer and ecoclimatic province. The species codes, binomial, and common name for all species on all sites is shown in Table 12.

All three subarctic sites were dominated by black spruce in the tree layer, Labrador tea in the shrub layer, and species of reindeer lichen in the moss and lichen layer. The boreal sites appeared (by dominant species) to group into eastern (Rocky Harbour (CBR), Gander (GAN), Montmorency (MON)) and western (Chapleau (CHA), Nelson House 1 (NH1), Prince Albert (PAL)) sites, with the eastern sites dominated by balsam fir in the tree layer and western sites by jack pine. Shrub, herb, and moss/lichen layers appeared to have no common types across the western or eastern boreal sites, though all boreal sites had a *Vaccinium* species in the shrub layer. All of the interior cordilleran sites had lodgepole pine as a dominant tree species with the exception of Hidden Lake (HID), a wet site dominated by western hemlock. No shrub or herb species appeared to be common across all interior cordilleran sites although step moss did occur on three of the sites. No mosses were reported for Hidden Lake (HID).

The remaining sites distributed across the pacific cordilleran, cool temperate, and transitional grassland greatly differed in vegetation. The two pacific cordilleran sites are located in the dry and wet extremes of the zone (Shawnigan Lake (SHL) and Port McNeill (PMC), respectively) with the only similarity between sites being salal in the shrub layer. The two cool temperate sites also had no species in common, Petawawa (PET) being a softwood stand dominated by jack pine and Morgan Arboretum (MAR), a hardwood stand dominated by beech.

The three wetland sites (Batoche (BAT), Nelson House 2 (NH2), and Gillam 2 (GI2)) were each in a different ecoclimatic province and varied in species composition with all sites having no trees and no common shrub or moss species, but with sedge a common species found in the herb/grass layer at all sites.

Table 11. Species vegetation data for all CIDET sites sorted by vegetation layer and ecoclimatic province

Site code	Moist.[a]	Ecoclimatic province	Vegetation layer[b]	Species[c] Primary	Secondary	Tertiary
MON	u	Boreal	Tr2	Abiebals	Sorbdeco	-
TOP	u	Cordilleran	Tr2	Abielasi	Piceglau	Alnuviri
GI1	u	Subarctic	Tr	Picemari	Larilari	-
INU	u	Subarctic	Tr	Picemari	Betupapy	Piceglau
SCH	u	Subarctic	Tr	Picemari	Piceglau	Larilari
CBR	u	Boreal	Tr	Abiebals	Betupapy	Piceglau
CHA	u	Boreal	Tr	Pinubank	Picemari	-
GAN	u	Boreal	Tr	Abiebals	Betupapy	Picemari
MON	u	Boreal	Tr	Abiebals	Betupapy	Piceglau
NH1	u	Boreal	Tr	Pinubank	-	-
PAL	u	Boreal	Tr	Pinubank	-	-
MAR	u	Cool Temperate	Tr	Fagugran	Acerrubr	-
PET	u	Cool Temperate	Tr	Pinubank	Pinustro	Pinuresi
TER	u	Transitional Grassland	Tr	Poputrem	-	-
HID	u	Cordilleran	Tr	Tsughete	Thujplic	Betupapy
KAN	u	Cordilleran	Tr	Pinucont	Piceglau/enge	Popubals/trem
TOP	u	Cordilleran	Tr	Pinucont	Abielasi	Piceglau/enge
WHI	u	Cordilleran	Tr	Pinucont	Picemari	Poputrem
PMC	u	Pacific Cordilleran	Tr	Tsughete	Abieamab	-
SHL	u	Pacific Cordilleran	Tr	Pseumenz	-	-
GI2	w	Subarctic	Tr	-	-	-
NH2	w	Boreal	Tr	-	-	-
BAT	w	Transitional Grassland	Tr	-	-	-
GI1	u	Subarctic	Sh	Vacculig	Ledugroe	-
INU	u	Subarctic	Sh	Ledugroe	Alnucris	Salix
SCH	u	Subarctic	Sh	Betuglan	Ledugroe	-
CBR	u	Boreal	Sh	Acerspic	Taxucana	-
CHA	u	Boreal	Sh	Vaccangu	Dierloni	-
GAN	u	Boreal	Sh	Gauthisp	Kalmangu	Vaccangu
MON	u	Boreal	Sh	Acerspic	-	-
NH1	u	Boreal	Sh	Vaccmyrt	Arctuvau	Vaccviti
PAL	u	Boreal	Sh	Arctuvau	Vaccmyrt	Sympalbu
MAR	u	Cool Temperate	Sh	Acerpens	-	-
PET	u	Cool Temperate	Sh	Vaccmyrt	Comppere	Gaulproc
TER	u	Transitional Grassland	Sh	Sympocci	Rosawood	Rubuidae
HID	u	Cordilleran	Sh	Taxubrev	Rubuparv	Rosagymn
KAN	u	Cordilleran	Sh	Linnbore	Shepcana	Vacccaes
TOP	u	Cordilleran	Sh	Vaccmemb	Loneinvo	Rubuparv
WHI	u	Cordilleran	Sh	Arctuvau	Linnboru	-
PMC	u	Pacific Cordilleran	Sh	Vacc	Tsughete	Gaulshal
SHL	u	Pacific Cordilleran	Sh	Gaulshal	Mahonerv	-
GI2	w	Subarctic	Sh	Chamcaly	Ledugroe	Kalmpoli
NH2	w	Boreal	Sh	Betuglad	Sali	-
BAT	w	Transitional Grassland	Sh	Betuglan	Potefrut	Salicand

Table 11. (Continued)

Site code	Moist.[a]	Eation province	Vegetation layer[b]	Species[c]		
				Primary	Secondary	Tertiary
GI1	u	Subarctic	Mo	Hylosple	Cladmiti	Tomenite
INU	u	Subarctic	Mo	Clad	Spha	Peltapth
SCH	u	Subarctic	Mo	Cladstel	Cladrang	-
CBR	u	Boreal	Mo	Hylosple	Pleuschr	Diacmaju
CHA	u	Boreal	Mo	Pleuschr	-	-
GAN	u	Boreal	Mo	Pleuschr	Ptilcris	Spha
MON	u	Boreal	Mo	moss	-	-
NH1	u	Boreal	Mo	Cladmiti	Cladrang	Pleuschr
PAL	u	Boreal	Mo	Cladmiti	Cladrang	Pleuschr
MAR	u	Cool Temperate	Mo	-	-	-
PET	u	Cool Temperate	Mo	Pleuschr	Polycomm	-
TER	u	Transitional Grassland	Mo	-	-	-
HID	u	Cordilleran	Mo	-	-	-
KAN	u	Cordilleran	Mo	Pleuschr	Hylosple	-
TOP	u	Cordilleran	Mo	Pleuschr	Ptilcris	Hylosple
WHI	u	Cordilleran	Mo	Clad	Hylosple	Peltmala
PMC	u	Pacific Cordilleran	Mo	Hylosple	Rhytlore	-
SHL	u	Pacific Cordilleran	Mo	Kindoreg	-	-
GI2	w	Subarctic	Mo	Sphaangu	Mylianom	Tomenite
NH2	w	Boreal	Mo	Sphawarn	Tomenite	Aulapalu
BAT	w	Transitional Grassland	Mo	Tomenite	Drep	Campstel
GI1	u	Subarctic	He	Petapalm	-	-
INU	u	Subarctic	He	Vaccvitu	Empunigr	-
SCH	u	Subarctic	He	Empenigr	Vacc	-
CBR	u	Boreal	He	Corncana	Triebore	Gaulhisp
CHA	u	Boreal	He	Maiacana	Anemquin	Corncana
GAN	u	Boreal	He	Corncana	-	-
MON	u	Boreal	He	Oxalmont	Athyfili	Strerose
NH1	u	Boreal	He	-	-	-
PAL	u	Boreal	He	Astelaev	Soli	Hierumbe
MAR	u	Cool Temperate	He	Maiacana	-	-
PET	u	Cool Temperate	He	Pteraqui	-	-
TER	u	Transitional Grassland	He	Bromanom	Anemcana	Thalvenu/Smilstel
HID	u	Cordilleran	He	Linnbore	Tiarunif/triq	Pelicani
KAN	u	Cordilleran	He	Corncana	Astecons	Hedusulp
TOP	u	Cordilleran	He	Corncana	Rubupeda	Linnbore
WHI	u	Cordilleran	He	Festalta	Epilangu	Pyroassa/Pedigroe
PMC	u	Pacific Cordilleran	He	Kindoreg	Blecspic	Dryoexpa
SHL	u	Pacific Cordilleran	He	Pteraqui	-	-
GI2	w	Subarctic	He	Rubucham	Smiltrif	Care
NH2	w	Boreal	He	Care	Oxycmicr	Smiltrif
BAT	w	Transitional Grassland	He	Care	Trigmari	Pyroasar
TOP	u	Cordilleran	Ep	Parmsulc	Hypophys	Hypoenter

[a] Upland (u) or wetland (w).

[b] Vegetation layer - Tr (1 or 2) - Tree, Sh - Shrub, He - Herb, Mo -Moss, Ep - Epiphyte.

[c] Species - refer to Table 12 for full species names; Primary, Secondary and Tertiary refer to species dominance based upon % cover and presence in all four plots at a site.

Table 12. Vegetation species list across all CIDET sites including vegetation layer, species code, species binomial, and common name

Vegetation layer[a]	Species codes	Species binomial	Common name
TR	Abieamab	*Abies amabilis*	Amabilis fir
TR	Abiebals	*Abies balsamea*	Balsam fir
TR	Abielasi	*Abies lasiocarpa*	Alpine fir
TR	Acerrubr	*Acer rubrum*	Red maple
TR	Acersacc	*Acer saccharum*	Sugar maple
TR	Alnurugo	*Alnus rugosa*	Speckled alder
TR	Alnuviri	*Alnus viridis*	European green alder
TR	Betupapy	*Betula papyrifera*	White birch cidet
TR	Chamnoot	*Chamaecyparis nootkatensis*	Yellow-cedar
TR	Fagugran	*Fagus grandifolia*	Beech cidet
TR	Larilari	*Larix laricina*	Tamarack
TR	Larilari	*Larix laricina bc*	Tamarack larch bc
TR	Larilari	*Larix laricina sk*	Tamarack sk cidet
TR	Lariocci	*Larix occidentalis*	Western larch bc
TR	Piceenge	*Picea engelmannii*	Engelmann spruce
TR	Piceglau	*Picea glauca*	White spruce
TR	Piceglau/enge	*Picea glaucaXengelmannii*	White/Engelmann spruce hybrid
TR	Picemari	*Picea mariana*	Black spruce
TR	Picemari	*Picea mariana bc*	Black spruce bc
TR	Picemari	*Picea mariana sk*	Black spruce sk cidet
TR	Picesitc	*Picea sitchensis*	Sitka spruce
TR	Pinubank	*Pinus banksiana*	Jack pine
TR	Pinubank	*Pinus banksiana on*	Jack pine on cidet
TR	Pinucont	*Pinus contorta*	Lodgepole pine
TR	Pinucont	*Pinus contorta abc*	Lodgepole pine abc
TR	Pinucont	*Pinus contorta bcc*	Lodgepole pine bcc
TR	Pinucont	*Pinus contorta c*	Lodgepole pine c
TR	Pinumont	*Pinus monticola*	Western white pine
TR	Pinupond	*Pinus ponderosa*	Ponderosa pine
TR	Pinuresi	*Pinus resinosa*	Red pine
TR	Pinustro	*Pinus strobus*	White pine
TR	Popubals	*Populus balsamifera*	Balsam poplar
TR	Popubals/trem	*Populus balsamiferaXtremuloides*	Balsam poplar/Trembling aspen hybrid
TR	Poputrem	*Populus tremuloides*	Trembling aspen
TR	Poputrem	*Populus tremuloides sk*	Trembling aspen sk cidet
TR	Pseumenz	*Pseudotsuga menziesii*	Douglas-fir
TR	Pseumenz	*Pseudotsuga menziesii glauca*	Douglas-fir in
TR	Pseumenz	*Pseudotsuga menziesii menziesii*	Douglas-fir cidet
TR	Pseumenz	*Pseudotsuga menziesii menziesii*	Douglas-fir nw bay
TR	Pseumenz	*Pseudotsuga menziesii menziesii*	Douglas-fir dg shawn
TR	Querrubr	*Quercus rubra*	Red oak
TR	Sorbdeco	*Sorbus decora*	Showy mountain ash
TR	Taxubrev	*Taxus brevifolia f*	Pacific yew fresh
TR	Taxubrev	*Taxus brevifolia l*	Pacific yew litter
TR	Thujocci	*Thuja occidentalis*	Eastern whitecedar
TR	Thujplic	*Thuja plicata*	Western redcedar
TR	Thujplic	*Thuja plicata bc*	Western redcedar bc cidet
TR	Tsughete	*Tsuga heterophylla*	Western hemlock
TR	Tsughete	*Tsuga heterophylla needle*	Western hemlock n
TR	Tsughete	*Tsuga heterophylla wood buried*	Western hemlock wb cidet
TR	Tsughete	*Tsuga heterophylla wood surface*	Western hemlock ws cidet
TR	Tsugmert	*Tsuga mertensiana*	Mountain hemlock n

Table 12. Continued

Vegetation layer[a]	Species codes	Species binomial	Common name
SH	Acerpens	*Acer pensylvanicum*	Striped maple/Moose wood
SH	Acerspic	*Acer spicatum*	Mountain maple
SH	Alnucris	*Alnus crispa*	Green alder
SH	Arctuvau	*Arctostaphylos uva-ursi*	Kinnikinnick
SH	Betuglan	*Betula glandulosa*	Scrub-birch
SH	Chamcaly	*Chameadaphne calyculata*	Leatherleaf
SH	Comppere	*Comptoria peregrina*	–
SH	Dierloni	*Diervilla lonicera*	Bush honeysuckle
SH	Gaulshal	*Gaultheria shallon*	Salal
SH	Gauthisp	*Gautheria hispidula*	Creeping-snowberry
SH	Kalmangus	*Kalmia angustifolia*	Lambkill kalmia
SH	Kalmpoli	*Kalmia polifolia*	Bog-laurel
SH	Ledugroe	*Ledum groenlandicum*	Labrador tea
SH	Linnbore	*Linnaea borealis*	Twinflower
SH	Loniinvo	*Lonicera involucrata*	Black twinberry
SH	Mahonerv	*Mahonia nervosa*	Dull oregon-grape
SH	Potefrut	*Potentilla fruticosa*	Shrubby-cinquefoil
SH	Rosagymn	*Rosa gymnocarpa*	Baldhip rose
SH	Rosawood	*Rosa woodsii*	Woods rose
SH	Rubuidae	*Rubus idaeus*	Red raspberry
SH	Rubuparv	*Rubus parviflora*	Thimbleberry
SH	Salicand	*Salix candida*	Hoary-willow
SH	Sali	*Salix* spp	Willow
SH	Shepcana	*Sheperdia canadensis*	Soopolallie
SH	Sympalbu	*Symphoricarpos albus*	Common snowberry
SH	Sympocci	*Symphoricarpos occidentalis*	Western snowberry
SH	Taxubrev	*Taxus brevifolia*	Western yew
SH	Taxucana	*Taxus canadensis*	American yew
SH	Vaccangu	*Vaccinium angustifolium*	Early low blueberry
SH	Vacccaes	*Vaccinium caespitosum*	Dwarf blueberry
SH	Vaccmemb	*Vaccinium membranaceum*	Black huckleberry
SH	Vaccmyrt	*Vaccinium myrtilloides*	Blueberry
SH	Vacc	*Vaccinium* spp	Bilberry/Huckleberry/Vaccinium
SH	Vacculig	*Vaccinium uliginosum*	Bog blueberry
SH	Vaccviti	*Vaccinium vitis-idaea*	Mountain cranberry
HE	Anemcana	*Anemone canadensis*	Meadow anemone
HE	Anemquin	*Anenome quinquefolia*	Wood anenome
HE	Astecons	*Aster conspicuus*	Showy-aster
HE	Astelaev	*Aster laevis*	Smooth Aster
HE	Athyfili	*Athyrium filix-femina*	Lady fern
HE	Blecspic	*Blechnum spicant*	Deer fern
HE	Bromanom	*Bromus anomalus*	Nodding brome
HE	Care	*Carex* spp	Sedge
HE	Clinbore	*Clintonia borealis*	Yellow clintonia
HE	Corncana	*Cornus canadensis*	Bunchberry
HE	Corncana	*Cornus canadensis*	Bunchberry
HE	Dryoexpa	*Dryopteris expansa*	Spiny wood fern
HE	Empenigr	*Empetrum nigrum*	Crowberry
HE	Epilangu	*Epilobium angustifolium*	Fireweed
HE	Festahal	*Festuca hallii*	Plains rough fescue cidet
HE	Festalta	*Fetuca altaica*	Altai fescue
HE	Gaulhisp	*Gaultheria hispidula*	Creeping-snowberry

Table 12. Continued

Vegetation layer[a]	Species codes	Species binomial	Common name
HE	Hedysulp	*Hedysarum sulphurescens*	Sulfur sweetvetch
HE	Hierumbe	*Hieracium umbellatum*	Narrow-leaved hawkweed
HE	Linnbore	*Linnaea borealis*	Twinflower
HE	Maiacana	*Maianthemun canadense*	Wild lily-of-the-valley
HE	Oxalmont	*Oxalis montana*	American woodsorrel
HE	Oxycmicr	*Oxycoccus microcarpus*	Small cranberry
HE	Pedigroe	*Pedicularis groenlandicus*	Elephant's head fern
HE	Petapalm	*Petasites palmatus*	Palmate coltsfoot
HE	Pteraqui	*Pteridium aquilinum*	Bracken fern cidet
HE	Pyroasar	*Pyrola asarifolia*	Pink wintergreen
HE	Rubucham	*Rubus chamaemorus*	Cloudberry
HE	Rubupeda	*Rubus pedatus*	Five-leaved bramble
HE	Smilstel	*Smilacina stellata*	Starry solomon plume
HE	Smiltrif	*Smilacina trifolia*	Three-leaved false solomon's-seal
HE	Soli	*Solidago* spp	Goldenrod
HE	Strerose	*Streptopus roseus*	Rosy twistedstalk
HE	Thalvenu	*Thalictrum venulosum*	Veiny meadow rue
HE	Tiarunif	*Tiarella unifoliata triquetris*	Coolwort foamflower
HE	Triebore	*Trientalis borealis*	American starflower
HE	Trigmari	*Triglochin maritimum*	Sea arrow-grass
HE	Vacc	*Vaccinium* spp	Bilberry/Huckleberry/Vaccinium
MO	Aulapalu	*Aulacomnium palustre*	Ribbed bog moss
MO	Campstel	*Campylium stellatum*	Campylium stellatum
MO	Cladmiti	*Cladina mitis*	Yellow reindeer lichen
MO	Cladrang	*Cladina rangiferina*	True reindeer lichen
MO	Clad	*Cladina* spp	Reindeer lichen
MO	Cladstel	*Cladina stellaris*	Northern reindeer lichen
MO	Dicamaju	*Dicarinum majus/Dicranum?*	forkmoss?
MO	Drep	*Drepanocladus* spp	Sickle moss
MO	Hylosple	*Hylocomium splendens*	Step moss
MO	Kindoreg	*Kindbergia oregana*	Oregon beaked moss
MO	Mylianom	*Mylia anomala*	Hard scale liverwort
MO	Peltapth	*Peltigera apthosa*	Freckled lichen
MO	Pelicani	*Peligera canina*	Dog lichen
MO	Peltmala	*Peltigera malacea*	Apple pelt lichen
MO	Pleuschr	*Pleurozium schreberi*	Big red stem
MO	Polycomm	*Polytrichum commune*	Common hairycap moss
MO	Ptilcris	*Ptilium crista-castrensis*	Knight's plume
MO	Rhytlore	*Rhytidiadelphus loreus*	Lanky moss
MO	Sphaangu	*Sphagnum angustifolium*	Poor-fen sphagnum
MO	Spha	*Sphagnum* spp	Sphagnum/Peat moss
MO	Sphawarn	*Sphagnum warnstorfii*	Sphagnum warnstorfii
MO	Tomenite	*Tomenthyonum nitens*	Golden fuzzy fen moss
EP	Hypoente	*Hypogymnia enteromorpha*	Beaded bone
EP	Hypophys	*Hypogymnia physodes*	Hooded bone
EP	Parmsulc	*Parmelia sulcata*	Waxpaper lichen

[a] Vegetation layer codes Tr (1 or 2) - Tree, Sh - Shrub, He - Herb, Mo - Moss, Ep - Epiphyte.

5. Progress to Date

The CIDET Working Group meets occasionally to discuss progress and to plan future work as the need arises. The first meeting was held in Saskatoon in September 1991 to draw up plans and discuss methodological protocols. A second meeting was held in Edmonton in July 1996 to review progress and to discuss publication plans. A third meeting is anticipated for 1998 or 1999.

CIDET required the construction of close to 11 000 litterbags. The first collection of 1008 bags was made in the fall of 1993. The fourth annual collection was completed in the fall of 1996 and all 4032 bags returned to date have been processed for weights and macronutrient analysis. Site weather data for all sites have been obtained from the AES through December 1996. All data are archived on the PFC VAX under the [CIDET.CIDET] account.

In addition to the 23 litter types characterized for nutrient content and organic C fractions (by proximate chemical analysis and NMR) as part of CIDET, 14 other litter types have been characterized as part of an NSERC funded study (C. Prescott, pers. comm.). The complete set of chemical data from both studies has been published in a single paper (Trofymow et al. 1995). Two more detailed papers on the NMR analysis of all litter types and from characterization of the chemical proximate fractions of selected litter types are in preparation (Preston, C.M.; Trofymow, J.A.; Sayer, B.G. Characterization of litter fall from representative species of Canadian forests by ^{13}C CPMAS NMR spectroscopy. Manuscript in preparation.) or in press (Preston et al. 1997). A paper on the results of the first three years (Moore et al. in press) was submitted in 1997 and additional papers are planned for the six-year data. As of October 1997, eight presentations — including posters, one published paper, this report, one accepted paper, two workshops and a workshop report, two draft papers, and one brochure — have been completed. The fifth-year sample was collected in the fall of 1997.

The successful establishment of CIDET complements similar studies underway in the U.S. (LIDET 1995) and Europe (Berg et al. 1993). Proponents of the U.S. study have expressed interest in using CIDET results for testing models being developed. Also, methods will be compared with a long-term study being conducted in Edinburgh (D.W. Heal, pers. Comm.).

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Appendix 1
Ancillary and Related Studies

At the 1991 Saskatoon workshop, several ancillary and related studies were proposed which would complement and enhance CIDET, but were beyond the present budget and scope of CIDET. The studies which could and may be undertaken by others are listed as follows. The first four are ancillary studies and depend directly upon CIDET while the last four are related studies.

Exogenous nutrient availability: Several methods exist for measuring the exogenous nutrient availability including *in situ* incubation of buried bags, *in vitro* incubation of forest floor either aerobically or anaerobically, and *in situ* incubation of resin bags. While all methods have their strengths, workshop participants felt that resin bags would be the best comparative method, even though bags would have to be collected several times over a two-year period. Resin bags would be assembled, distributed, and analyzed from a central lab.

Changes in litter C fractions through time: As only total mass loss and nutrient contents are to be measured in the project it would be useful to know how the amounts in each chemical C fraction change as decay proceeds. In particular the last stage of decay is assumed to occur when the lignocellulose ratio reaches 0.5 and also corresponds to the period of major N mineralization. Litter samples collected just prior to and at the onset of the final decay stage could be characterized retrospectively by chemical or NMR analysis.

Validation of soil organic matter models: Several dynamic soil organic matter models (e.g., CENTURY - Parton et al. 1987, GENDEC - Moorehead and Reynolds 1991) have been developed which will be paramaterized and tested in the U.S. intersite study (LIDET 1995). A separate study could use data from CIDET to test these and other models.

Specificity of decay organisms: Substrate quality, climate, microclimate, and soil factors may not completely account for all of the variation in decay rates. A factor not accounted for in this project is the differences in the decay organisms from site to site. It may be possible that not all organisms at all sites can decompose the different litter types equally well. A potentially useful study would be to examine the types and numbers of decay organisms (bacteria, fungi, microfauna, and mites) to determine if the decay organisms depend on site or substrate. Fresh undried litterbags could be sampled once or twice.

Overstory species: Since fresh litter is continually being added each year, the potential exists for soluble substrates leached from newly fallen litter to influence the rates of decomposition of older litter. Thus even within the same climatic regime, microclimate, and soil type, the composition of the overstory litter could influence decay rates. A comparative study of long-term litter decay could be done on adjacent stands of aspen and jack pine.

Exposure: Clear-felling of the forest leads to dramatic changes in the microclimate. Specifically, sites may become warmer and wetter as insolation and soil moisture increase. This possibility suggests that a long-term decay study could be done on adjacent cut and uncut stands to examine the relationship of site microclimate and long-term decay rates. C. Prescott has started to examine this question in a NSERC-funded project which examines the short-term decay rates of a one or two standard litter types in cleared and intact stands across a range of biogeoclimatic zones in British Columbia.

Substrate-quality and short-term decay rates: As CIDET will only sample litterbags annually, the dynamics of the soluble-C pools will not be measured. Given the wide range of substrates collected and to be characterized conducting a short-term decay study to examine the interaction of environmental conditions and substrate quality would be useful. C. Prescott has indicated such a study is planned as part of an NSERC funded study which could include several of the litter types in CIDET.

Long-term decay rates in non-forested ecosystems: Some of the sites to be examined in the U.S. are in prairie and tundra and include grass and sedge species. Such sites and species have been excluded in this project. It thus may be useful to suggest that a similar project be initiated in agricultural, prairie, or tundra ecosystems using litter from those systems.

Appendix 2
CIDET Site Information Summaries and Maps

The following appendices present the maps and detailed descriptions of the basic site characteristics, soil description, soil chemical properties, and (where available) detailed mensurational characteristics for each of the 21 CIDET sites. Data for each of these appendices were provided by the site cooperator and have been entered into a database and compiled in a common format for further use in analysis of the litter decomposition data.

For further information on the methods, standards, and references used in gathering the data or for clarification of the different data fields headings used for the site descriptions refer to Section 3.2. Column heading codes for the soil descriptions, surface organic and mineral soil chemical properties, and mensurational data are listed below.

Headings for site level soil description section of each appendix

HOR	Soil horizon designation according to Canadian soil classification system
DEPTH	Horizon depth with the interface of the organic and mineral soil at 0.
UP	Upper depth of horizon layer (cm).
LOW	Lower depth of horizon (cm).
COARSE FRAGMENT DESC	Estimated volumetric percentage of horizon in various size fractions.
<7.5	Percentage of horizon with materials less than 7.5 cm in size.
7.5-25	Percentage of horizon with materials between 7.5 and 25 cm in size.
>25	Percentage of horizon with materials greater than 25 cm in size.
SOIL TEXTURE	Soil textural class of <2 mm material based on relative amounts sand, silt, and clay. For some sites the von Post humification class was recorded for the organic layers.
STRUCTURE	Predominate type, kind, and class of aggregation observed for primary soil particles in each soil horizon as defined for the Canadian system for describing soils in the field.
COLOUR(DRY)	Munsell system notation for primary colour of dry soil.
PH	Soil pH in water. Not available for most sites. See soil chemistry section.
NOTES	General notes on moisture regime, mottles and gleying, concretions, root abundance, or other features.

Headings for surface organics chemistry section of each appendix

PLOT	Site plot number
HORIZON	General surface organic horizon name for site or for each plot
LFHDEPTH	Surface organic horizon (LFH) depth sampled (cm)
LFHAREA	Area of LFH sampled (cm^2)
TOTWT	Total dry weight of sample taken (grams)
CPCT	% carbon
NPCT	% nitrogen
PPCT	% phosphorus
CAPPM	Calcium (mg/kg)
MGPPM	Magnesium (mg/kg)
NAPPM	Sodium (mg/kg)
KPPM	Potassium (mg/kg)
CECCMLKG	Cation exchange capacity (meq/100g)

Headings for mineral soil[1] chemistry section of each appendix

PLOT	Site plot number
HORIZON	General mineral soil horizon name for site or for each plot
L	Level designation used to group horizons for mean calculation
MINUP	Upper mineral soil depth (cm)
MINLOW	Lower mineral soil depth (cm)
PHCA	pH in calcium chloride
PHH2	pH water
ORGC	% organic carbon
INORGC	% inorganic carbon
TOTN	% total nitrogen
TOTP	Total phosphorus (mg/kg)
TOTS	Total sulphur (mg/kg)
BUFCEC	Buffered cation exchange capacity (cmol/kg)
EXTACID	Exchangeable acidity (cmol/kg)
EXCA	Exchangeable calcium (cmol/kg)
EXMG	Exchangeable magnesium (cmol/kg)
EXNA	Exchangeable sodium (cmol/kg)
EXK	Exchangeable potasium (cmol/kg)

[1]Note: Very thick surface organic layer at PMC split into 10 cm LF, next 15 cm of H sampled as surface soil.

Headings[1] for basic plot mensuration data section fo each appendix

PLOTSITE	Three-letter site code or code plus plot number
TTYPE	Two-letter species code
NTRSMEAS	Number of trees measured
MDENSITY	Tree stand density number/ha
BAREA	Basal area in m^2/ha
MDBH	Mean diameter at breast height in cm
MHEIGHT	Mean tree height in m
MAXHEIGHT	Maximum tree height in m
MAGE	Mean tree age
SPEC1	Eight letter code for dominant tree species
SPEC2	Eight letter code for secondary tree species
SPEC3	Eight letter code for tertiary tree species

[1]Note: First line is the site summary mensuration derived from plot data or from other supplied site reports.

Appendix 2.1:

Site Information and Maps for Batoche (BAT)

S. Zoltai and M. Siltanen, Canadian Forest Service, Northern Forestry Centre, Edmonton, AB. T6H 3S5

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Batoche (BAT)

Site Information

Map: NTS 73-B/9	Lat: 52 43 41 N	Long: 106 07 52 W	UTM Zone: 13	Easting: 423613	Northing: 5842402
Datum: NAD 27	Year: 1977	Aspect: 40	Slope: 20%	Elevation: 472	
Macro site position:	g) plain	Meso site position:	d) lower slope		
Site surface shape:	c) straight	Microtopography:	c) slightly mounded		

Meteorological Yearly Means and 30 Year Normal(51-80) for Prince Albert:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	16.6	14.9	19.2	22.0	39.4	69.1	65.3	15.9	9.9	3.7	-7.2	-16.5	398.4
Temperature ˚C	-21.5	-16.5	-10.3	1.9	10.0	14.6	17.4	15.9	9.9	3.7	-7.2	-16.5	0.1

Soil Classification: Limno Mesisol

Ecological Classification:

Canada Ecoclimatic Regions: Transitional Grassland   Holdridge Lifezone: Cool Temperate Steppe

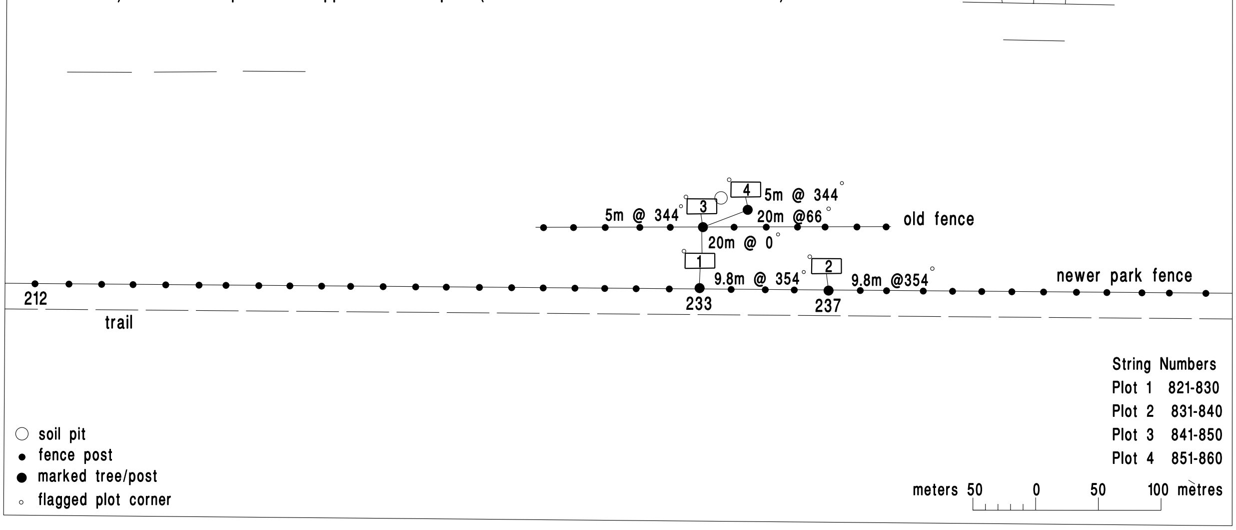
Summary Mensuration:

Species: no trees	No. of trees measured:
Mean density #/ha:	Basal Area m^2/ha:
Mean DBH cm:	Mean Height m:
Maximum Height m:	Mean Age years:

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*no trees*		
Shrub Layer	*Betula glandulosa*	*Potentilla fruticosa*	*Salix candida*
Herb Layer	*Carex spp.*	*Triglochin maritima*	*Pyrola asarifolia*
Moss Layer	*Tomenthypnum nitens*	*Drepanocladus spp.*	*Campylium stellatum*

Additional comments: Plots located at South boundary of Batoche National Historic Park near Batoche. The climate and yearly meteorological data for BAT is for Prince Albert Airport. Organic / Marl Fen.

Location: East on Hwy 312 from Rosthern. Turnoff 6.5 km past Hwy 312 and Hwy 11 intersection to north, Seager Wheeler Rd. Travel north 5.1 km and turn east onto 'Gun Club' road. Travel east 3.2 km and then turn on to road to north. Travel north 1.6 km then turnoff to east and travel 1.7 km. Follow fence to plot sites. Site is at south boundary of Batoche National Historic Park. The distance from the site marked aspen tree (at vehicle parking spot) to the first plot along the fence is 1092 m. The site marked aspen tree is at post 32 (from the SW fence corner). The fence posts are approx. 5.5 m apart (POSTS ARE NOT DRAWN TO SCALE).



Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Batoche (BAT)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Batoche (BAT)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE[1]	STRUCTURE	COLOUR(DRY)	PH	NOTES
										Limno Mesisol
LF(H)	0	10				–		–	7.4	Undecomposed litter and moss; 69.1% soil moisture; 0.09g/cm^3 bulk density.
Omk1	10	30				6		–	7.0	Moderately strong decomposed; marly peat, very high carbonate precipitate mixed with marsh peat; 67.1% soil moisture; 0.28 g/cm^3 bulk density.
Omk2	30	180+				6/7		–	6.5	Moderately strong decomposed; brown to black mucky peat derived from marsh and lacustrine peat material; carbonates present.

[1] Von Post decomposition scale

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Batoche (BAT)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	FH/0	10.0	400	373.9	29.07	1.1175	0.0945	6760.00	1336.00	125.500	329.000	63.90
2	FH/0	10.0	400	647.1	27.53	0.8700	0.0675	7190.00	1104.00	52.000	137.000	30.60
3	FH/0	10.0	400	613.9	18.16	0.4575	0.0450	5160.00	753.00	15.500	76.000	51.55
4	FH/0	10.0	400	374.8	22.64	0.7800	0.0690	6100.00	1012.00	70.500	116.000	49.60

Appendix 2.2:

Site Information and Maps for Rocky Harbour (CBR)

B.D. Titus, Canadian Forest Service (Newfoundland), Atlantic Forestry Centre, St. John's, NF. A1C 5X8

[1] Present address: C.F.S., Pacific Forestry Centre, Victoria, BC.

Canadian Intersite Decomposition Experiment
Basic Site Description Data for Rocky Harbour (CBR)

Site Information

Map: NTS 12-H/12	Lat: 49 32 47	Long: 57 50 13	UTM Zone: 21	Easting: 439400	Northing: 5488400
Datum: NAD 27	Year: 1990	Aspect: 270	Slope: 41%	Elevation: 50m	

Macro site position: d) middle slope — Meso site position: c) middle slope
Site surface shape: c) straight — Microtopography: d) moderately mounded

Meteorological Yearly Means and 30 Year Normal(51-80) for Rocky Harbour:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	129.4	78.9	91.2	64.1	74.1	82.7	93.4	106.4	99.9	116.0	130.9	132.7	1199.7
Temperature °C	-5.7	-7.2	-3.4	1.3	6.2	11.6	15.7	15.4	11.2	6.4	2.3	-3.0	4.2

Soil Classification: Plot 1 Gleyed Humo-Ferric Podzol, Plot 2 Orthic Humic Podzol, Plot 3 Orthic Gleysol, Plot 4 Ortho Humo-Ferric Podzol

Ecological Classification:

Canada Ecoclimatic Regions: Maritime Low Boreal — Holdridge Lifezone: Cool Temperate Subalpine Wet Forest

Summary Mensuration:

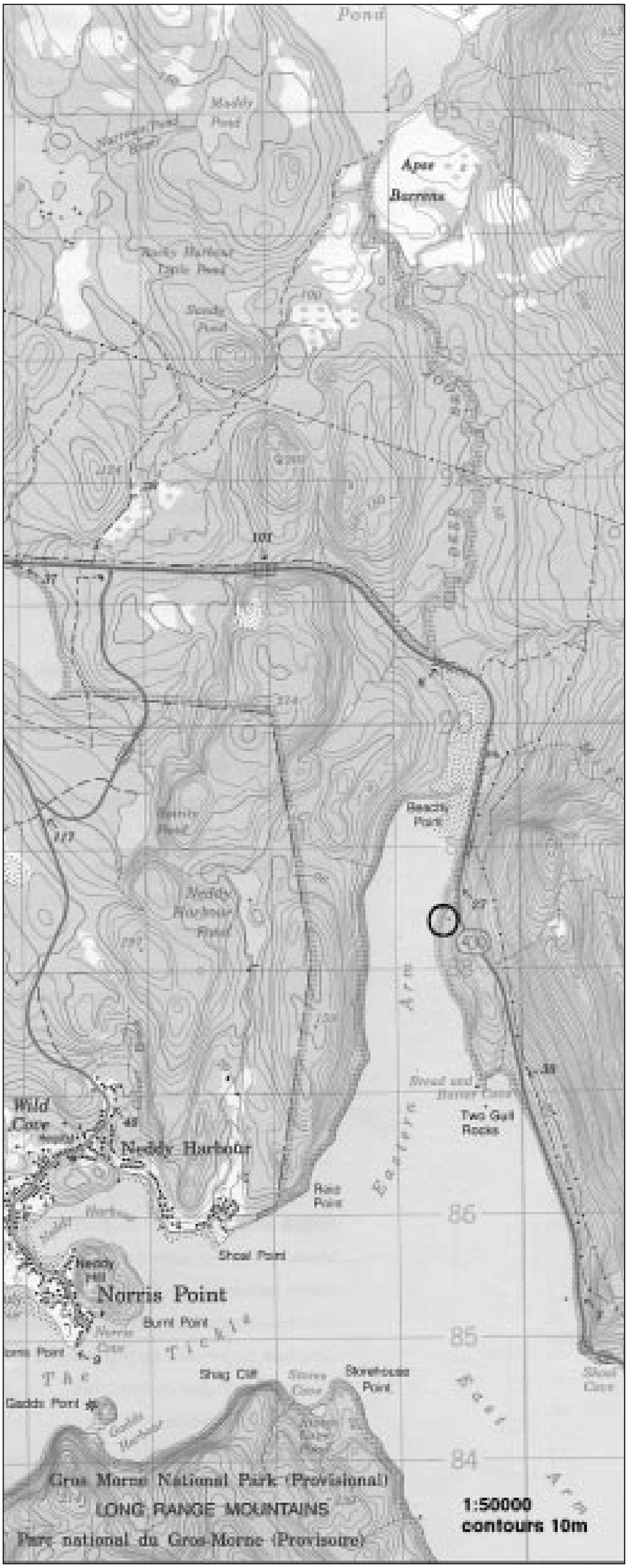
Species: Balsam Fir, White Birch, White Spruce	No. of trees measured: 197
Mean density #/ha: 6270.7	Basal Area m^2/ha: 18.21
Mean DBH cm: 5.3	Mean Height m: 8.97
Maximum Height m: 11.8	Mean Age years: 35.88

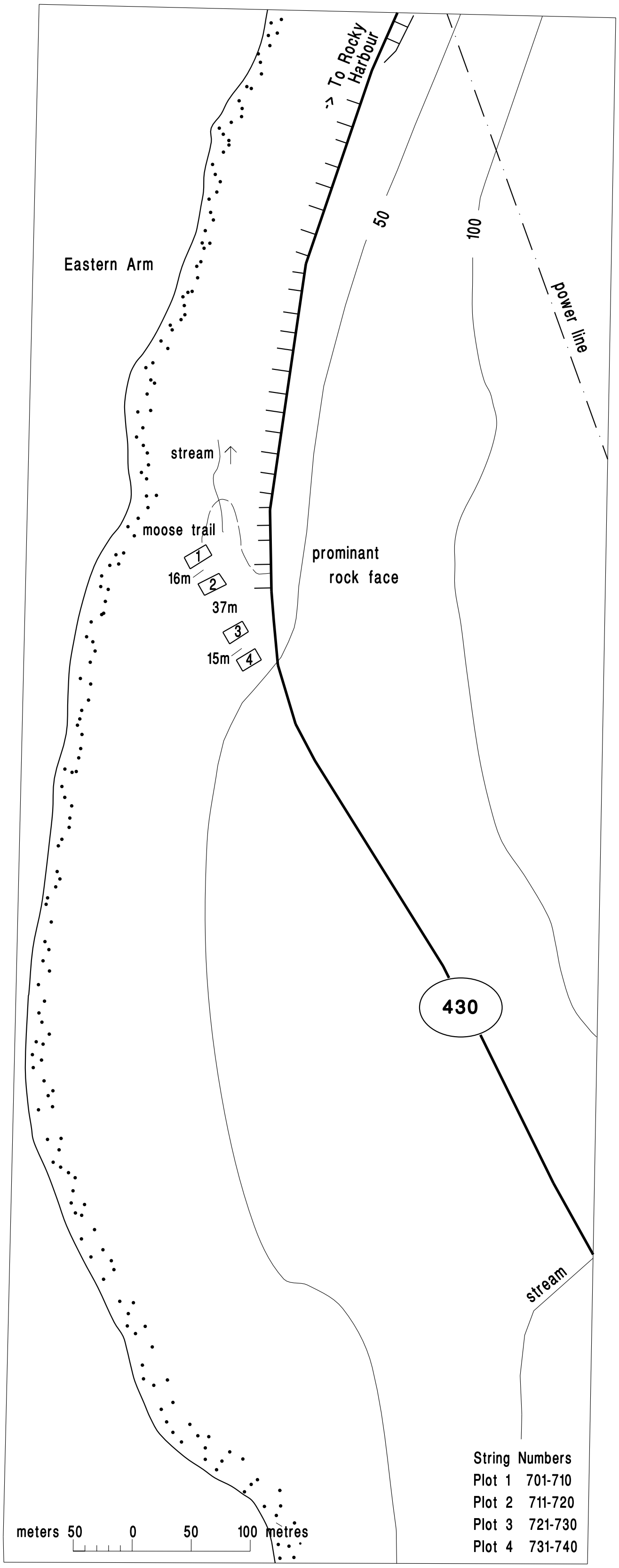
Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Abies balsamea*	*Betula papyrifera*	*Picea glauca*
Shrub Layer	*Acer spicatum*	*Taxus canadensis*	
Herb Layer	*Cornus canadensis*	*Trientalis borealis*	*Gaultheria hispidula*
Moss Layer	*Hylocomium splendens*	*Pleurozium schreberi*	*Dicarinum majus*

Additional comments:

mensuration: Stand was felled in early 1900's and again 41-42 years prior to measurement. In plot 4 a 125 year old White Spruce was excluded from the mean age calculation as it has minimal influence in the plot, and distorts the mean.

Note that for the yearly meteorological data, the station that is providing this data was automated at approximately the end of 1992/beginning of 1993, and its location was shifted slightly.





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Rocky Harbour (CBR)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Rocky Harbour (CBR)

HOR	DEPTH UP	DEPTH LOW	COARSE FRAGMENT DESC. <7.5	COARSE FRAGMENT DESC. 7.5-25	COARSE FRAGMENT DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH
PLOT 1									
LFH	6	0	65			H3 (H4) [1]			
Ae	0	5.3	60	15		Silt loam			
Bfhg(j)	5.3	31.8	35			Silt loam			
Bfh	31.8	61				Very fine sand loam			

NOTES (Plot 1): Gleyed Humo-Ferric Podzol
Bfhgj > 14.5 upper level 25.2 lower level from Bhfgj upper level. Grey layer within Bfhgj, likely a result of early seasonal transient seepage. Moisture regime > somewhat moist (3)scale. Drainage 3-4 transient seepage. Process > dominant is vertical percolation to Bfh translocation is aided high stone volume, stone is loosely packed. Lithic contact under last B horizon.

HOR	DEPTH UP	DEPTH LOW	COARSE FRAGMENT DESC. <7.5	COARSE FRAGMENT DESC. 7.5-25	COARSE FRAGMENT DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH
PLOT 2									
LFH	12.5	0				H3			
Ae	0	12.2	60			Sandy Loam			
Bh	12.2	23.6	5	80		Silt clay loam			
Bhfgj	23.6	33	5	85		Silt clay loam			

NOTES (Plot 2): Orthic Humic Podzol
Transitional nature of Bh is due to large rock, much variation. Moisture regime > moist (4)Dom (3)Less. Drainage > 3 moderately well (4) imperfectly. Dominant process is vertical percolation resulting is humus accumulation (Bh) with rock aiding its accumulation by impeeding drainage. Subdominant seepage process below Bh (rock level). Bh is not subject to seepage.

HOR	DEPTH UP	DEPTH LOW	COARSE FRAGMENT DESC. <7.5	COARSE FRAGMENT DESC. 7.5-25	COARSE FRAGMENT DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH
PLOT 3									
LFH	6.2	0				H3 (H4)			
Ah	0	3.1	10			Silt			
Bg	3.1	20.2	30	20		Silt			
Bg	20.2	42.7	45	20		Sandy clay loam			
BCgj	42.7								

NOTES (Plot 3): Orthic Gleysol
Moisture regime > moist 4 drainage > 4 imperfect. Seepage more dominant here due to longer slopes with seepage in pit at BC transition.

HOR	DEPTH UP	DEPTH LOW	COARSE FRAGMENT DESC. <7.5	COARSE FRAGMENT DESC. 7.5-25	COARSE FRAGMENT DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH
PLOT 4									
LFH	8	0				H3 (H4)			
Ae	0	11.2	65			Silt loam			
Bfh	11.2	41.7	50	15		Silt loam			

NOTES (Plot 4): Ortho Humo-Ferric Podzol
Moisture regime > somewhat moist 3 > 2. Drainage > 2 well drained (3) moderately well drained no seepage, mainly vertical process, mainly due to microtopography.

1 von Post humification class

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Rocky Harbour (CBR)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LFH	6.0	.	.	42.41	1.3500	0.1095	2005.00	472.00	53.880	277.500	34.20
2	LFH	12.5	.	.	46.06	1.0200	0.0638	1240.00	375.50	53.750	172.000	31.75
3	LFH	6.2	.	.	40.50	0.9300	0.1530	3190.00	434.00	55.300	181.000	54.05
4	LFH	8.0	.	.	43.84	1.5150	0.1005	2160.00	466.00	55.820	219.500	36.45

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ae	1	0.0	5.3	3.4	4.1	4.17	0.00	0.109	239.0	120.0	20.89	24.15	0.73	0.42	0.13	0.06
1	Bfhgj	2	5.3	31.8	5.0	5.3	8.06	0.00	0.297	537.0	417.0	26.66	31.55	9.79	2.22	0.36	0.04
1	Bfh	3	31.8	61.0	5.2	5.5	1.42	0.00	0.059	705.0	165.0	11.27	13.45	4.54	0.54	0.12	0.00
2	Ae	1	0.0	12.2	3.3	4.1	1.47	0.00	0.064	79.0	34.0	11.73	11.40	1.86	0.59	0.11	0.06
2	Bh	2	12.2	23.6	4.9	5.3	8.10	0.00	0.392	779.0	420.0	21.37	38.40	19.75	2.01	0.28	0.17
2	Bhfgi	3	23.6	33.0	.	.	.	.	.	.	.	.	.	.	.	.	.
3	Ah	1	0.0	3.1	4.8	5.3	9.59	0.00	0.491	1183.0	621.0	25.56	32.85	7.73	1.30	0.25	0.07
3	Bg	2	3.1	20.2	4.6	5.1	2.24	0.00	0.100	813.0	148.0	13.16	19.05	2.06	0.30	0.10	0.00
3	Bg2	3	20.2	42.7	.	.	.	.	.	.	.	.	.	.	.	.	.
3	BCgj	4	42.7	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	Ae	1	0.0	2.2	3.0	3.7	6.73	0.00	0.159	102.0	58.0	23.62	26.00	1.79	1.13	0.21	0.27
4	Bfh	2	2.2	29.8	5.4	5.8	7.68	0.00	0.388	771.0	490.0	34.06	29.30	19.32	2.49	0.39	0.04
4	TRANS	3	29.8	.	3.4	4.0	2.22	0.00	0.092	150.0	72.0	23.13	23.50	0.35	0.33	0.09	0.10

Canadian Intersite Decomposition Experiment

Basic Mensuration Data by Plot for Rocky Harbour (CBR)

						MENSURATION					
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGHT	MAGE	SPEC1	SPEC2	SPEC3
–	–	197	6270.7	18.2	5.3	9.0	11.8	35.9	Abiebals	Betupapy	Piceglau
CBR	ALL	197	6270.7	18.2	5.3	9.0	11.8	35.9			
CBR	bF	166	5283.9	15.4	5.3	.	.	.			
CBR	wB	31	986.8	2.8	5.6	.	.	.			
CBR1	ALL	47	5984.2	19.2	5.5	9.7	11.8	37.5			
CBR1	bF	32	4074.4	14.4	5.5	.	.	.			
CBR1	wB	15	1909.9	4.8	5.4	.	.	.			
CBR2	ALL	59	7512.1	18.2	5.1	8.4	10.6	37.0			
CBR2	bF	54	6875.5	16.3	5.0	.	.	.			
CBR2	wB	5	636.6	2.0	5.9	.	.	.			
CBR3	ALL	38	4838.3	18.3	5.8	.	.	.			
CBR3	bF	36	4583.7	17.9	5.9	.	.	.			
CBR3	wB	2	254.6	0.4	4.5	.	.	.			
CBR4	ALL	53	6748.2	17.2	5.0	8.9	10.9	33.7			
CBR4	bF	44	5602.2	13.2	4.9	.	.	.			
CBR4	wB	9	1145.9	4.0	5.9	.	.	.			

Appendix 2.3:

Site Information and Maps for Chapleau (CHA)

I.K. Morrison, Canadian Forest Service, Great Lakes Forestry Centre, Sault Ste. Marie, ON. P6A 5M7

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Chapleau (CHA)

Site Information

Map: NTS 41-O/11	Lat: 47 38 10	Long: 83 14 32	UTM Zone: 17	Easting: 331500	Northing: 5277900
Datum: NAD 27	Year: 1977	Aspect: n/a	Slope: 0%	Elevation: 460m	
Macro site position:	g) plain	Meso site position:	g) level		
Site surface shape:	c) straight	Microtopography:	b) micro mounded		

Meteorological Yearly Means and 30 Year Normal(51-80) for Chapleau:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	46.9	34.5	56.2	59.3	73.8	100.4	81.8	86.2	101.5	75.7	64.2	53.5	834.0
Temperature ˚C	-16.9	-15.8	-8.6	0.6	8.6	14.3	16.8	15.4	10.4	4.9	-3.5	-12.8	1.1

Soil Classification: Orthic Dystric Brunisol O.DYB

Ecological Classification:

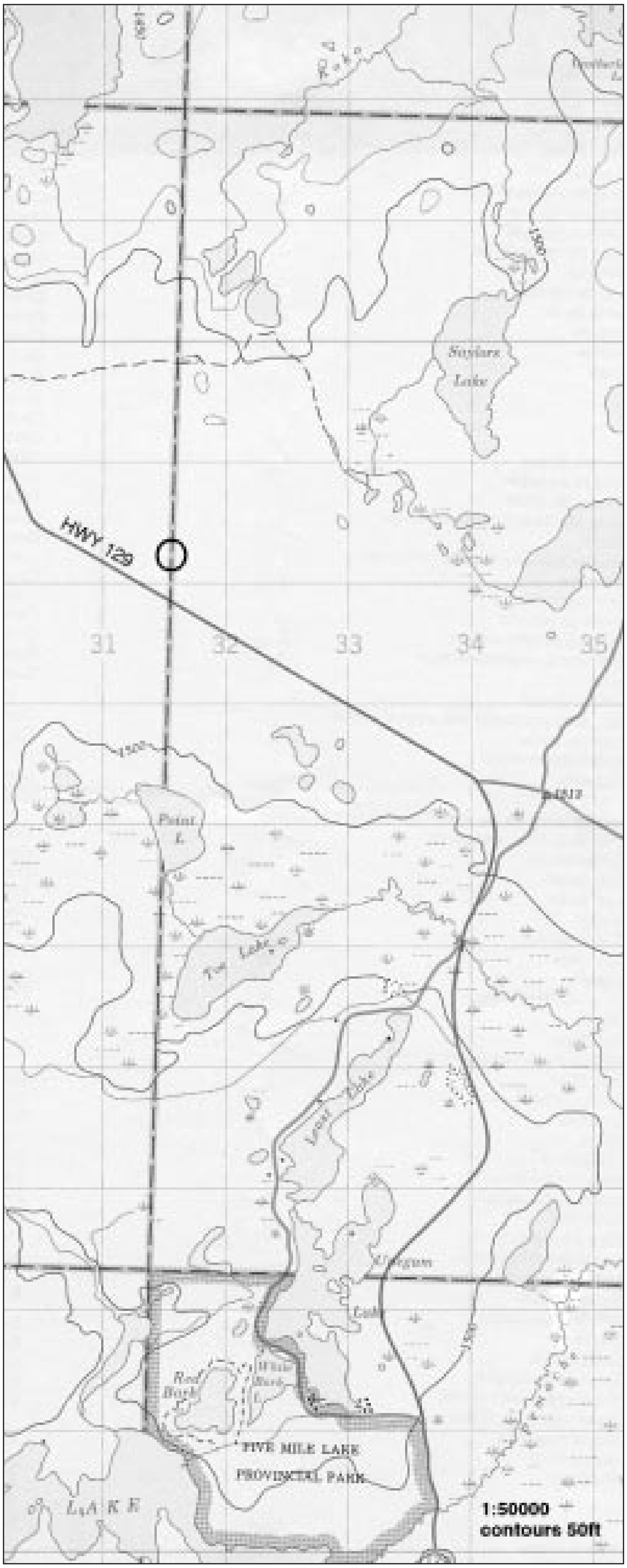
Canada Ecoclimatic Regions: Humid Low Boreal
Holdridge Lifezone: Cool Temperate Subalpine Wet Forest

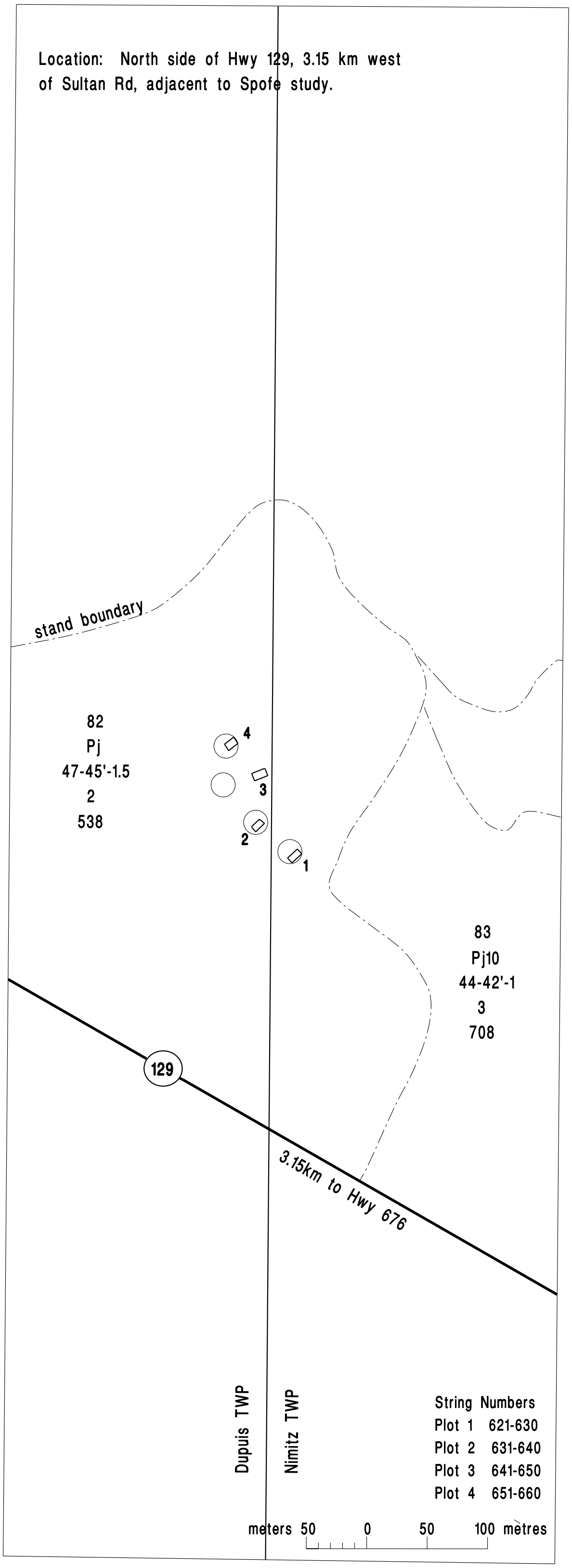
Mensuration Summary:

Species: Jack Pine, Black Spruce
Mean density #/ha: 1902 +-272
Mean DBH cm: 16.1 +- 0.9
Maximum Height m: 21.0
No. of trees measured: 40
Basal Area m^2/ha: 41.9 +- 2.2
Mean Height m: 15.8 +- 0.6
Mean Age years: 70

Vegetation:	Primary	Secondary	Tertiary
Tree Layer	*Pinus banksiana*	*Picea mariana*	
Shrub Layer	*Vaccinium angustifolium*	*Pierrilla lonicera*	
Herb Layer	*Maianthemum canadense*	*Anemone quinquefolia*	*Cornus canadensis*
Moss Layer	*Pleurozium schreberi*		

Additional comments: Present stand resulted from a 1922 wildfire. Bags were individually pinned down due to topography.





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Chapleau (CHA)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Chapleau (CHA)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
Lq	8.5	-								Continuous living moss carpet
Fq	-	-						10YR2/1		
Hd	-	0.0						10YR2/1		
Ae	0.0	2.0	15	0	0	Silt Loam	Single grained	10YR6/2		Loose consistence; clear irregular boundary; moist
Bm1	2.0	10.0	15	0	0	Silt Loam	Single grained	10YR5/4		Loose consistence; gradual irregular boundary; moist
Bm2	10.0	30.0	20	0	0	Silt Loam	Single grained	10YR6/4		Loose consistence; clear smooth boundary; moist
IIBC	30.0	44.0	40	0	0	Loamy Sand	Single grained	10YR5/4		Loose consistence; diffuse irregular boundary; moist
IIC	44.0	60.0	50	0	0	Loamy Sand	Single grained	10YR5/4		Loose consistence; moist

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Chapleau (CHA)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LFH	8.5	400	255.0	24.42	0.6075	0.0634	810.00	120.00	9.500	191.000	18.75
2	LFH	8.5	400	121.7	38.66	1.0650	0.0915	1405.00	214.00	3.000	374.000	24.30
3	LFH	8.5	400	208.9	35.94	1.3275	0.1043	1465.00	194.50	14.000	315.500	25.60
4	LFH	8.5	400	122.3	43.84	1.0950	0.0848	610.00	77.00	3.000	112.500	10.60

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ae	1	0.0	2.0	3.7	4.3	1.48	0.00	0.068	208.0	55.0	8.94	11.30	0.40	0.03	0.03	0.02
1	Bm1	2	2.0	10.0	5.1	5.4	1.10	0.00	0.062	580.0	137.0	9.38	11.60	0.43	0.00	0.02	0.00
1	Bm2	3	10.0	30.0	5.2	5.5	0.45	0.00	0.027	465.0	119.0	5.45	7.30	0.10	0.00	0.01	0.00
1	IIBC	4	30.0	44.0	5.1	5.6	0.13	0.00	0.008	569.0	58.0	1.80	2.50	0.09	0.00	0.01	0.00
1	IIC	5	44.0	60.0	5.4	5.8	0.11	0.00	0.011	370.0	39.0	0.83	1.23	0.04	0.00	0.02	0.00
2	Ae	1	0.0	2.0	3.7	4.3	1.96	0.00	0.086	164.0	82.0	9.94	11.85	0.78	0.04	0.04	0.03
2	Bm1	2	2.0	10.0	4.7	5.1	1.98	0.00	0.096	420.0	148.0	12.01	14.93	0.54	0.02	0.02	0.04
2	Bm2	3	10.0	30.0	5.1	5.5	0.51	0.00	0.027	462.0	92.0	5.13	7.05	0.08	0.00	0.02	0.01
2	IIBC	4	30.0	44.0	5.2	5.6	0.21	0.00	0.015	780.0	63.0	2.80	3.95	0.09	0.00	0.01	0.01
2	IIC	5	44.0	60.0	5.3	5.8	0.13	0.00	0.005	283.0	36.0	1.08	1.05	0.13	0.00	0.01	0.00
3	Ae	1	0.0	2.0	3.7	4.4	1.36	0.00	0.064	328.0	55.0	8.50	9.60	0.83	0.04	0.04	0.05
3	Bm1	2	2.0	10.0	4.7	5.3	1.37	0.00	0.066	555.0	91.0	10.85	15.35	0.59	0.04	0.03	0.00
3	Bm2	3	10.0	30.0	5.0	5.6	0.89	0.00	0.051	475.0	73.0	8.69	11.40	0.44	0.02	0.02	0.00
3	IIBC	4	30.0	44.0	5.0	5.7	0.23	0.00	0.024	480.0	37.0	3.03	4.77	0.20	0.02	0.03	0.00
3	IIC	5	44.0	60.0	5.0	5.7	0.27	0.00	0.015	509.0	51.0	3.09	3.80	0.23	0.02	0.02	0.00
4	Ae	1	0.0	2.0	3.3	4.0	1.98	0.00	0.075	193.0	68.0	10.33	15.00	0.55	0.12	0.05	0.07
4	Bm1	2	2.0	10.0	4.8	5.2	1.52	0.00	0.072	565.0	178.0	12.50	16.75	0.51	0.04	0.03	0.00
4	Bm2	3	10.0	30.0	5.0	5.5	0.70	0.00	0.034	593.0	116.0	8.04	9.95	0.43	0.00	0.04	0.00
4	IIBC	4	30.0	44.0	5.0	5.7	0.13	0.00	0.004	945.0	66.0	3.34	3.20	0.97	0.05	0.02	0.00
4	IIC	5	44.0	60.0	5.0	5.7	0.31	0.00	0.003	669.0	70.0	3.39	4.55	0.36	0.02	0.03	0.00

Canadian Intersite Decomposition Experiment

Basic Mensuration Data by Plot for Chapleau (CHA)

				MENSURATION							
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGH	MAGE	SPEC1	SPEC2	SPEC3
–	–	40	1902.0	41.9	16.1	15.8	21.0	70.0	Pinubank	Picemari	-
CHA	ALL	.	1902.0	41.9	16.1	15.8	21.0	70.0			
CHA	Pj	.	1393.0	37.5	18.2	17.8	.	.			
CHA	Sb	.	509.0	4.4	9.9	9.9	.	.			
CHA1	ALL	65	2060.0	44.0	15.8	15.7	.	.			
CHA1	Pj	47	1496.0	38.3	17.7	17.5	.	.			
CHA1	Sb	18	573.0	5.6	10.8	10.7	.	.			
CHA2	ALL	48	1528.0	39.6	17.5	16.8	.	.			
CHA2	Pj	40	1273.0	37.7	19.1	18.2	.	.			
CHA2	Sb	8	255.0	1.9	9.3	18.2	.	.			
CHA3	ALL	50	1878.0	40.5	15.6	15.4	.	.			
CHA3	Pj	43	1369.0	37.3	18.3	17.9	.	.			
CHA3	Sb	16	509.0	3.2	8.4	8.9	.	.			
CHA4	ALL	67	2132.0	43.6	15.6	15.4	.	.			
CHA4	Pj	45	1432.0	36.5	17.7	17.7	.	.			
CHA4	Sb	22	700.0	7.1	11.2	10.8	.	.			

Appendix 2.4:

Site Information and Maps for Gander (GAN)

B.D. Titus, Canadian Forest Service (Newfoundland), Atlantic Forestry Centre, St. John's, NF. A1C 5X8

[1] Present address: C.F.S., Pacific Forestry Centre, Victoria, BC.

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Gander (GAN)

Site Information

Map: NTS 02-D/15	Lat: 48 55 08	Long: 54 34 28	UTM Zone: 21	Easting: 677800	Northing: 5421050
Datum: NAD 27	Year: 1987	Aspect: 200-230	Slope: 10%	Elevation: 115m	

Macro site position: d) middle slope — Meso site position: c) middle slope
Site surface shape: c) straight — Microtopography: c)-d) moderately-strongly mounded

Meteorological Yearly Means and 30 Year Normal(51-80) for Gander International Airport:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	109.1	99.7	110.1	93.2	70.0	80.3	69.0	97.3	81.2	104.7	107.3	108.2	1130.1
Temperature ˚C	-6.2	-6.8	-3.5	0.9	6.2	11.8	16.5	15.6	11.4	6.0	1.8	-3.8	4.3

Soil Classification: Gleyed Ferro-Humic Podzol GL.FHP

Ecological Classification:

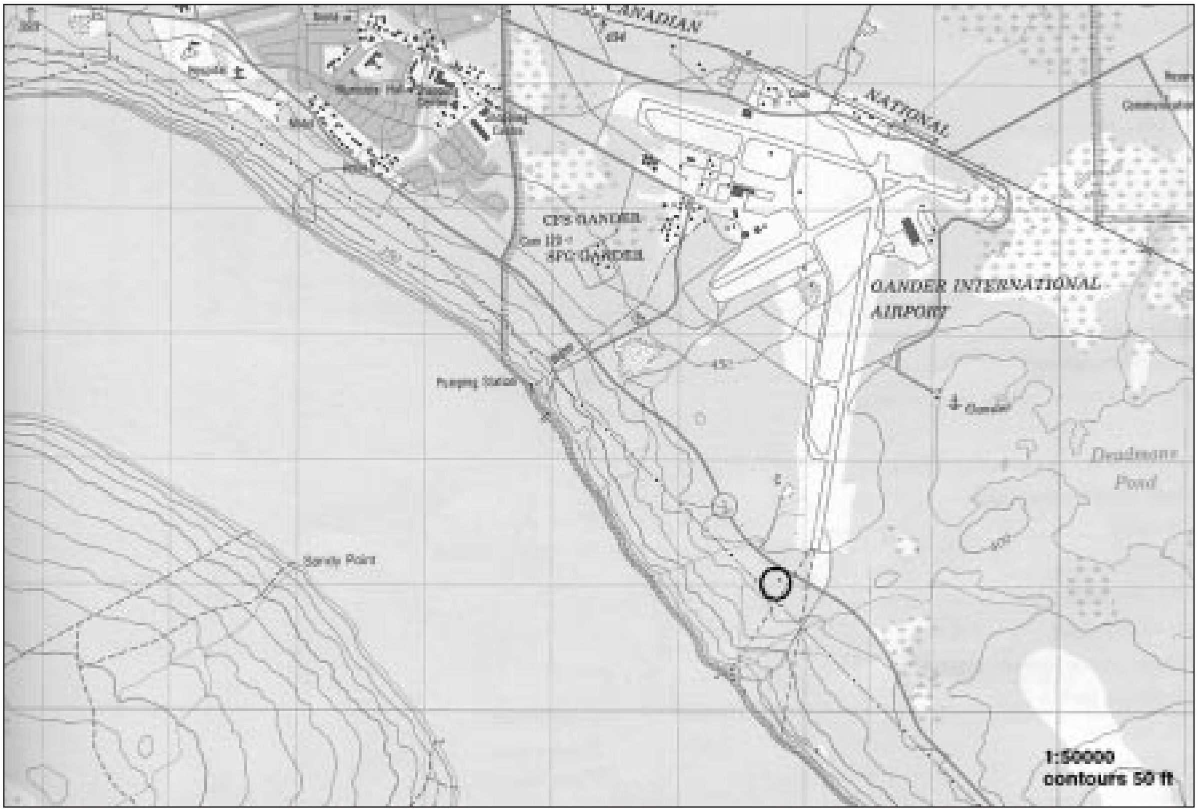
Canada Ecoclimatic Regions: Maritme Mid-Boreal — Holdridge Lifezone: Cool Temperate Subalpine Wet Forest

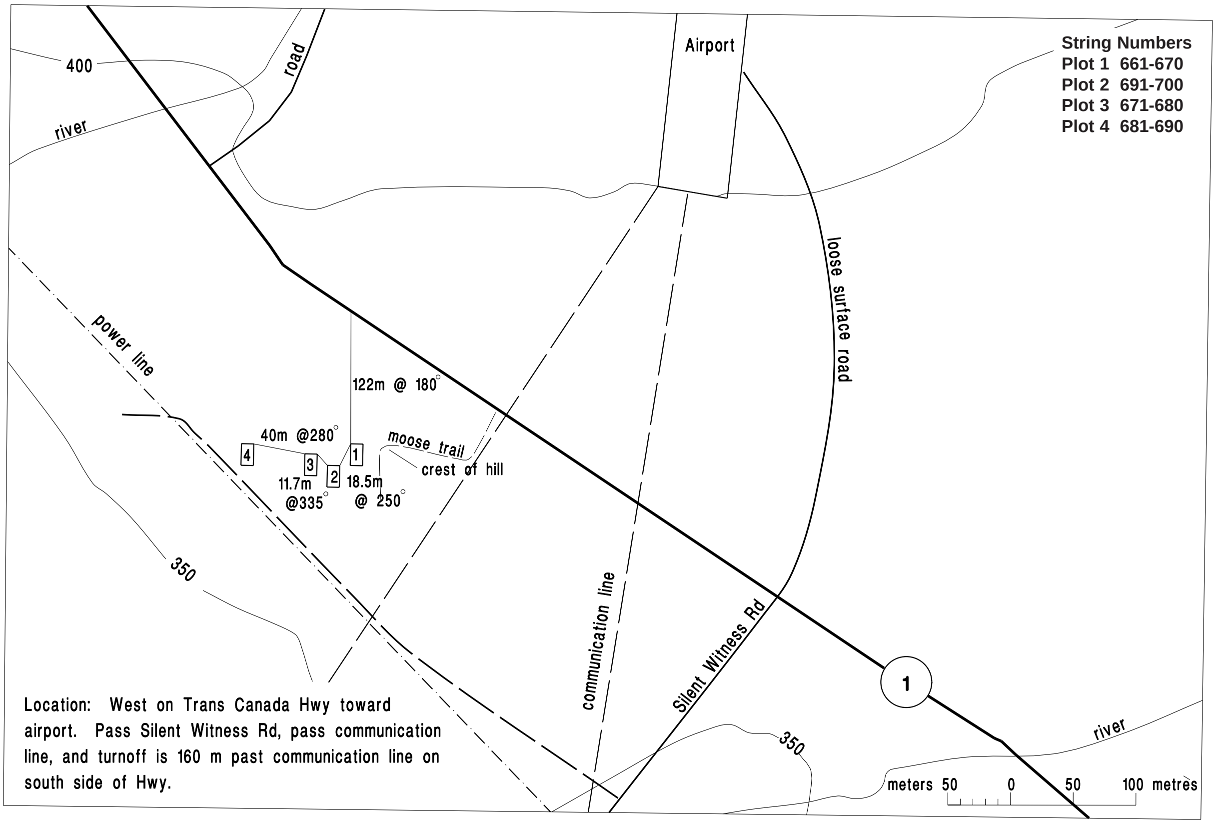
Summary Mensuration:

Species: Balsam Fir, Black Spruce — No. of trees measured: 202
Mean density #/ha: 6913.83 — Basal Area m^2/ha: 63.15
Mean DBH cm: 10.03 — Mean Height m: 10.6
Maximum Height m: 13.8 — Mean Age years: ~85 (originated from 1910 fire)

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Abies balsamea*	*Betula papyrifera*	*Picea mariana*
Shrub Layer	*Gautheria hispidula*	*Kalmia angustifolia*	*Vaccinium angustifolium*
Herb Layer	*Cornus canadensis*		
Moss Layer	*Pleurozium schreberi*	*Ptilium crista-castrensis*	*Sphagnum spp.*

Additional comments:





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Gander (GAN)

Canadian Intersite Decomposition Experiment

Site Level Soil Descriptions for Gander (GAN)

DESCRIPTION

HOR	DEPTH UP	LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
										Gleyed Ferro-Humic Podzol
LFH	12.0	0.0					granular	5YR2/2	3.4	Abrupt dark reddish brown; granular mor; roots plentiful
Ae	0.0	7.0				silt loam	weak fine angular blocky	10YR7/1	3.5	Light gray; sticky; roots few
Ahe	7.0	10.0				silt loam	weak fine angular blocky	10YR5/4	4.0	Yellowish brown; sticky; roots few
Bhfgj	10.0	45.0				loam	moderate medium granular	2.5YR4/6	4.7	Reddish; sticky; yellowish brown (10YR5/6) mottles distinct, common, medium; rooting depth 24 cm
C	45.0	+				loam	moderate medium angular blocky	5Y5/3	5.2	Olive

Canadian Intersite Decomposition Experiment

Surface Organics (LFH) and Mineral Soil Chemistry for Gander (GAN)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LFH	10.0	.	.	44.67	0.7800	0.0705	535.00	322.00	11.000	201.500	30.10
2	LFH	10.0	.	.	47.97	0.9150	0.0600	545.00	199.50	5.000	99.000	25.80
3	LFH	8.0	.	.	44.75	0.6075	0.0735	662.50	275.00	0.000	236.250	11.50
4	LFH	10.0	.	.	45.69	0.6450	0.0660	795.00	235.00	1.500	165.000	34.20

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ae	1	0.0	4.0	2.9	3.6	1.85	0.00	0.052	52.0	21.0	13.87	18.70	0.10	0.33	0.11	0.13
1	B	2	4.0	34.0	4.4	4.7	3.75	0.00	0.144	448.0	269.0	17.47	24.55	0.00	0.02	0.03	0.00
1	C	3	34.0	.	4.6	4.6	1.51	0.00	0.058	282.0	148.0	10.67	15.85	0.00	0.00	0.03	0.00
2	Ae	1	0.0	16.0	2.9	4.0	0.88	0.00	0.035	27.0	16.0	8.62	10.50	0.01	0.09	0.03	0.01
2	B	2	16.0	32.0	4.0	4.4	1.94	0.00	0.148	614.0	254.0	21.02	30.73	0.08	0.07	0.03	0.08
3	Ae	1	0.0	10.0	3.0	3.9	2.03	0.00	0.064	75.0	10.0	16.59	19.77	0.20	0.47	0.05	0.08
3	B	2	10.0	32.0	4.5	4.7	2.90	0.00	0.112	610.0	298.0	14.71	20.60	0.00	0.04	0.03	0.00
3	B1(B2)	3	32.0	55.0	4.6	4.9	2.47	0.00	0.081	492.0	179.0	13.76	20.10	0.00	0.02	0.01	0.00
4	Ae	1	0.0	2.0	2.9	3.6	2.82	0.00	0.085	107.0	32.0	18.19	24.47	0.17	0.26	0.05	0.11
4	B	2	2.0	30.0	4.6	5.0	4.39	0.00	0.158	477.0	253.0	18.74	30.10	0.01	0.04	0.03	0.00
4	C	3	30.0	.	4.8	5.1	1.15	0.00	0.047	224.0	164.0	8.19	12.70	0.00	0.00	0.02	0.00

Canadian Intersite Decomposition Experiment

Basic Mensuration Data by Plot for Gander (GAN)

					MENSURATION						
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGH	MAGE	SPEC1	SPEC2	SPEC3
–	–	202	6913.8	63.2	10.0	10.6	13.8	85.0	Abiebals	Betupapy	Picemari
GAN	ALL	202	6913.8	63.2	10.0	10.6	13.8	85.0			
GAN	bS	190	6503.8	61.7	10.3	.	.	.			
GAN	bF	12	410.7	1.4	6.0	.	.	.			
GAN1	ALL	61	5393.5	70.2	12.1	12.3	13.8	85.0			
GAN1	bS	55	4863.0	67.4	12.6	.	.	.			
GAN1	bF	6	530.5	2.9	7.7	.	.	.			
GAN2	ALL	49	9747.4	70.2	8.9	10.4	10.9	85.0			
GAN2	bS	45	8951.7	69.0	9.3	.	.	.			
GAN2	bF	4	795.7	1.2	4.4	.	.	.			
GAN3	ALL	40	7957.0	68.9	9.9	11.5	13.2	85.0			
GAN3	bS	39	7758.1	68.6	10.1	.	.	.			
GAN3	bF	1	198.9	0.3	4.2	.	.	.			
GAN4	ALL	52	6620.8	44.8	8.8	8.1	9.6	85.0			
GAN4	bS	51	6493.5	44.6	8.9	.	.	.			
GAN4	bF	1	127.3	0.2	4.3	.	.	.			

Appendix 2.5:

Site Information and Maps for Gillam 1 (GI1)

S. Zoltai and M. Siltanen, Canadian Forest Service, Northern Forestry Centre, Edmonton, AB. T6H 3S5

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Gillam 1 (GI1)

Site Information

Map: NTS 54-D/07	Lat: 56 19 28 N	Long: 94 51 28 W	UTM Zone: 15	Easting: 385111	Northing: 6243527
Datum: NAD 83	Year: 1973	Aspect:	90	Slope: 1%	Elevation: 140m
Macro site position:	g) plain	Meso site position:	g) level		
Site surface shape:	c) straight	Microtopography:	e) strongly mounded		

Meteorological Yearly Means and 30 Year Normal(51-80) for Gillam Airport:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	21.1	18.5	29.5	37.1	33.5	30.6	93.4	60.9	51.2	32.6	34.3	42.1	484.8
Temperature ˚C	-28.0	-23.9	-17.2	-6.6	2.7	10.3	15.0	13.8	6.6	-0.4	-12.1	-22.8	-5.2

Soil Classification: Brunisolic Static Cryosol BR.SC

Ecological Classification:

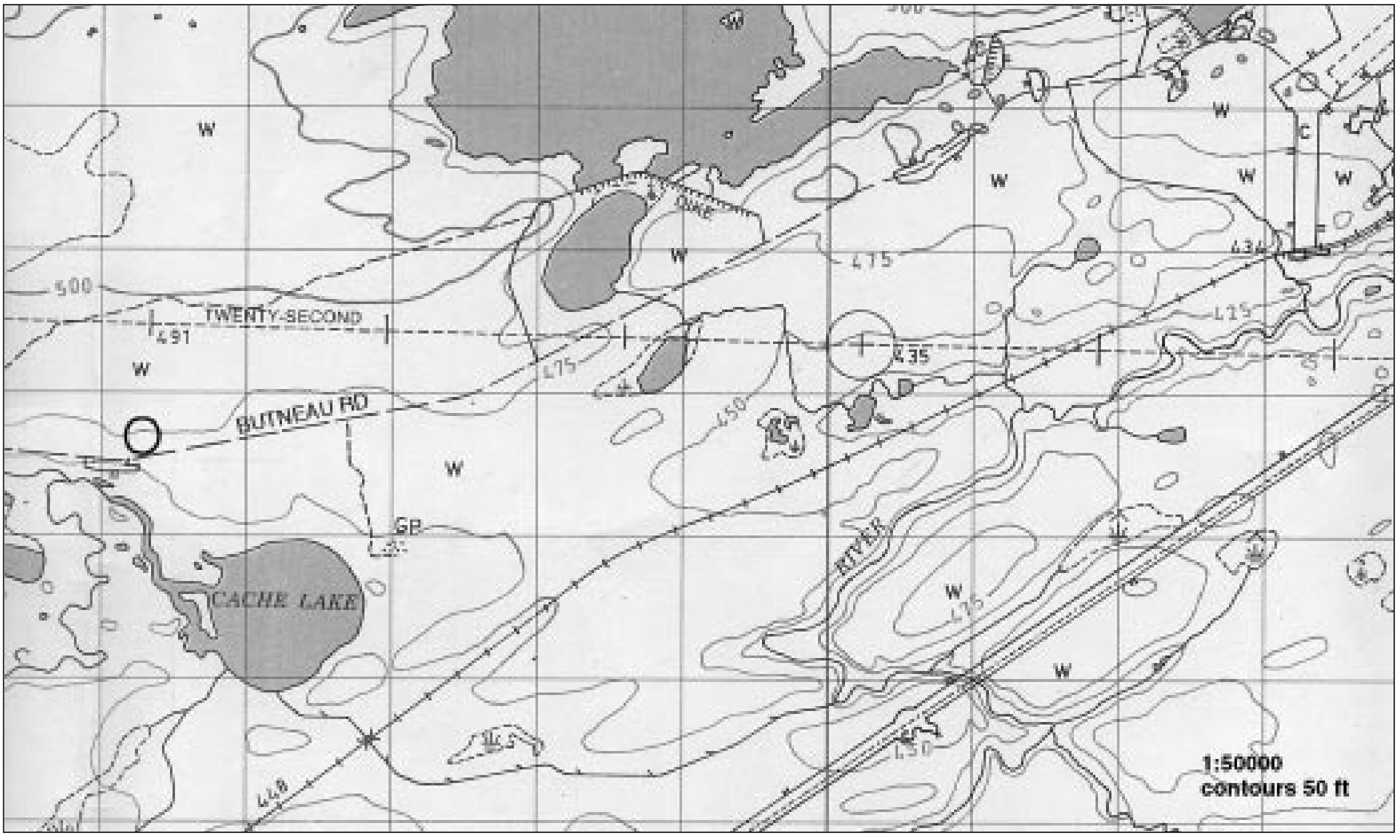
Canada Ecoclimatic Regions: Low Subarctic — Holdridge Lifezone: Boreal Moist/Wet Forest

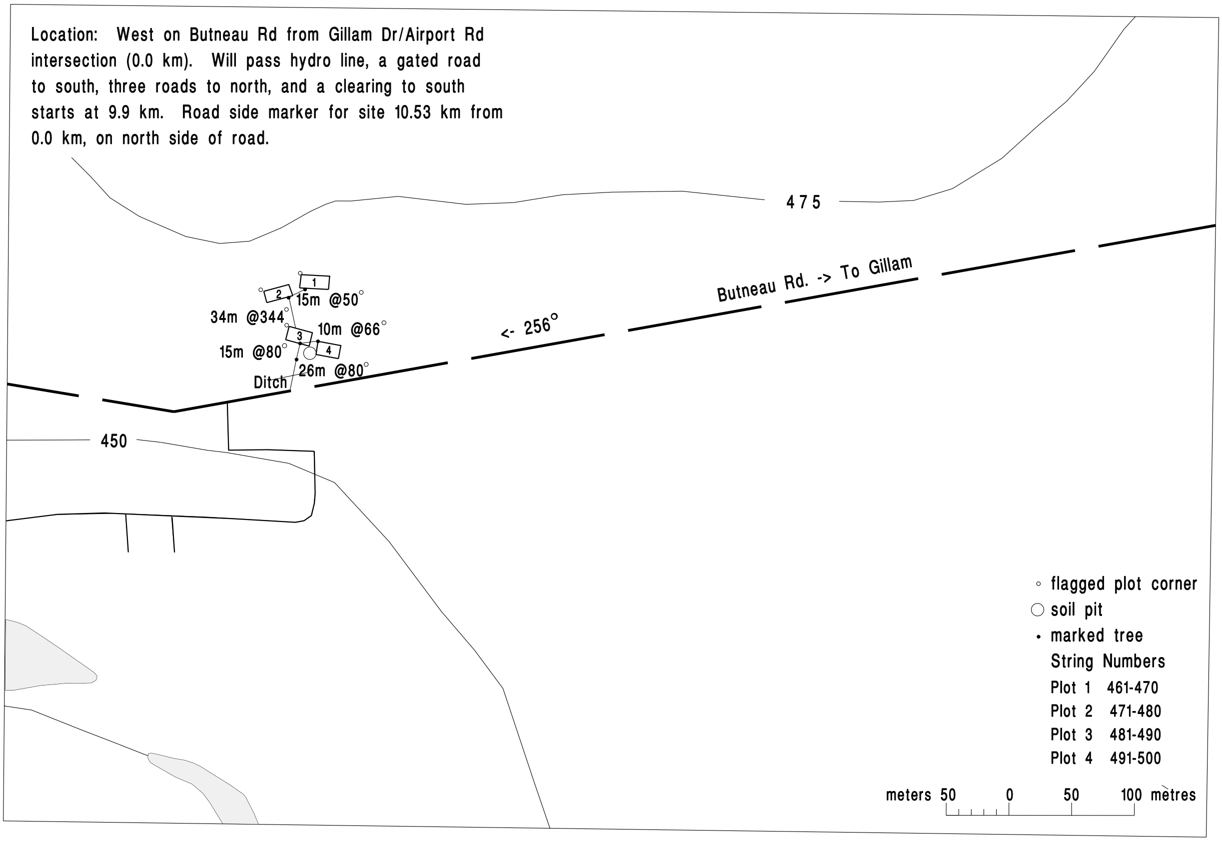
Summary Mensuration:

Species: Black Spruce, Tamarack	No. of trees measured: 42
Mean density #/ha: 5054.5	Basal Area m^2/ha: 12.06
Mean DBH cm: 7.32	Mean Height m: 5.79
Maximum Height m: 9.8	Mean Age years: 94.3

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Picea mariana*	*Larix laricina*	
Shrub Layer	*Vaccinium uliginosum*	*Ledum groenlandicum*	
Herb Layer	*Petasites palmatus*		
Moss Layer	*Hylocomium splendens*	*Cladina mitis*	*Tomenthypnum nitens*

Additional comments:





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Gillam 1 (GI1)

Canadian Intersite Decomposition Experiment

Site Level Soil Descriptions for Gillam 1 (GI1)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
LF	15.0	10.0							5.8	56.9% soil moisture, 0.11 g/cm^3 bulk density, humimor
H	10.0	0.0							6.5	74.4% soil moisture, 0.21 g/cm^3 bulk density
Ah	0.0	5.0	0	0	0					
Bm	5.0	42.0	0	0	0				5.9	24.8% soil moisture, 1.37 g/cm^3 bulk density
Ck	42.0	56.0	0	0	0	Silty Clay		2.5Y6/4	5.9	weak effervescence
Cz	56.0+		0	0	0					

Canadian Intersite Decomposition Experiment

Surface Organics (LFH) and Mineral Soil Chemistry for Gilliam (GI1)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
.	1/2	.	.	.	40.65	1.0800	0.0660	7010.00	1017.00	13.000	197.000	95.30
.	2/2	.	.	.	41.43	1.0350	0.0630	7220.00	1014.00	22.500	194.000	91.95
.	H	.	.	.	34.09	1.1025	0.0780	10000.00	1298.00	5.000	46.000	144.75
1	LFH	15.0	400	1184.1	37.24	1.2750	0.0795	11500.00	1734.00	0.000	92.500	136.50
2	LFH	15.0	400	338.0	37.09	1.0200	0.0540	6150.00	957.00	0.000	118.500	93.55
3	LFH	15.0	400	1747.3	34.91	1.0200	0.0780	8160.00	491.50	0.000	111.500	115.25
4	LFH	15.0	400	702.8	38.63	0.8850	0.0630	6360.00	919.00	0.000	170.500	88.80

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ah&Bm	1	0.0	20.0	6.0	6.6	4.18	0.00	0.176	522.0	194.0	55.24	13.00	38.59	8.29	0.01	0.47
2	Ah&Bm	1	0.0	20.0	6.2	6.7	4.32	0.00	0.180	383.0	206.0	55.14	12.90	39.69	9.34	0.02	0.50
3	Ah&Bm	1	0.0	20.0	6.1	6.7	4.52	0.00	0.222	594.0	312.0	65.68	14.95	48.65	9.27	0.04	0.55
4	Ah&Bm	1	0.0	20.0	5.8	6.5	5.16	0.00	0.244	605.0	340.0	67.75	17.60	48.17	9.46	0.05	0.49

Canadian Intersite Decomposition Experiment
Basic Mensuration Data by Plot for Gillam 1 (GI1)

				MENSURATION							
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGH	MAGE	SPEC1	SPEC2	SPEC3
–	–	42	5054.5	12.1	7.3	5.8	9.8	94.3	Picemari	Larilari	-
GI1	ALL	42	5054.5	12.1	7.3	5.8	9.8	94.3			
GI1	Sb	40	4633.9	11.5	7.5	5.8	9.8	.			
GI1	Lt	2	420.6	0.6	4.2	4.6	4.5	.			
GI11	ALL	10	6205.6	11.5	6.9	5.1	8.5	.			
GI11	Sb	10	6205.6	11.5	6.9	5.1	8.5	.			
GI12	ALL	13	3935.4	14.9	8.6	7.0	9.8	.			
GI12	Sb	11	2252.8	12.6	9.4	7.4	9.8	.			
GI12	Lt	2	1682.6	2.3	4.2	4.6	4.8	.			
GI13	ALL	10	3524.3	11.5	7.8	6.0	9.8	.			
GI13	Sb	10	3524.3	11.5	7.8	6.0	9.8	.			
GI14	ALL	9	6552.8	10.3	5.4	4.6	7.6	.			
GI14	Sb	9	6552.8	10.3	5.4	4.6	7.6	.			

Appendix 2.6:

Site Information and Maps for

Gillam 2 (GI2)

S. Zoltai and M. Siltanen, Canadian Forest Service, Northern Forestry Centre, Edmonton, AB. T6H 3S5

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Gillam 2 (GI2)

Site Information

Map: NTS 54-D/7	Lat: 56 19 54 N	Long: 94 30 45 W	UTM Zone: 15	Easting: 406479	Northing: 6243808
Datum: NAD 27	Year: 1973	Aspect: n/a	Slope: 0%	Elevation: 125m	
Macro site position:	g) plain	Meso site position:	g) level		
Site surface shape:	c) straight	Microtopography:	d) moderately mounded		

Meteorological Yearly Means and 30 Year Normal(51-80) for Gillam Airport:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	21.1	18.5	29.5	37.1	33.5	30.6	93.4	60.9	51.2	32.6	34.3	42.1	484.8
Temperature ˚C	-28.0	-23.9	-17.2	-6.6	2.7	10.3	15.0	13.8	6.6	-0.4	-12.1	-22.8	-5.2

Soil Classification: Typic Fibrisol TY.F

Ecological Classification:

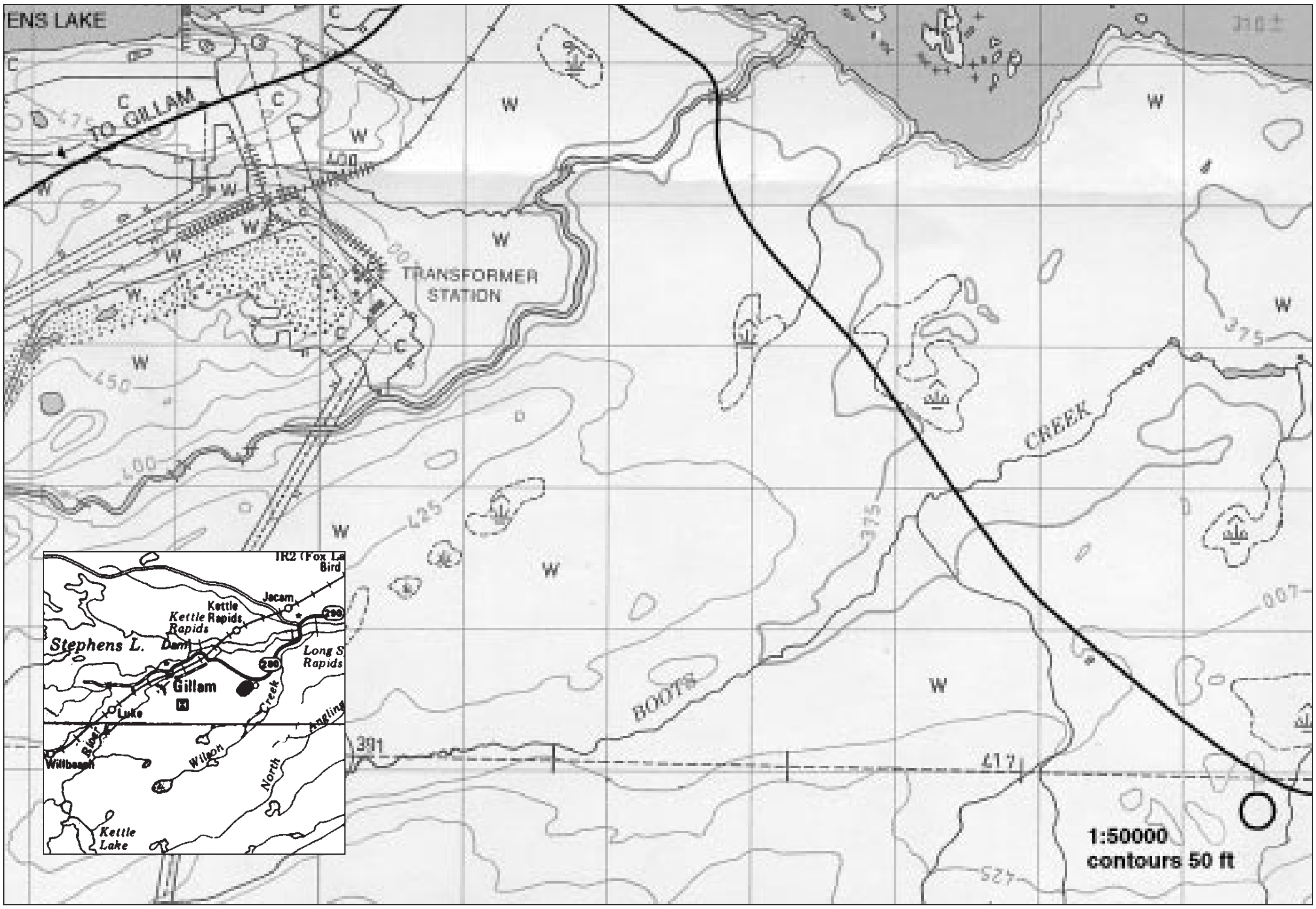
Canada Ecoclimatic Regions: Low Subarctic   Holdridge Lifezone: Boreal Moist/Wet Forest

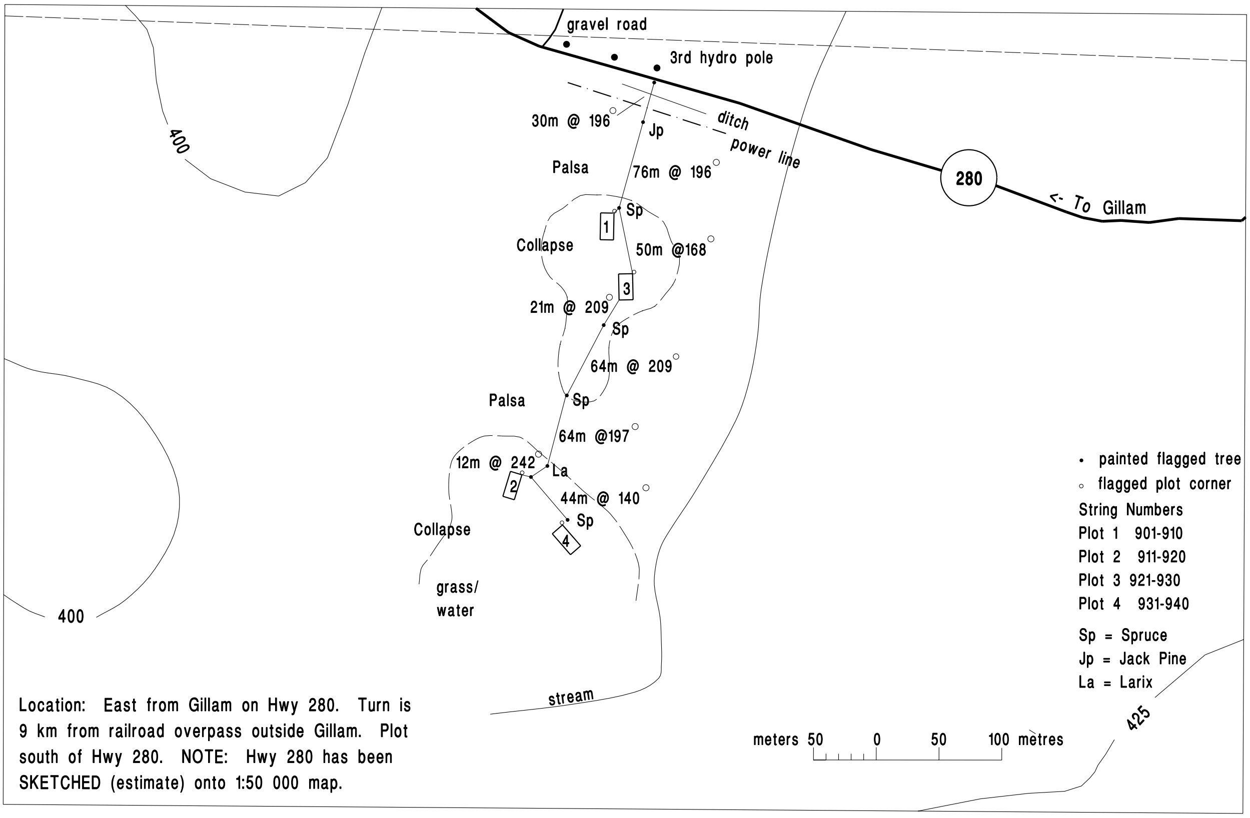
Summary Mensuration:

Species: no trees	No. of trees measured:
Mean density #/ha:	Basal Area m^2/ha:
Mean DBH cm:	Mean Height m:
Maximum Height m:	Mean Age years:

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*no trees*		
Shrub Layer	*Chameadaphne calyculata*	*Ledum groenlandicum*	*Kalmia polifolia*
Herb Layer	*Rubus chamaemorus*	*Smilacina trifolia*	*Carex spp.*
Moss Layer	*Sphagnum angustifolium*	*Mylia anomala*	*Tomenthypnum nitens*

Additional comments: All plots are in collapsed areas of palsa complex





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Gillam 2 (GI2)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Gillam 2 (GI2)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
Of1	0.0	10.0	0	0	0	2			4.3	Fibric peaty mor; 83.5% soil moisture, 0.12 g/cm^3 bulk density
Of2	10.0	200+	0	0	0	4			4.4	87.5% soil moisture, 0.08 g/cm^3 bulk density

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Gillam 2 (GI2)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	ORG	10.0	400	198.6	41.51	1.1775	0.0803	4000.00	426.25	132.280	148.750	18.65
2	ORG	10.0	400	175.5	42.31	1.1400	0.0660	3600.00	486.25	147.150	267.500	17.75
3	ORG	10.0	400	267.7	41.19	0.8550	0.0518	4100.00	410.00	129.850	133.750	20.20
4	ORG	10.0	400	179.0	43.19	0.9675	0.0593	1737.50	377.50	126.620	297.500	11.20

Appendix 2.7:

Site Information and Maps for Hidden Lake (HID)

C. Prescott, Dept. Forest Science, University of British Columbia, Vancouver B.C. V6T 1Z4

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Hidden Lake (HID)

Site Information

Map: NTS 82-L/10	Lat: 50 33 54	Long: 118 50 20	UTM Zone: 11	Easting: 369800	Northing: 5602700
Datum: NAD 27	Year: 1974	Aspect: n/a	Slope: 0%	Elevation: 650m	

Macro site position: e)lower slope
Meso site position: e) toe
Site surface shape: c) straight
Microtopography: b)micro mounded

Meteorological Yearly Means and 30 Year Normal(51-80) for Lumby Sigalet Rd:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	61.3	32.5	29.8	27.0	50.1	63.1	42.9	50.6	41.6	37.1	47.0	64.4	547.4
Temperature ˚C	-5.7	-2.3	0.8	6.7	11.6	14.9	18.1	17.2	12.3	6.1	0.1	-3.7	6.3

Soil Classification: Orthic Humo-Ferric Podzol O.HFP

Ecological Classification:

Canada Ecoclimatic Regions: Moist Montane Southern Cordilleran

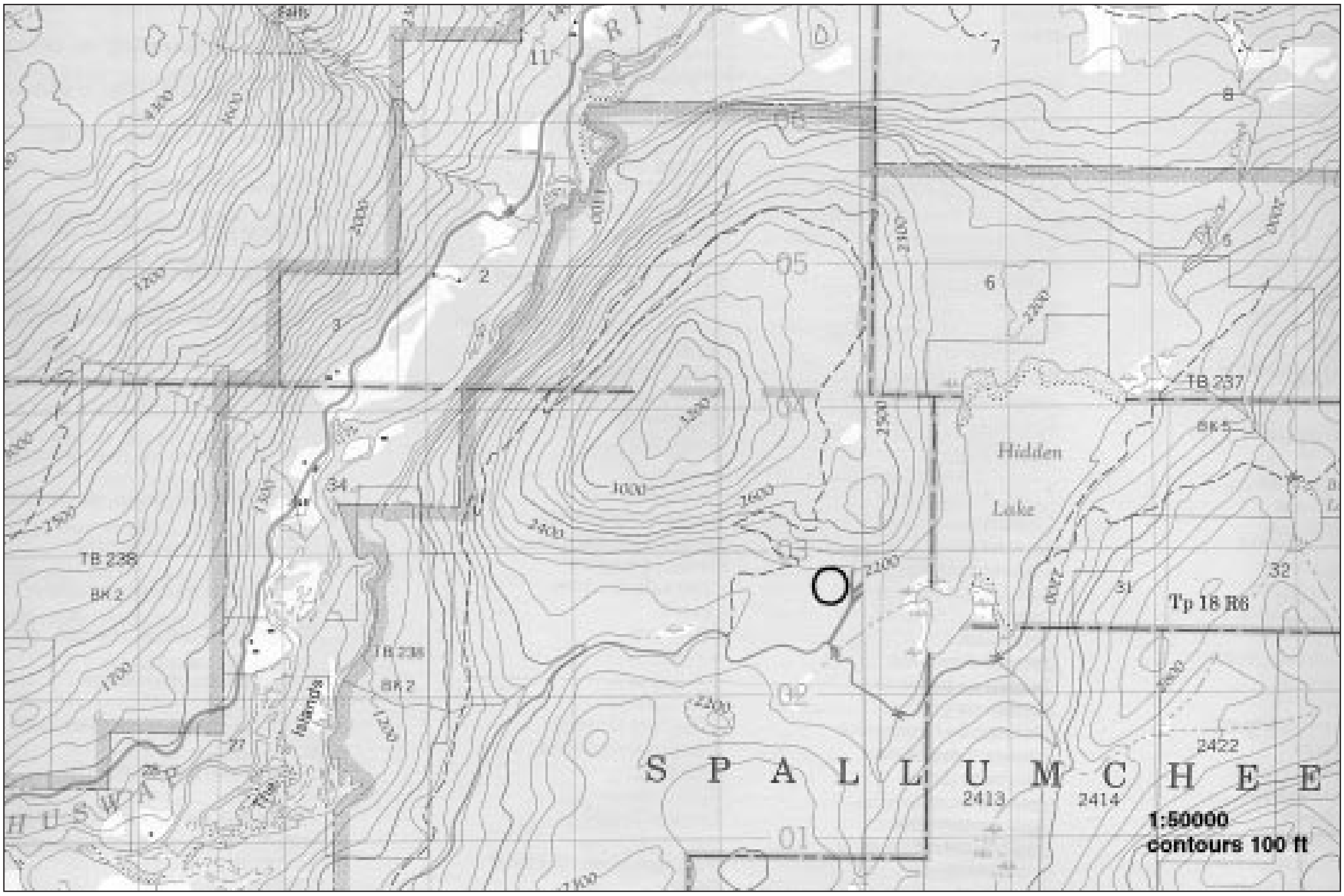
Holdridge Lifezone: Cool Temperate Moist Forest

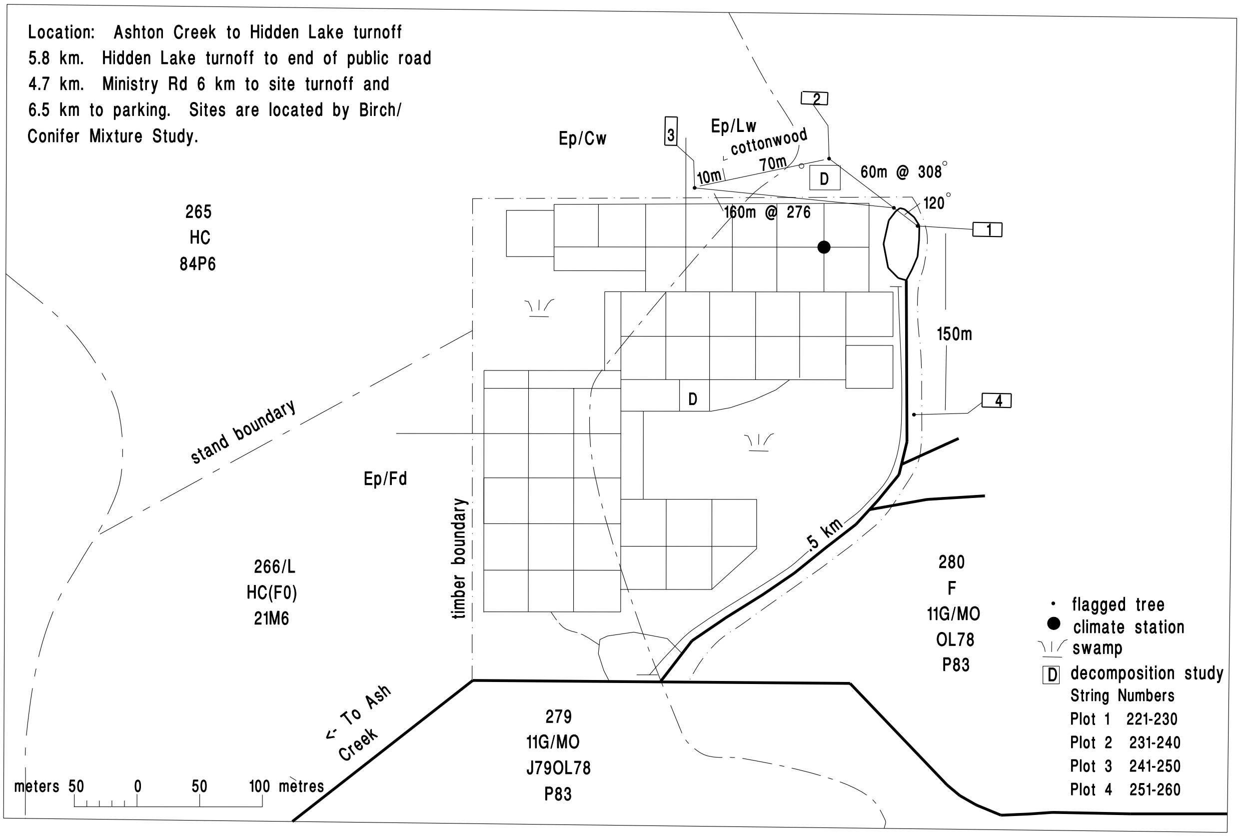
Summary Mensuration:

Species: Red Cedar, Western Hemlock
Mean density #/ha: 600
Mean DBH cm: 26.0
Maximum Height m: 28.8
No. of trees measured: 6
Basal Area m^2/ha: 45.1
Mean Height m: 18.1
Mean Age years: 101

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Tsuga heterophylla*	*Thuja plicata*	*Betula papyrifera*
Shrub Layer	*Taxus brevifolia*	*Rubus parviflora*	*Rosa gymnocarpa*
Herb Layer	*Linnaea boreale*	*Tiarella unifoliata triquetris*	*Peligera canina*
Moss Layer			

Additional comments: Old growth, probably of wildfire origin





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Hidden Lake (HID)

Canadian Intersite Decomposition Experiment

Site Level Soil Descriptions for Hidden Lake (HID)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
L	13.0	10.0								Very few roots
F	10.0	1.0								Abundant roots - medium to fine
H	1.0	0.0								Abundant roots - fine
Ae	0.0	2.0	5%			Silt Loam				Abundant roots - coarse, fine, medium
Bf	2.0	50+	25%			Loam				Abundant roots - medium, fine, coarse

Canadian Intersite Decomposition Experiment

Surface Organics (LFH) and Mineral Soil Chemistry for Hidden Lake (HID)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LFH	11.0	.	209.5	39.35	1.2300	0.1005	4215.00	500.00	50.840	836.000	62.75
2	LFH	11.0	.	794.3	37.21	1.1550	0.0795	4850.00	278.50	53.750	141.000	56.40
3	LFH	11.0	.	130.7	36.70	0.9300	0.0990	4420.00	298.50	51.100	155.000	44.90
4	LFH	11.0	.	206.7	41.79	1.1700	0.1118	2295.00	251.50	49.740	232.000	33.50

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ae&Bf	1	0.0	10.0	5.8	6.5	1.37	0.00	0.070	1081.0	56.0	10.84	10.15	4.89	0.43	0.00	1.40
2	Ae&Bf	1	0.0	10.0	4.4	5.3	3.20	0.00	0.091	1165.0	108.0	20.61	21.55	3.62	0.41	0.03	0.23
3	Ae&Bf	1	0.0	10.0	6.1	6.3	1.84	0.00	0.057	2187.0	51.0	12.30	8.90	4.85	0.30	0.02	0.10
4	Ae&Bf	1	0.0	10.0	4.9	5.6	1.55	0.00	0.063	1527.0	57.0	12.70	12.00	2.49	0.25	0.11	0.11

Canadian Intersite Decomposition Experiment
Basic Mensuration Data by Plot for Hidden Lake (HID)

						MENSURATION					
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGH	MAGE	SPEC1	SPEC2	SPEC3
–	–	6	600.0	45.1	26.0	18.1	28.8	101.0	Tsughete	Thujplic	Betupapy
HID	ALL	6	599.9	45.1	26.0	18.1	28.8	101.0			
HID	Hw	5	499.9	29.2	22.1	16.0	27.8	.			
HID	Cw	1	100.0	16.0	45.1	28.8	28.8	.			
HID1	ALL	3	599.9	61.2	31.7	20.9	28.8	169.0			
HID1	Hw	2	399.9	29.3	25.0	17.0	27.8	.			
HID1	Cw	1	200.0	31.9	45.1	28.8	28.8	.			
HID2	ALL	3	599.9	29.1	20.2	15.3	27.1	34.0			
HID2	Hw	3	599.9	29.1	20.2	15.3	27.1	.			

Appendix 2.8:

Site Information and Maps for Inuvik (INU)

R. Wein, Faculty of Agriculture and Forestry, University of Alberta, Edmonton, AB. T6G 2P5

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Inuvik (INU)

Site Information

Map: NTS 107-B/7	Lat: 68 19 10	Long: 133 32 13	UTM Zone: 8	Easting: 560300	Northing: 7578900
Datum: NAD 27	Year: 1992	Aspect: 170-270	Slope: 3-7%	Elevation: 70-76m	

Macro site position: e) Lower Slope
Meso site position: d) Lower Slope
Site surface shape: c) Straight
Microtopography: f) Severely Mounded

Meteorological Yearly Means and 30 Year Normal(51-80) for Inuvik Airport:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	17.9	10.5	12.0	14.8	17.6	23.5	33.6	52.1	39.4	21.6	17.0	21.8	266.1
Temperature ˚C	-29.6	-28.9	-25.0	-14.3	-0.8	10.1	13.6	10.7	3.1	-8.1	-20.7	-27.2	-9.8

Soil Classification: Cryic Gleysol

Ecological Classification:

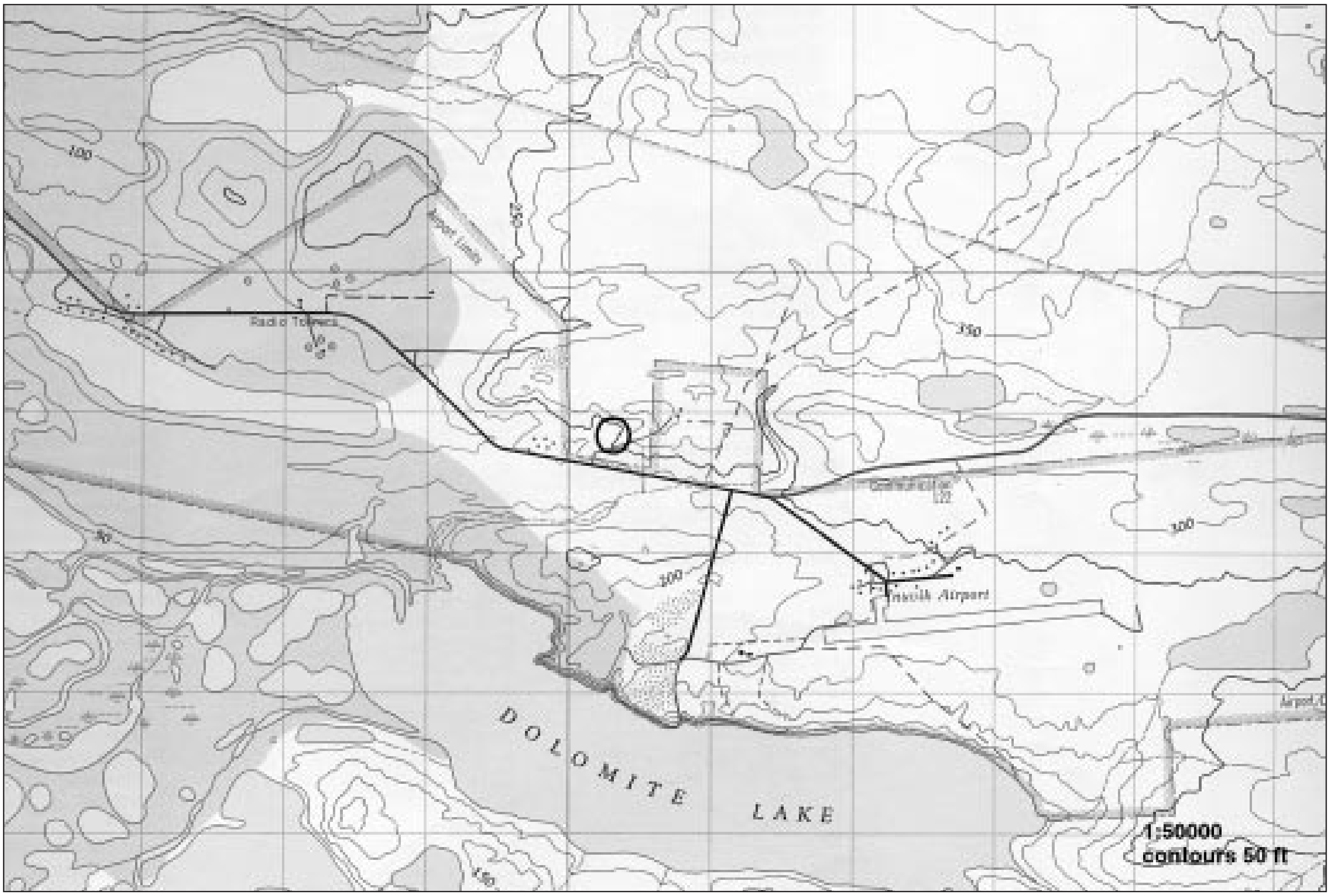
Canada Ecoclimatic Regions: High Subarctic
Holdridge Lifezone: Boreal Moist Forest

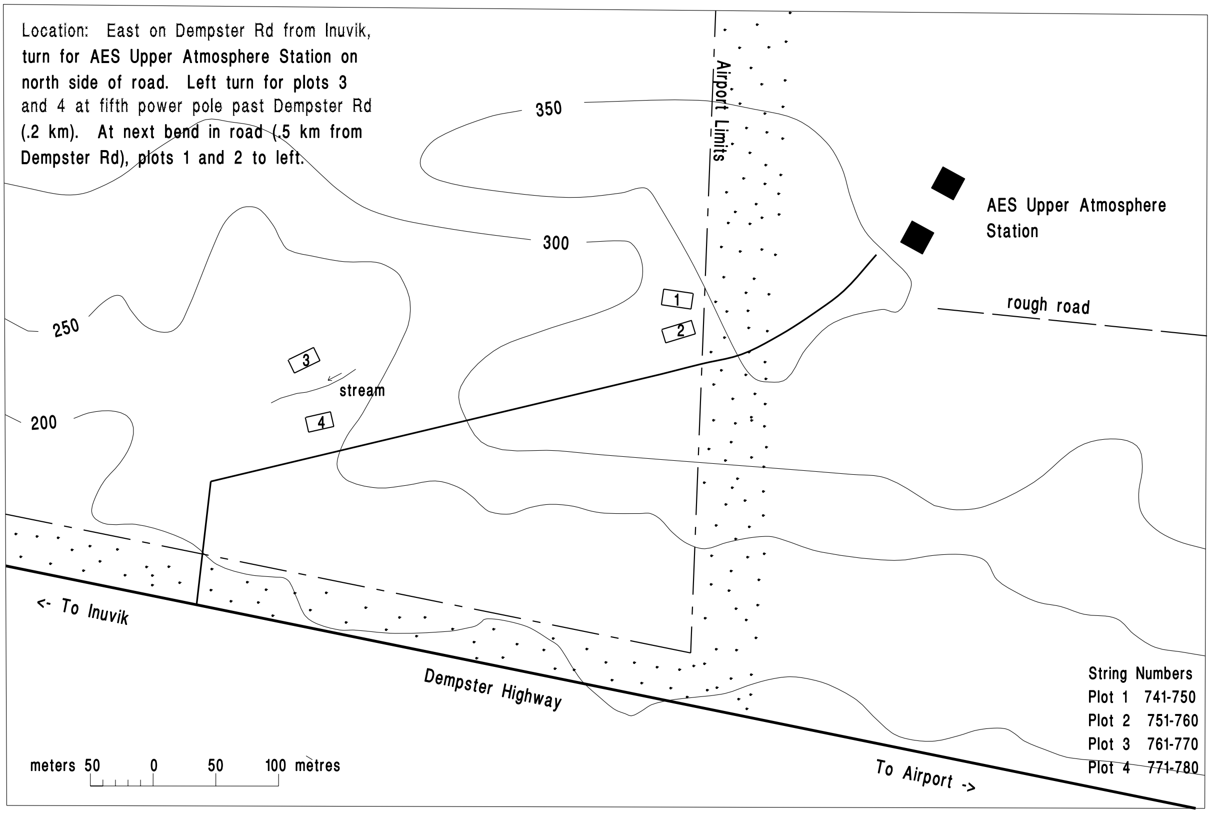
Summary Mensuration:

Species: Black Spruce
No. of trees measured: 93
Mean density #/ha: 3,300
Basal Area m^2/ha: 3.54
Mean DBH cm: 3.8
Mean Height m: 3.1
Maximum Height m: 8.0
Mean Age years: 160

Vegetation:	Primary	Secondary	Tertiary
Tree Layer	*Picea mariana*	*Betula papyrifera*	*Picea glauca*
Shrub Layer	*Ledum groenlandicum*	*Alnus crispa*	*Salix spp.*
Herb Layer	*Vaccinium vitus-idaea*	*Empetrum nigrum*	
Moss Layer	*Cladina spp.*	*Sphagnum spp.*	

Additional comments: Sites burned, about 1835. There is increasing soil moisture from plots 1 and 2 to plots 3 and 4. Succession stage of vegetation is old-growth black spruce. Useful reference: Zoltai S.C. and C. Tarnocai. 1974. Soils and Vegetation on Hummocky Terrain. Environmental-Social Program Task Force on Northern Development Report No. 74-5 Ottawa.





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Inuvik (INU)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Inuvik (INU)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
PLOT1										
O	10	0								Thickness 5-15cm. Organic
A	0	7.5				Silt				Thickness 0-15cm. Mix of organic and silt.
B	7.5	100	*	*		Silt	None			Thickness 85-100cm. Broken siltstone parent material.
	100									Permafrost at about 1m.
PLOT2										
O	15	0								Thickness 5-20cm. Organic (raw spagnum).
A	0	35				Silt				Thickness 5-40cm.
	35					Silt	None			Permafrost
PLOT3										
O	10	0								Thickness 5-15cm. Organic.
A	0	30				Silt				Thickness 10-50cm.
	30					Silt	None			Permafrost
PLOT4										
O	15	0								Thickness 5-20cm. Organic (raw sphagnum).
A	0	55				Silt				Thickness approx. 55cm.
	55					Silt	None			Permafrost

Soils show typical hummocky surface with “drunken” forests, weak mottling and gleying.

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Inuvik (INU)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	O	7.6	371	317.9	39.37	1.0125	0.2040	2410.00	369.00	11.000	235.000	39.85
2	O	6.9	410	315.2	44.24	1.0125	0.1350	2395.00	523.50	0.000	218.500	40.90
3	O	5.0	306	184.6	45.50	0.8783	0.1125	1580.00	698.00	103.500	298.000	39.45
4	O	4.8	361	470.6	37.63	0.9975	0.1530	1615.00	324.00	2.000	137.500	34.10

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	MIN	1	0.0	12.5	4.3	5.2	2.71	0.00	0.157	3264.0	816.0	20.60	18.75	6.41	0.43	0.08	0.15

Appendix 2.9:

Site Information and Maps for Kananaskis (KAN)

S. Visser, Kananaskis Centre, Biosciences, University of Calgary, Calgary, AB. T2N 1N4

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Kananaskis (KAN)

Site Information

Map: NTS 82-O/3	Lat: 51 00 48	Long: 115 00 10	UTM Zone: 11	Easting: 640100	Northing: 5653000
Datum: NAD 27	Year: 1990	Aspect: 80	Slope: flat	Elevation: 1530 m	

Macro site position: d) middle slope
Meso site position: g) level
Site surface shape: c) straight
Microtopography: c) micro mounded

Meteorological Yearly Means and 30 Year Normal(51-80) for Kananaskis:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	34.5	36.0	39.2	73.9	79.2	99.9	59.9	71.0	57.3	40.5	29.1	36.9	657.4
Temperature ˚C	-10.2	-5.6	-3.8	1.9	7.1	11.1	14.1	13.2	9.2	5.0	-2.1	-6.2	2.8

Soil Classification: Orthic Eutric Brunisol O.EB

Ecological Classification:

Canada Ecoclimatic Regions: Montane Southern Cordilleran
Holdridge Lifezone: Warn Temperate Subalpine Wet Forest

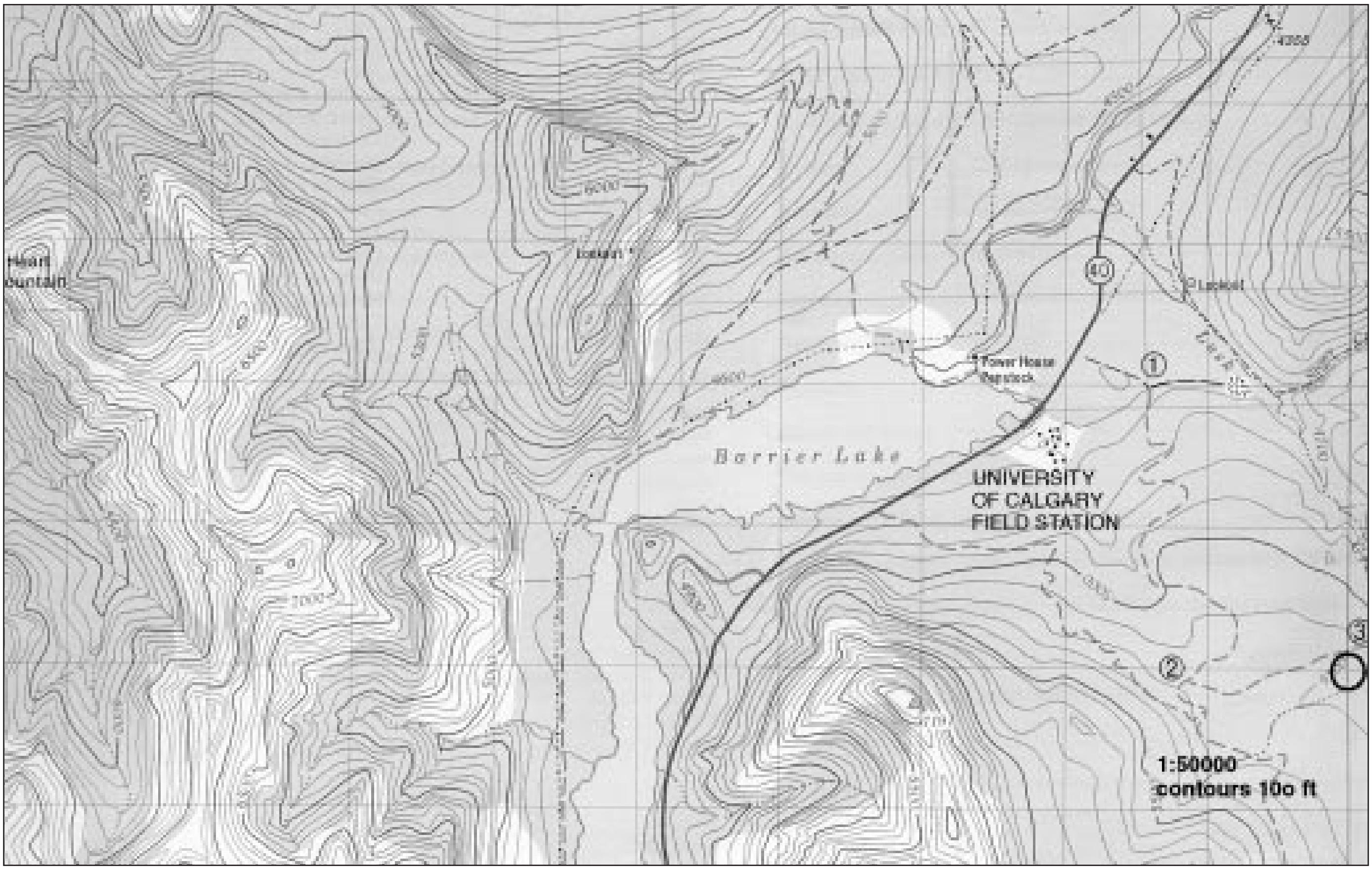
Summary Mensuration:

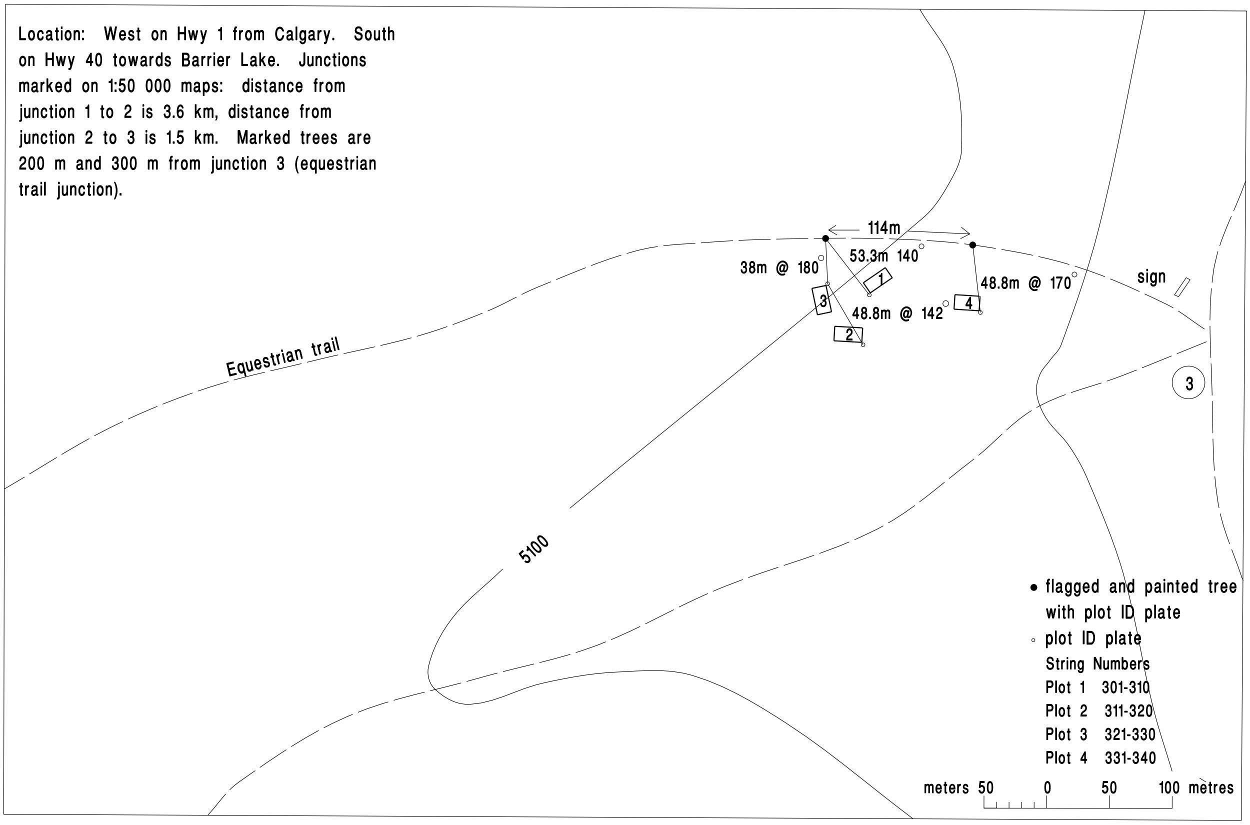
Species: Lodgepole Pine
Mean density #/ha: 1716
Mean DBH cm: 14.4
Maximum Height m: ?

No. of trees measured:
Basal Area m^2/ha: 30.52
Mean Height m: 15
Mean Age years: 90

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Pinus contorta*	*Picea glauca* x *engelmanii*	*Populus balsamifera and P. tremuloides*
Shrub Layer	*Linnaea borealis*	*Sheperdia canadensis*	*Vaccinium caespitosum*
Herb Layer	*Cornus canadensis*	*Aster conspicuus*	*Hedysarum sulphurescens*
Moss Layer	*Pleurozium schreberi*	*Hylocomium splendens*	

Additional comments:





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Kananaskis (KAN)

Canadian Intersite Decomposition Experiment

Site Level Soil Descriptions for Kananaskis (KAN)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
LFH	6	0								Substantial amounts of incorporated charred wood and large amounts of uncharred wood on the surface.
A	0	10				Sandy loam				Soils are mostly well drained brunisols of sandy-loam texture derived from predominantly limestone parent material.

Canadian Intersite Decomposition Experiment

Surface Organics (LFH) and Mineral Soil Chemistry for Kananaskis (KAN)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LFH	6.0	.	390.8	41.15	1.3650	0.1080	4875.00	694.00	10.590	374.000	63.55
2	LFH	6.0	.	221.6	32.85	1.2300	0.1110	2660.00	293.00	8.550	264.500	34.55
3	LFH	6.0	.	267.9	39.01	1.1250	0.1050	3515.00	390.50	10.000	361.000	48.15
4	LFH	6.0	.	314.1	40.20	0.9300	0.0900	3390.00	393.50	4.000	239.000	52.95

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	A	1	0.0	10.0	4.5	5.2	1.75	0.00	0.101	222.0	86.0	13.78	7.55	5.41	1.14	0.01	0.51
2	A	1	0.0	10.0	4.1	4.9	1.22	0.00	0.058	223.0	67.0	10.54	7.30	5.62	1.18	0.01	0.10
3	A	1	0.0	10.0	4.3	5.0	1.15	0.00	0.061	223.0	54.0	9.30	5.13	4.62	0.71	0.01	0.17
4	A	1	0.0	10.0	4.4	4.9	1.16	0.00	0.045	239.0	39.0	9.92	6.17	4.88	0.78	0.02	0.11

Appendix 2.10:

Site Information and Maps for Morgan Arboretum (MAR)

J. Fyles, Dept. Natural Resource Sciences, Macdonald campus, McGill University, Ste-Anne-de-Bellevue, PQ. H9X 3V9

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Morgan Arboretum (MAR)

Site Information

Map: NTS 31-H/5	Lat: 45 25 55.7	Long: 73 57 00	UTM Zone: 18	Easting: 582200	Northing: 5030900
Datum: NAD 27	Year: 1988	Aspect: n/a	Slope: level	Elevation: 48m	

Macro site position: a) crest
Meso site position: a) crest
Site surface shape: b) convex
Microtopography: c) slightly mounded

Meteorological Yearly Means and 30 Year Normal(51-80) for Ste Genevieve:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	60.1	57.2	71.6	66.3	64.8	71.8	82.0	82.8	82.6	69.8	73.4	80.9	863.3
Temperature ˚C	-10.6	-9.3	-2.9	5.4	13.0	18.3	21.0	19.6	14.9	8.9	2.1	-6.9	6.1

Soil Classification: Orthic Humo-Ferric Podzol O.HFP

Ecological Classification:

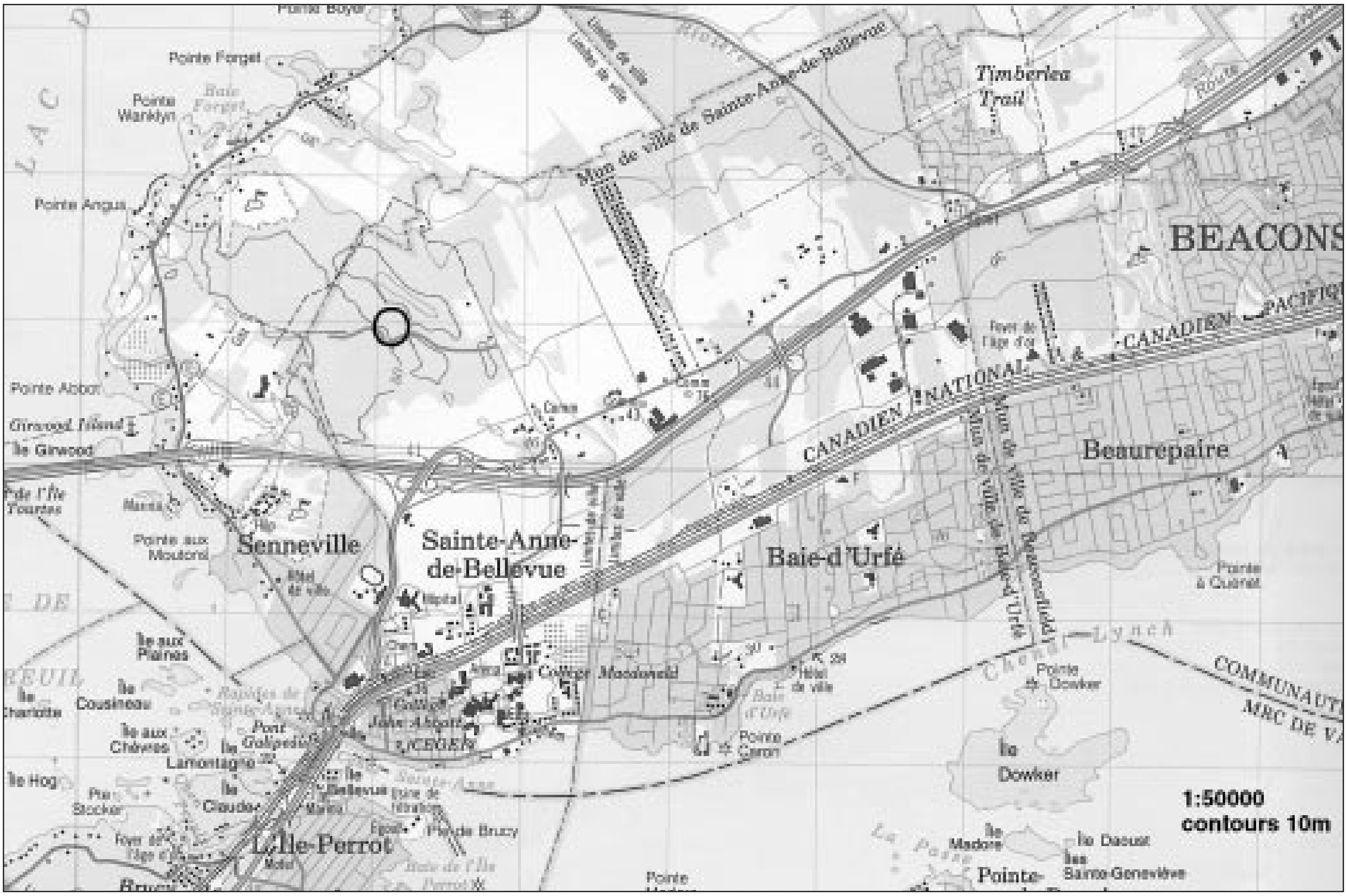
Canada Ecoclimatic Regions: Humid Mid-Cool Temperate
Holdridge Lifezone: Cool Temperate Moist Forest

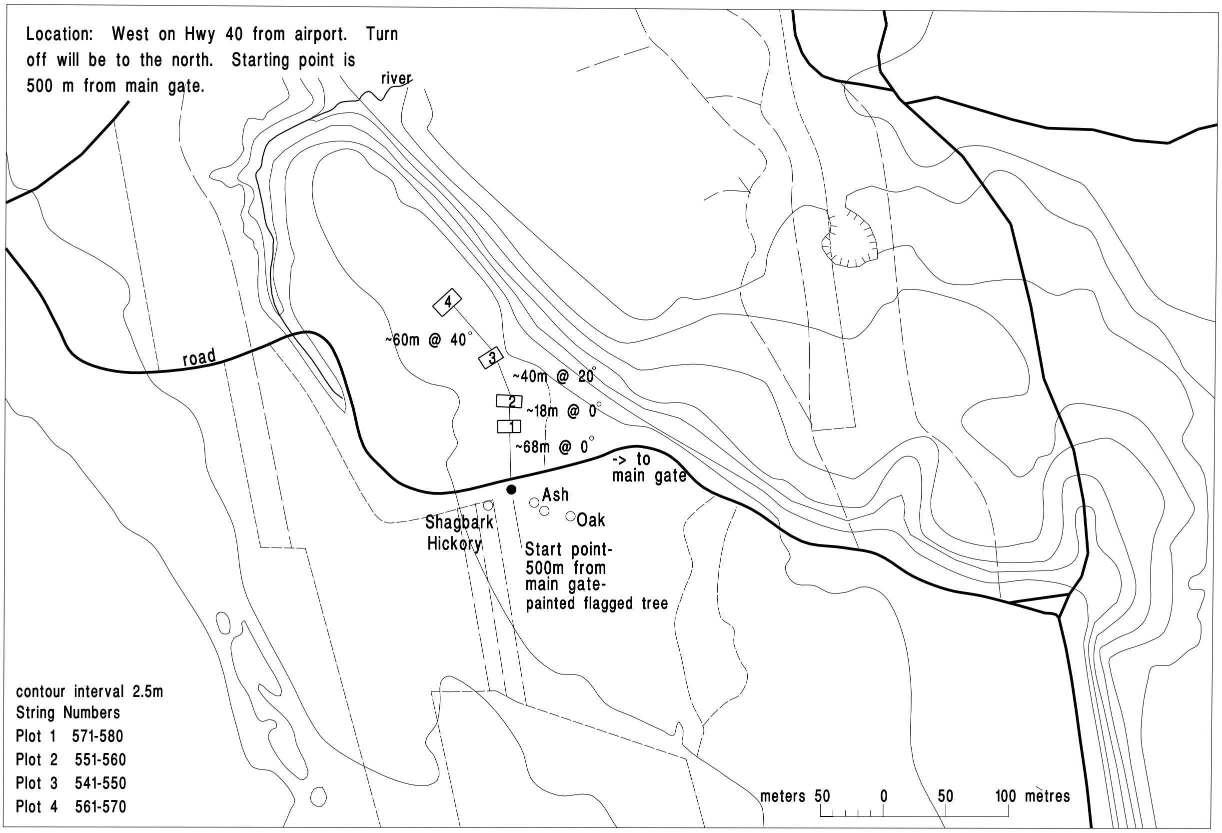
Summary Mensuration:

Species: Beech
No. of trees measured: 16
Mean density #/ha: 256
Basal Area m^2/ha: 26
Mean DBH cm: 33.5
Mean Height m: 25
Maximum Height m: 34
Mean Age years: 150

Vegetation:	Primary	Secondary	Tertiary
Tree Layer	*Fagus grandifolia 94%*	*Acer rubrum*	
Shrub Layer	*Acer pensylvanicum*		
Herb Layer	*Maianthemun canadense*		
Moss Layer	*not present*		

Additional comments:





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Morgan Arboretum (MAR)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Morgan Arboretum (MAR)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
LFH	6	0	0			n/a	n/a	n/a		Many fine and medium oblique and horizontal roots
Ahe	0	5	0			Loamy sand		5YR3/1		Many medium oblique and few fine and medium roots
Bfh1	5	15	0			Loamy sand		5YR4/4		Many oblique medium roots
Bfh2	15	35	0			Loamy sand		5YR4/6		Few oblique, coarse roots
BC	35	+	0			Loamy sand		10YR5/4		Few vertical coarse and medium roots

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Morgan Arboretum (MAR)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LFH	6.0	.	266.5	38.48	0.9100	0.0815	2419.58	256.35	60.793	513.792	25.56
2	LFH	3.5	.	182.0	30.26	1.2675	0.0825	1283.50	225.50	0.000	178.000	26.95
3	LFH	3.0	.	136.8	34.78	1.3425	0.0848	1842.00	208.50	0.000	139.000	30.75
4	LFH	6.0	.	208.5	22.82	1.0125	0.0720	1317.50	150.50	0.000	127.000	17.70

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ahe	1	0.0	10.0	3.4	4.0	6.91	0.00	0.289	295.0	265.0	21.15	27.20	0.98	0.27	0.05	0.12
1	B	2	10.0	.	4.4	4.7	2.62	0.00	0.114	504.0	178.0	14.88	22.95	0.00	0.00	0.01	0.00
2	Ahe	1	0.0	10.0	3.3	4.0	4.03	0.00	0.146	150.0	88.0	11.80	17.67	0.26	0.07	0.02	0.01
2	B	2	10.0	.	4.5	4.7	2.14	0.00	0.089	414.0	207.0	13.51	17.60	0.03	0.00	0.02	0.00
3	Ahe	1	0.0	10.0	3.4	4.1	2.07	0.00	0.107	140.0	70.0	7.95	9.15	0.54	0.03	0.02	0.01
3	B	2	10.0	.	4.3	4.6	2.20	0.00	0.111	1176.0	138.0	16.08	19.75	0.12	0.00	0.02	0.00
4	Ahe	1	0.0	10.0	3.4	4.0	4.66	0.00	0.140	223.0	193.0	17.70	19.80	0.65	0.12	0.02	0.07
4	B	2	10.0	.	4.5	4.8	2.04	0.00	0.104	553.0	164.0	11.37	13.80	0.13	0.00	0.01	0.00

Appendix 2.11:

Site Information and Maps for Montmorency (MON)

C. Camiré, Faculté de Foresterie et de Geomatique, Université Laval, Québec, PQ. G1K 7P4

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Montmorency (MON)

Site Information

Map: NTS 21-M/6	Lat: 47 19 10	Long: 71 08 30	UTM Zone: 19	Easting: 338250	Northing: 5242500
Datum: NAD 27	Year: 1978	Aspect: 232	Slope: 8%	Elevation: 670m	

Macro site position: e) lower slope
Meso site position: c) middle slope
Site surface shape: a) concave
Microtopography: b) micromounded

Meteorological Yearly Means and 30 Year Normal(51-80) for Foret Montmorency:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	109.8	96.5	101.0	95.4	90.3	156.4	171.3	170.5	137.9	114.1	126.4	124.6?	1494.2
Temperature ˚C	-14.7	-13.6	-7.8	-0.6	6.4	12.6	14.7	13.5	9.1	2.9	-3.9	-11.7	0.6

Soil Classification: Orthic Ferro-Humic Podzol on Basal till

Ecological Classification:

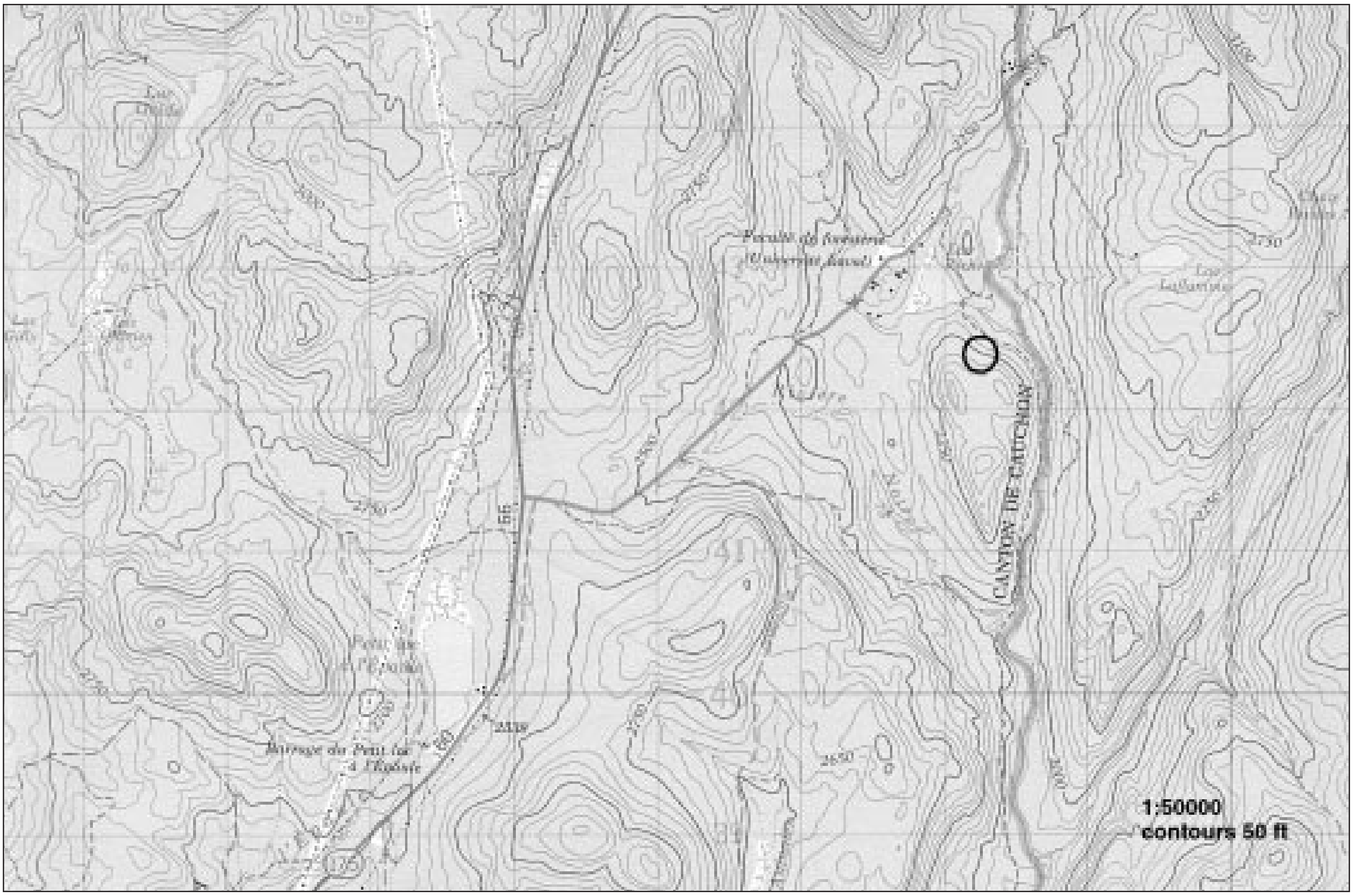
Canada Ecoclimatic Regions: Perhumid Low Boreal
Holdridge Lifezone: Cool Temperate Subalpine Rain Forest

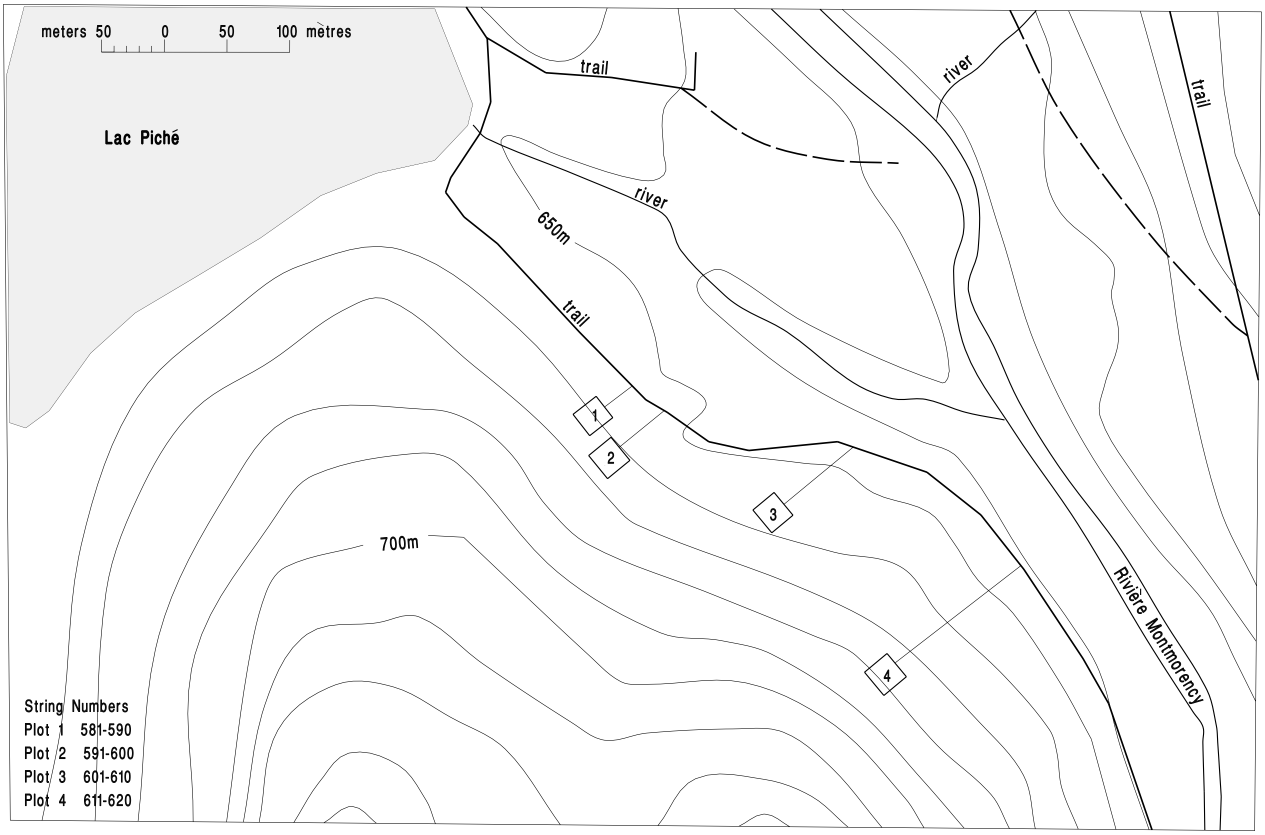
Summary Mensuration:

Species: Balsam Fir, White Birch, White Spruce
No. of trees measured: 64
Mean density #/ha: 3549.5
Basal Area m^2/ha: 60.45
Mean DBH cm: 14.30
Mean Height m: 8.95
Maximum Height m: 13.8
Mean Age years: 38.76

Vegetation:	Primary	Secondary	Tertiary
Tree Layer	*Abies balsamea*	*Betula papyrifera*	*Picea glauca*
Tree Layer 2	*Abies balsamea*	*Sorbus decora*	
Shrub Layer	*Acer spicatum*		
Herb Layer	*Oxalis montana*	*Athyrium filix-femins*	*Streptopus roseus* *Clintonia borealis* *Maianthemum canadense*
Moss Layer	*moss sp. present*		

Additional comments:





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Montmorency (MON)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Montmorency (MON)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
PLOT 1										
LFH	10	0						10 YR 2/1		Black; abrupt transition, wavy boundary; 6-14 cm thick
Ae	0	8				sandy loam	coarse subangular blocky	10 YR 4/3		Brown; few fine and medium roots; abrupt, wavy boundary; 2-15 cm thick
Bhf								10 YR 2/2		Very dark brown; diffuse, abrupt, wavy transition; 0-2 cm thick
Bf1	8	26				sandy loam	medium subangular blocky	5 YR 3/3		Dark reddish brown; few fine roots and abundant medium roots; clear, wavy boundary
Bf2	26	46				sandy loam	coarse subangular blocky	7.5 YR 4/4		Brown; few fine roots; abrupt, wavy boundary.
BC	46	52				sandy loam	medium subangular blocky	10 YR 4/3		Brown; clear,wavy boundary
C	52	+				gravelly sand	fine subangular blocky	10 YR 3/3		Dark brown
PLOT 2										
LFH	8	0						2.5 YR 2/0		Black; few fine and large roots; abrupt transition, wavy boundary; 7-10 cm thic
Ae	0	5				sandy loam	coarse subangular blocky	10 YR 5/2		Grayish brown; few fine and large roots; abrupt wavy, boundary; 3-9 cm thick
Bhf								10 YR 2/2		Very dark brown; diffuse, abrupt, wavy transition; 0-2 cm thick
Bf1	5	27				sandy loam	medium subangular blocky	5 YR 3/4		Dark reddish brown; few fine and large roots; clear,wavy boundary
Bf2	26	46				sandy loam	medium subangular blocky	7.5 YR 4/4		Brown; few fine and large roots; abrupt, wavy boundary.
BC	46	52				sandy loam	medium subangular blocky	10 YR 4/3		Brown; few medium roots; clear, wavy boundary
C	52	+				gravelly sand	medium subangular blocky	10 YR 3/3		Dark brown; sand
PLOT 3										
LFH	2	0						10 YR 3/2		Very dark grayish brown; abundant fine and very fine roots, few medium roots abrupt transition, smooth boundary; 1-3 cm thick
Ae	0	2				sandy loam	coarse subangular blocky	10 YR 5/1		Gray; few very fine and medium roots; clear, wavy boundary; 0-5 cm thick
Bhf										-
Bf1	2	25				sandy loam/ loamy sand	coarse subangular blocky	7.5 YR 4/4		Brown; few very fine and large roots; clear, wavy boundary
Bf2	25	61				sandy loam	coarse subangular blocky	10 YR 4/4		Dark yellowish brown; few very fine and large roots; clear, wavy boundary
BC	61	72				gravelly sand	coarse subangular blocky	10 YR 3/3		Dark brown; few very fine and medium roots; clear,smooth boundary
C	72	+				very gravelly sand	medium granular	10 YR 4/2		Dark grayish brown
PLOT 4										
LFH	4	0						10 YR 2/1		Black; abundant fine and very fine roots, few medium roots; abrupt transition, wavy boundary; 3-5 cm thick
Ae	0	2				sandy loam	coarse subangular blocky	10 YR 5/2		Grayish brown; few very fine and fine roots, moderately abundant medium roo and large roots; abrupt irregular boundary; 3-22 cm thick
Bhf	5	7						10 YR 2/2		Very dark brown; abundant fine and very fine roots, few medium roots; clear tranistion, broken boundary; 0-4 cm thick
Bf1	7	50				sandy loam	coarse subangular blocky	7.5 YR 4/4		Brown; few very fine and medium roots; clear, smooth boundary
Bf2	50	72				gravelly sandy	medium subangular blocky	10 YR 4/4		Dark yellowish brown; few very sine and fine roots; clear, smooth loam boundary
BC	50	72				gravelly sand		10 YR 4/3		Brown; medium platy; few very fine and medium roots; clear, smooth boundar
C	82	+				very gravelly sand	coarse subangular blocky	10 YR 3/3		Dark brown

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Montmorency (MON)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LF	6.5	.	.	44.02	0.7500	0.1200	450.00	99.50	14.000	260.500	23.55
1	H	3.5	.	.	41.43	0.7725	0.1320	160.00	61.00	32.500	128.000	24.95
2	LF	5.5	.	.	44.47	0.9600	0.1530	1275.00	185.00	29.500	379.500	30.50
2	H	2.5	.	.	46.72	0.9150	0.1350	795.00	96.00	27.500	146.500	20.30
3	LF	1.0	.	.	40.43	0.9900	0.1740	1065.00	165.50	41.000	318.500	28.00
3	H	1.0	.	.	39.53	0.8550	0.1530	530.00	109.50	25.500	185.500	22.20
4	LF	2.0	.	.	45.47	1.0350	0.1560	1075.00	196.50	44.500	314.500	28.35
4	H	2.0	.	.	40.12	1.0350	0.1800	420.00	142.50	18.500	160.000	25.55

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ae	1	0.0	8.0	3.5	4.2	0.67	0.00	0.051	67.0	18.0	2.74	3.25	0.18	0.00	0.00	0.00
1	Bhf	2	8.0	26.0	3.7	4.1	7.61	0.00	0.351	2993.0	339.0	30.99	44.40	0.46	0.02	0.01	0.00
1	Bf1	3	26.0	36.0	3.9	4.4	2.82	0.00	0.134	3122.0	178.0	21.52	25.07	0.31	0.00	0.01	0.00
1	Bf2	4	36.0	46.0	4.5	4.8	1.53	0.00	0.081	2886.0	121.0	13.55	17.55	0.15	0.00	0.00	0.00
1	BC	5	46.0	52.0	4.6	5.1	0.42	0.00	0.028	1360.0	37.0	5.40	6.85	0.03	0.00	0.01	0.00
1	C	6	52.0	.	4.8	5.3	0.21	0.00	0.017	1584.0	42.0	2.75	3.45	0.06	0.00	0.01	0.00
2	Ae	1	0.0	5.0	3.4	4.1	0.65	0.00	0.042	34.0	13.0	2.58	3.15	0.01	0.00	0.01	0.00
2	Bhf	2	5.0	27.0	3.6	4.0	8.31	0.00	0.381	2285.0	326.0	31.99	46.45	0.50	0.07	0.01	0.02
2	Bf1	3	27.0	33.0	4.1	4.5	5.00	0.00	0.224	3449.0	237.0	24.65	34.00	0.24	0.00	0.00	0.00
2	Bf2	4	33.0	46.0	4.6	4.9	2.01	0.00	0.107	2366.0	114.0	17.35	21.15	0.15	0.00	0.01	0.00
2	BC	5	46.0	52.0	4.8	5.2	0.39	0.00	0.022	1949.0	54.0	5.03	6.35	0.03	0.05	0.00	0.00
2	C	6	52.0	.	5.0	5.4	0.14	0.00	0.023	1986.0	43.0	2.80	9.35	0.05	0.07	0.30	0.14
3	Ae	1	0.0	2.0	3.4	4.1	2.35	0.00	0.137	209.0	92.0	7.26	8.60	0.12	0.03	0.04	0.02
3	Bhf	2	2.0	25.0	.	.	.	.	.	.	.	.	.	.	.	.	.
3	Bf1	3	25.0	43.0	4.3	4.8	1.99	0.00	0.135	1575.0	178.0	14.00	16.25	0.35	0.00	0.03	0.00
3	Bf2	4	43.0	61.0	4.5	5.0	1.16	0.00	0.078	2217.0	100.0	10.23	11.45	0.84	0.00	0.05	0.00
3	BC	5	61.0	72.0	4.6	5.1	0.50	0.00	0.032	2015.0	55.0	4.88	6.17	0.04	0.00	0.04	0.00
3	C	6	72.0	.	4.7	5.2	0.36	0.00	0.020	1733.0	34.0	4.54	5.65	0.06	0.00	0.02	0.00
4	Ae	1	0.0	2.0	3.5	4.1	0.93	0.00	0.072	84.0	36.0	4.01	4.40	0.00	0.00	0.03	0.01
4	Bhf	2	2.0	50.0	3.6	4.0	6.23	0.00	0.313	2765.0	314.0	23.80	31.73	0.15	0.00	0.02	0.01
4	Bf1	3	50.0	60.0	3.6	4.6	5.31	0.00	0.223	2546.0	313.0	26.59	33.90	0.14	0.00	0.01	0.00
4	Bf2	4	60.0	72.0	4.3	4.8	2.39	0.00	0.109	2547.0	141.0	16.84	20.50	0.21	0.00	0.00	0.00
4	BC	5	72.0	82.0	4.7	4.8	0.99	0.00	0.069	1949.0	148.0	8.40	11.05	0.04	0.00	0.07	0.00
4	C	6	82.0	.	4.7	5.1	0.42	0.00	0.016	1943.0	60.0	5.11	6.90	0.28	0.00	0.03	0.00

Canadian Intersite Decomposition Experiment

Basic Mensuration Data by Plot for Montmorency (MON)

					MENSURATION						
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGH	MAGE	SPEC1	SPEC2	SPEC3
–	–	104	3549.0	60.5	14.3	8.9	13.8	38.7	Abiebals	Betupapy	Piceglau
MON	ALL	104	3549.5	60.5	14.3	9.0	13.8	38.8			
MON1	ALL	27	3750.0	58.3	13.7	7.9	11.1	37.0			
MON2	ALL	30	3896.1	70.0	14.6	8.9	11.5	40.6			
MON3	ALL	22	3055.6	57.9	14.9	9.9	13.6	40.0			
MON4	ALL	25	3472.2	56.0	13.9	9.6	13.8	37.3			

Appendix 2.12:

Site Information and Maps for Nelson House 1 (NH1)

S. Zoltai and M. Siltanen, Canadian Forest Service, Northern Forestry Centre, Edmonton, AB. T6H 3S5

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Nelson House 1 (NH1)

Site Information

Map: NTS 63-O/15	Lat: 55 55 51 N	Long: 98 37 04 W	UTM Zone: 14	Easting: 523882	Northing: 6198234
Datum: NAD 27	Year: 1981	Aspect: 5	Slope: 5%	Elevation: 288 m	
Macro site position:	g) plain	Meso site position:	g) level		
Site surface shape:	c) straight	Microtopography:	a) smooth		

Meteorological Yearly Means and 30 Year Normal(51-80) for Thompson Airport:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	21.7	9.7	29.0	33.5	43.7	57.5	93.1	71.9	64.1	48.6	31.1	38.5	542.4
Temperature ˚C	-26.6	-22.3	-14.9	-3.7	5.0	12.2	15.6	13.9	6.9	0.2	-11.9	-21.7	-3.9

Soil Classification: Orthic Dystric Brunisol O.DYB

Ecological Classification:

Canada Ecoclimatic Regions: Subhumid High Boreal Holdridge Lifezone: Cool Temperate Subalpine Moist/Wet Forest

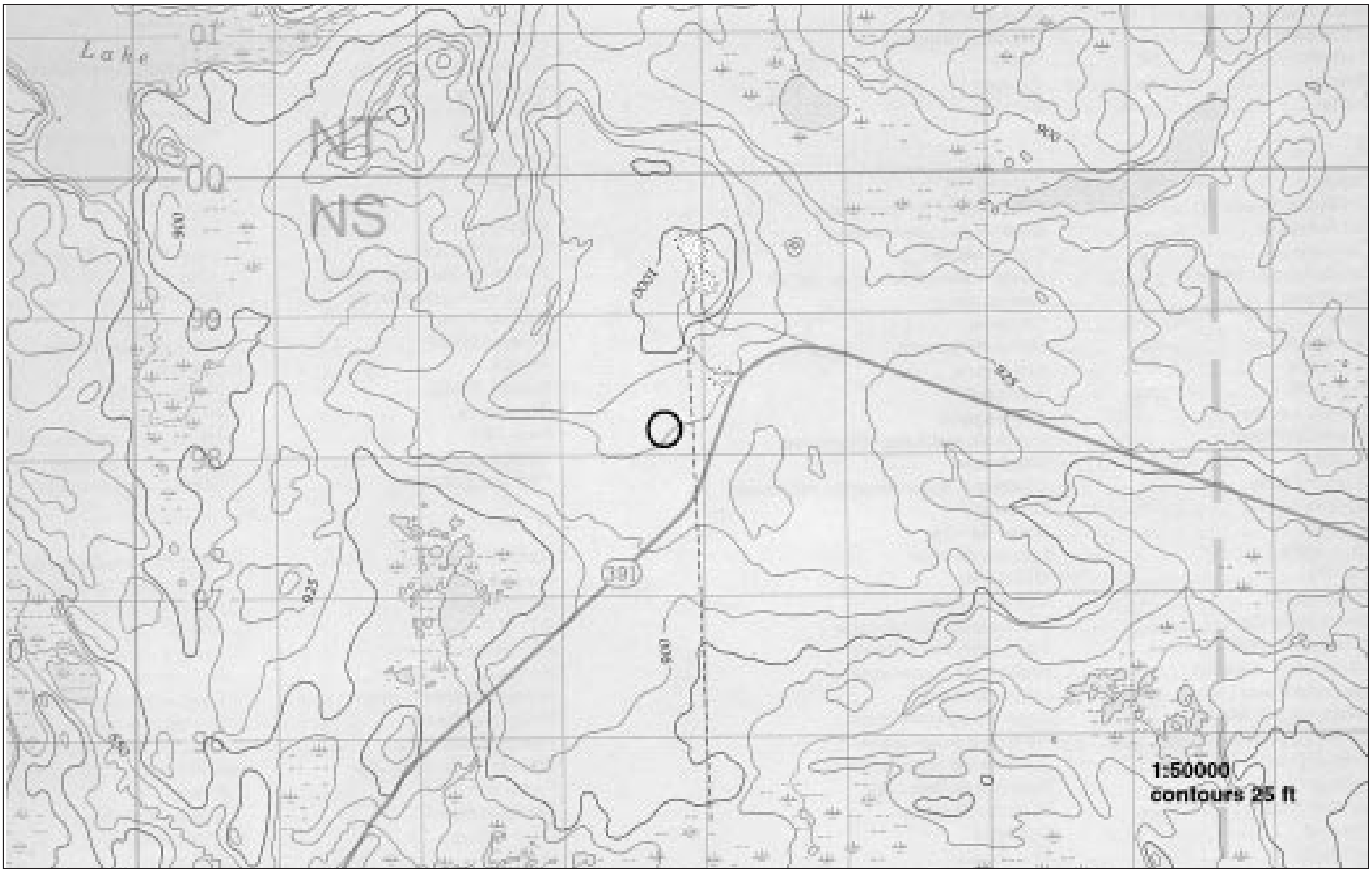
Summary Mensuration:

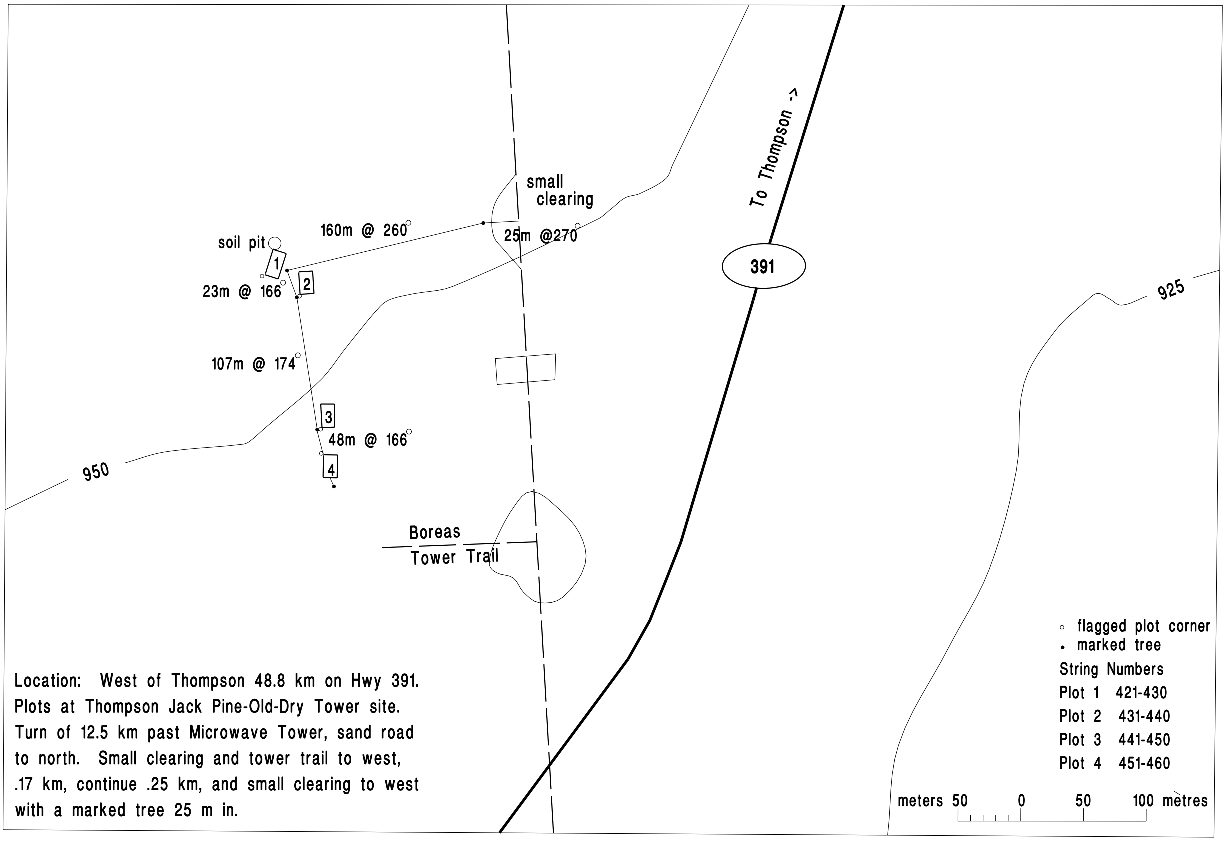
Species: Jack Pine
Mean density #/ha: 2476.99
Mean DBH cm: 9.91
Maximum Height m: 13.4

No. of trees measured: 52
Basal Area m^2/ha: 14.9
Mean Height m: 10.1
Mean Age years: 59.7

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Pinus banksiana*		
Shrub Layer	*Vaccinium myrtilloides*	*Arctostaphylos uva-ursi*	*Vaccinium vitis-idaea*
Herb Layer	*none evident*		
Moss Layer	*Cladina mitis*	*Cladina rangiferina*	*Plerozium schreberi*

Additional comments: Stand of fire origin.





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Nelson House 1 (NH1)

Canadian Intersite Decomposition Experiment

Site Level Soil Descriptions for Nelson House 1 (NH1)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
LF	1.0	0.0							4.4	No effervescence; 49.6% soil moisture, 0.09 g/cm^3 bulk density; Primarily needles and lichens
Aej	0.0	2.0	-	-	-					No effervescence; Horizon thickness between 0 and 2 cm
Bm	0.0	29.0	10	-	-	Medium Sand		10YR5/6		No effervescence; 6.7% soil moisture, 1.39 g/cm^3 bulk density
Bm2	29.0	36.0	50	-	-	Very Coarse Sand		2.5Y6/4		No effervescence
Bm3	36.0	44.0	<5	-	-	Medium Sand				No effervescence; juvenile Bf?; 3.0% soil moisture, 1.40 g/cm^3 bulk density
C1	44.0	79.0	<5	-	-	Fine-Medium Sand		2.5Y7/4		No effervescence; 5.4% soil moisture, 1.37 g/cm^3 bulk density
C2	79.0	85+	-	-	75	Medium Sand				

Canadian Intersite Decomposition Experiment

Surface Organics (LFH) and Mineral Soil Chemistry for Nelson House 1 (NH1)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
.	LFH	.	.	.	29.12	0.4425	0.0540	610.00	74.50	18.500	124.500	16.20
1	LFH	1.0	400	135.0	23.31	0.3750	0.0480	540.00	80.50	0.940	171.500	11.35
2	LFH	1.0	400	135.1	28.37	0.5550	0.0570	770.00	104.50	1.880	124.000	34.40
3	LFH	1.0	400	85.1	39.39	0.6600	0.0660	1015.00	134.50	22.700	153.500	25.00
4	LFH	1.0	400	116.3	33.10	0.6000	0.0600	965.00	124.00	0.000	173.000	23.45

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ae&Bm1	1	0.0	20.0	4.8	5.1	0.21	0.00	0.012	179.0	60.0	1.95	2.95	0.12	0.02	0.00	0.00
2	Ae	1	0.0	2.0	3.9	4.5	0.37	0.00	0.010	33.0	24.0	1.87	2.10	0.27	0.02	0.00	0.00
2	Bm1	2	2.0	29.0	4.9	5.2	0.34	0.00	0.011	284.0	34.0	2.73	3.65	0.00	0.00	0.00	0.01
3	Ae	1	0.0	2.0	4.1	4.9	0.62	0.00	0.035	70.0	9.0	3.06	2.75	0.63	0.05	0.00	0.00
3	Bm1	2	2.0	29.0	4.6	5.1	0.33	0.00	0.050	325.0	25.0	3.41	4.10	0.15	0.00	0.00	0.00
4	Ae	1	0.0	2.0	4.1	4.8	1.01	0.00	0.048	85.0	18.0	3.58	5.20	0.35	0.04	0.00	0.00
4	Bm1	2	2.0	29.0	4.7	5.2	0.46	0.00	0.016	415.0	27.0	2.82	4.17	0.43	0.02	0.00	0.00

Canadian Intersite Decomposition Experiment

Basic Mensuration Data by Plot for Nelson House 1 (NH1)

				MENSURATION							
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGH	MAGE	SPEC1	SPEC2	SPEC3
–	–	52	2477.0	14.9	9.9	10.1	13.4	59.7	Pinubank	-	-
NH1	ALL	52	2477.0	14.9	9.9	10.1	13.4	59.7			
NH1	Pj	52	2477.0	14.9	9.9	10.1	13.4	59.7			
NH11	ALL	12	2544.2	13.8	9.4	9.8	13.4	59.0			
NH11	Pj	12	2544.2	13.8	9.4	9.8	13.4	59.0			
NH12	ALL	11	2063.9	12.6	9.7	9.9	11.4	59.0			
NH12	Pj	11	2063.9	12.6	9.7	9.9	11.4	59.0			
NH13	ALL	12	1961.2	13.8	10.1	10.2	11.4	61.0			
NH13	Pj	12	1961.2	13.8	10.1	10.2	11.4	61.0			
NH14	ALL	17	3338.6	19.5	10.3	10.7	11.5	.			
NH14	Pj	17	3338.6	19.5	10.3	10.7	11.5	.			

Appendix 2.13:

Site Information and Maps for Nelson House 2 (NH2)

S. Zoltai and M. Siltanen, Canadian Forest Service, Northern Forestry Centre, Edmonton, AB. T6H 3S5

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Nelson House 2 (NH2)

Site Information

Map: NTS 63-O/16	Lat: 55 55 06 N	Long: 98 25 32 W	UTM Zone: 14	Easting: 535903	Northing: 6196925
Datum: NAD 27	Year: 1980	Aspect:	N/A	Slope: 0%	Elevation: 260m
Macro site position:	g) plain	Meso site position:	g) level		
Site surface shape:	c) straight	Microtopography:	c) slightly mounded		

Meteorological Yearly Means and 30 Year Normal(51-80) for Thompson Airport:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	21.7	9.7	29.0	33.5	43.7	57.5	93.1	71.9	64.1	48.6	31.1	38.5	542.4
Temperature ˚C	-26.6	-22.3	-14.9	-3.7	5.0	12.2	15.6	13.9	6.9	0.2	-11.9	-21.7	-3.9

Soil Classification: Typic Fibrisol TY.F

Ecological Classification:

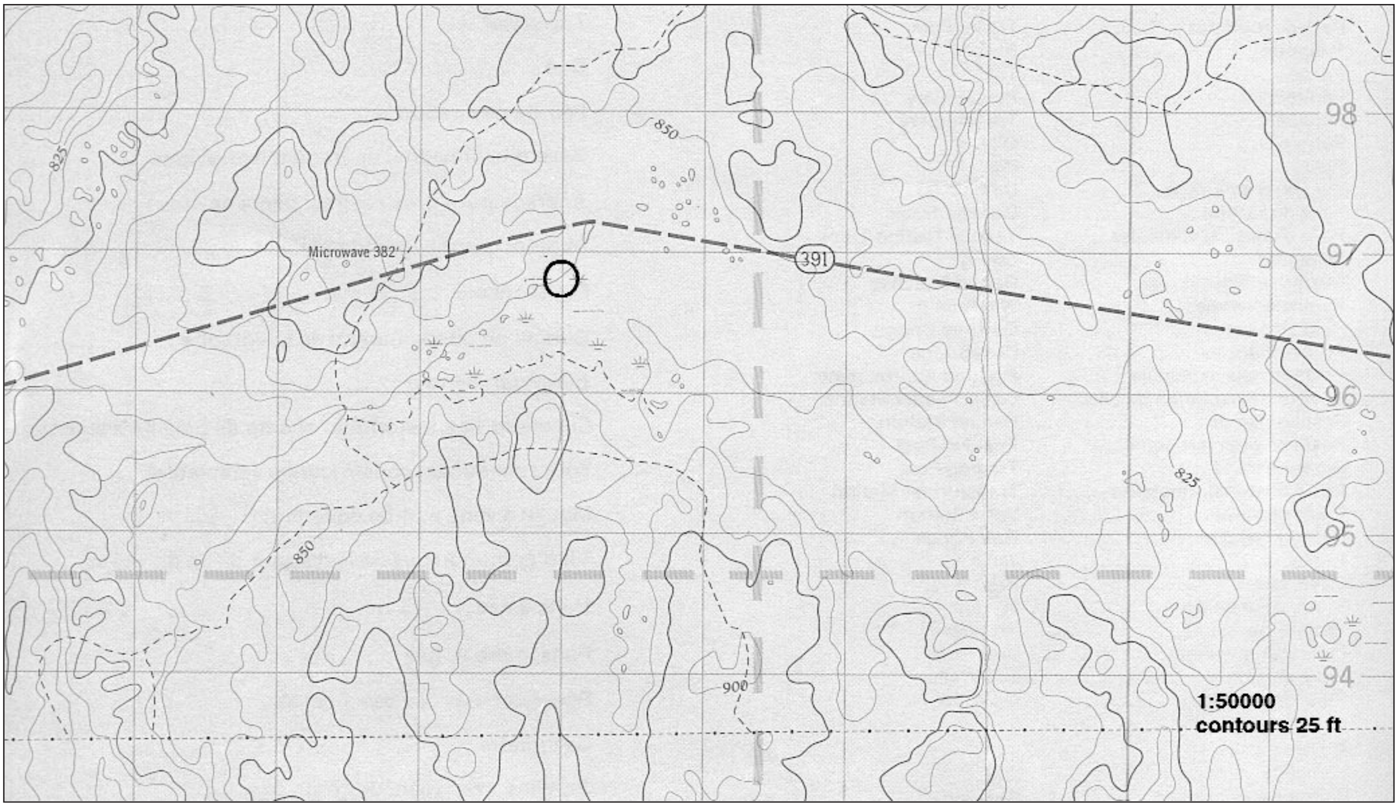
Canada Ecoclimatic Regions: Subhumid High Boreal Holdridge Lifezone: Cool Temperate Subalpine Moist/Wet Forest

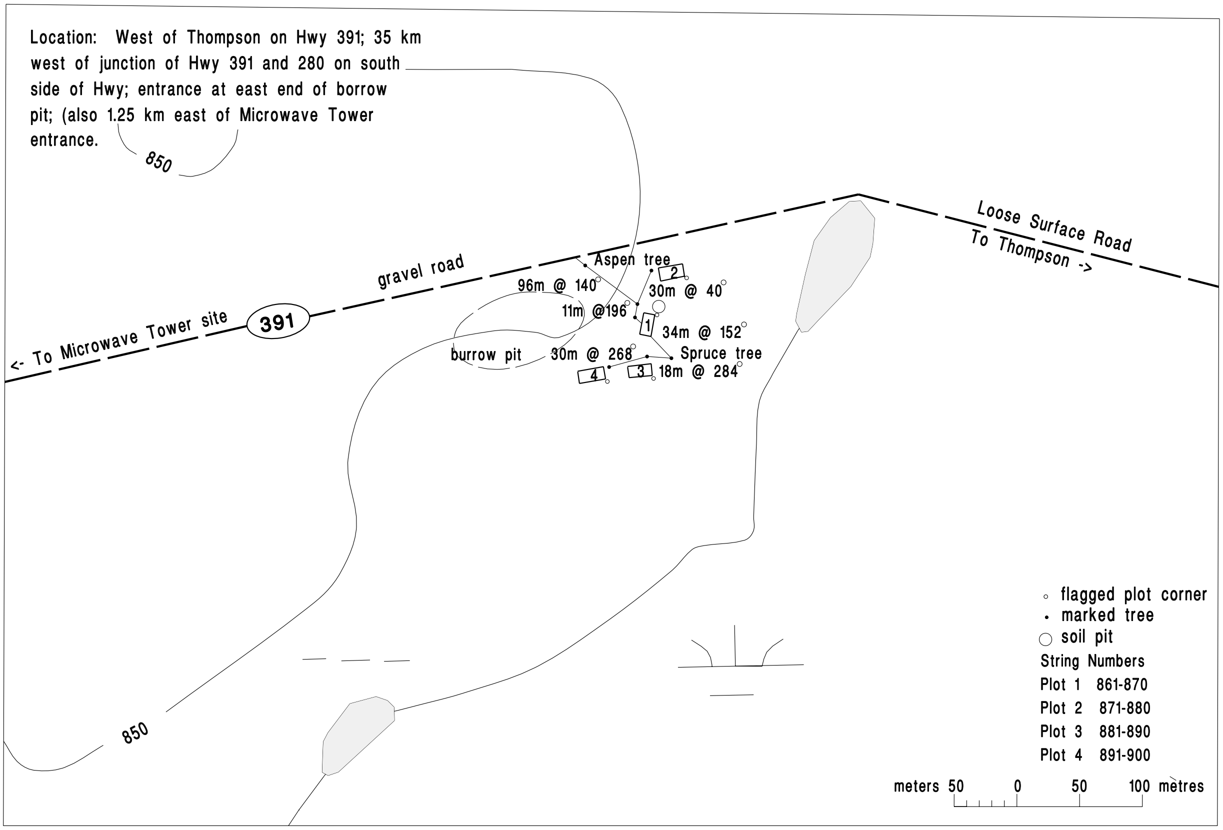
Summary Mensuration:

Species: no trees	No. of trees measured:
Mean density #/ha:	Basal Area m^2/ha:
Mean DBH cm:	Mean Height m:
Maximum Height m:	Mean Age years:

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer			
Shrub Layer	*Betula gladulosa*	*Salix spp.*	
Herb Layer	*Carex spp.*	*Oxycoccus microcarpus*	*Smilacina trifolia*
Moss Layer	*Sphagnum warnstorfii*	*Tomenthypnum nitens*	*Aulacomnium palustre*

Additional comments: Fibric peatymor.





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Nelson House 2 (NH2)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Nelson House 2 (NH2)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE [1]	STRUCTURE	COLOUR(DRY)	PH	NOTES
Of	0.0	10.0	0	0	0	H1			4.5	Fibric peaty mor; 74.1% soil moisture, 0.03 g/cm^3 bulk density
Of2	10.0	20.0	0	0	0	H2				Wet
Of3	20.0	100+	0	0	0	H4			4.7	87.6% soil moisture, 0.06 g/cm^3 bulk density

1 von Post decomposition scale

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Nelson House 2 (NH2)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	Of	10.0	400	77.1	42.87	0.9450	0.0915	2962.50	1233.75	7.500	590.000	10.00
2	Of	10.0	400	82.4	45.09	0.7725	0.1142	3215.00	445.50	1.500	456.000	57.95
3	Of	10.0	400	80.7	43.08	0.8925	0.1260	2537.50	903.75	0.000	680.000	51.88
4	Of	10.0	400	81.8	42.44	0.8025	0.0900	3337.50	655.00	32.500	742.500	61.50

Appendix 2.14:

Site Information and Maps for Prince Albert (PAL)

S. Zoltai and M. Siltanen, Canadian Forest Service, Northern Forestry Centre, Edmonton, AB. T6H 3S5

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Prince Albert (PAL)

Site Information

Map: NTS 73-H/04	Lat: 53 13 34 N	Long: 105 58 41 W	UTM Zone: 13	Easting: 434704	Northing: 5897653
Datum: NAD 27	Year: 1987	Aspect: 90	Slope: 5%	Elevation: 476 m	
Macro site position:	g) plain	Meso site position:	c) middle slope		
Site surface shape:	c) straight	Microtopography:	a) smooth		

Meteorological Yearly Means and 30 Year Normal(51-80) for Prince Albert Airport:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	16.6	14.9	19.2	22.0	39.4	69.1	65.3	15.9	9.9	3.7	-7.2	-16.5	398.4
Temperature ˚C	-21.5	-16.5	-10.3	1.9	10.0	14.6	17.4	15.9	9.9	3.7	-7.2	-16.5	0.1

Soil Classification: Orthic Regosol O.R

Ecological Classification:

Canada Ecoclimatic Regions: Subhumid Low Boreal Holdridge Lifezone: Cool Temperate Moist Forest

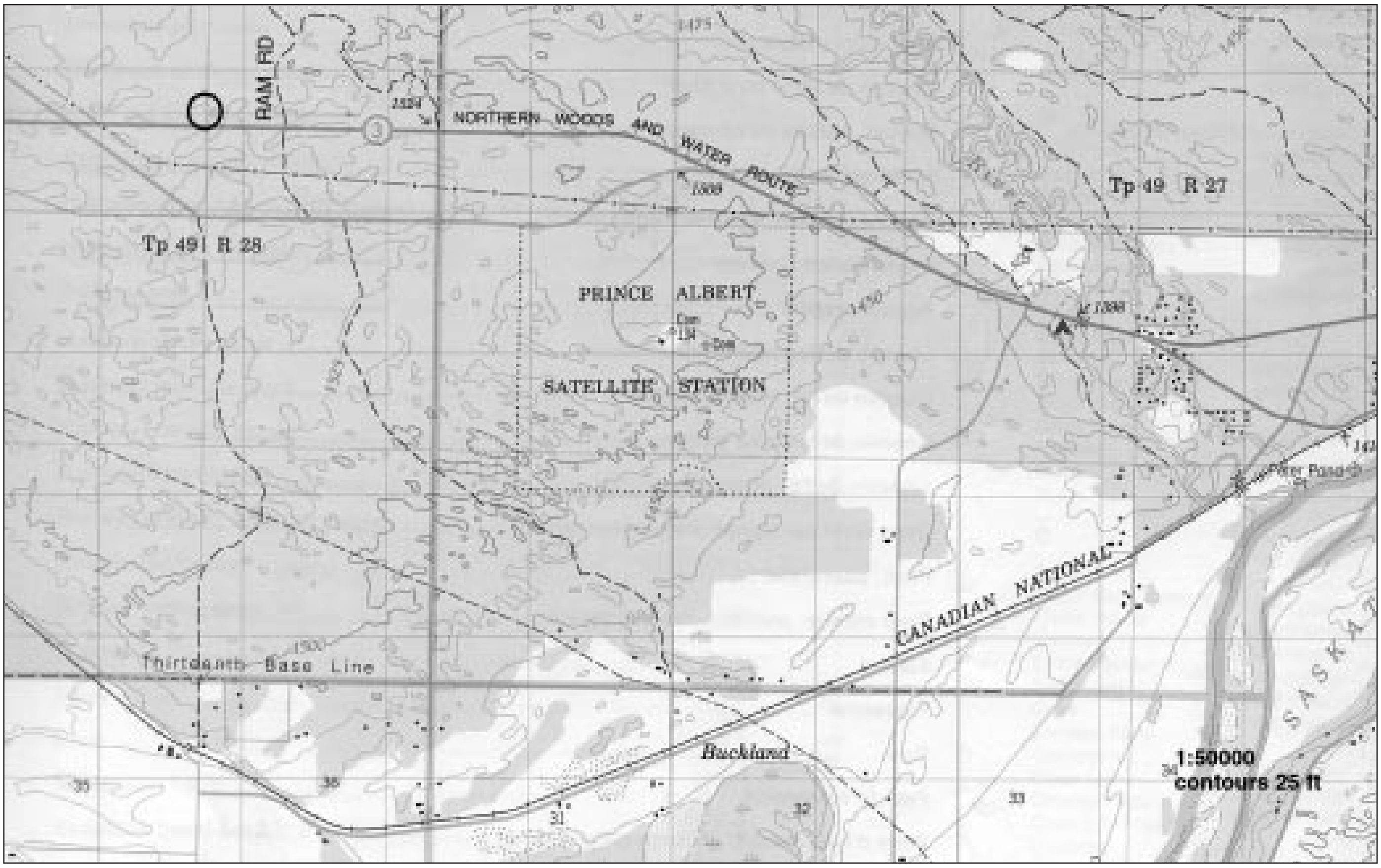
Summary Mensuration:

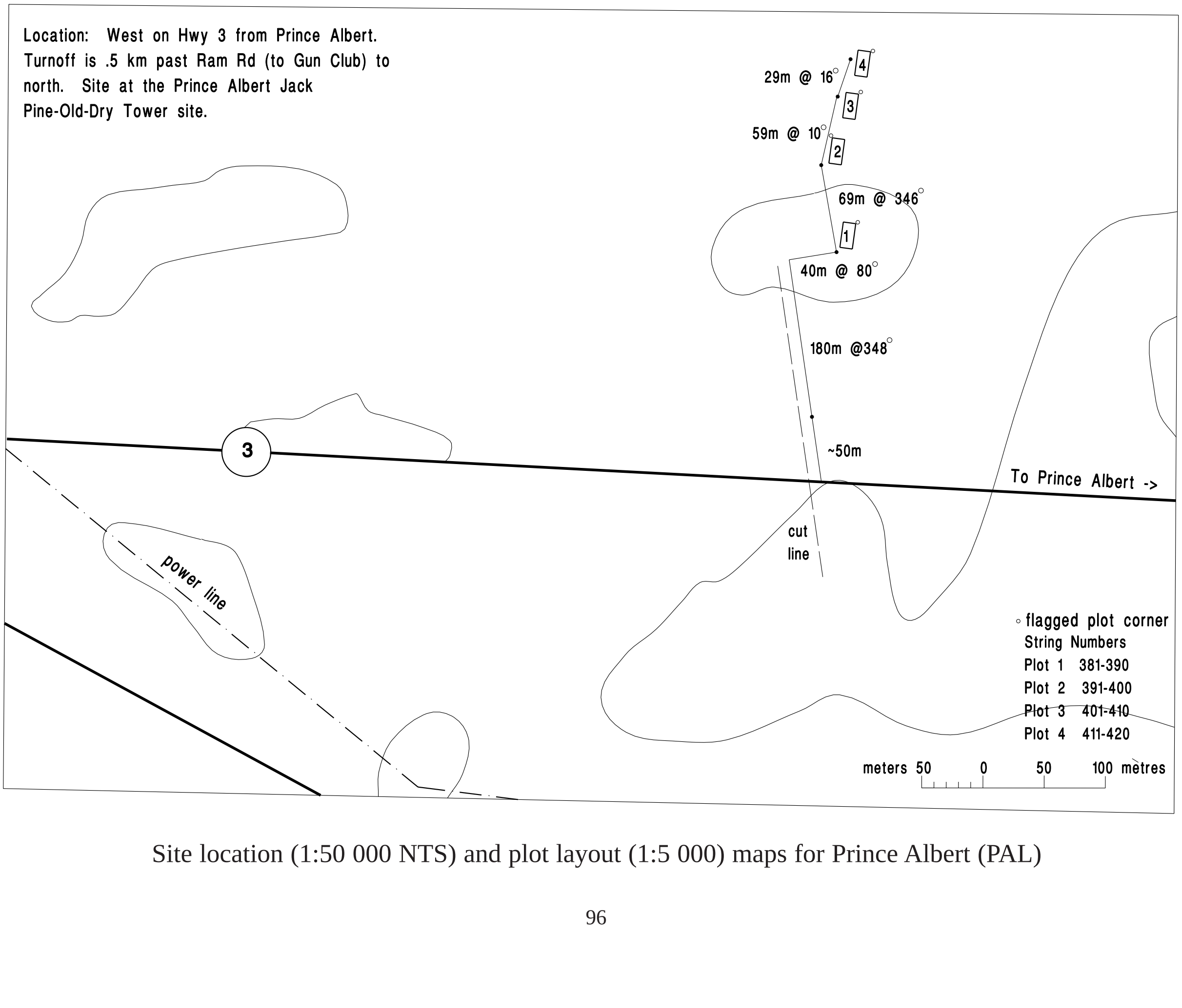
Species: Jack Pine
Mean density #/ha: 966.3
Mean DBH cm: 15.2
Maximum Height m: 14.6

No. of trees measured: 49
Basal Area m^2/ha: 14.1
Mean Height m: 11.95
Mean Age years: 65.3

Vegetation:	Primary	Secondary	Tertiary
Tree Layer	*Pinus banksiana*		
Shrub Layer	*Arctostaphylos uva-ursi*	*Vaccinium myrtilloides*	*Symphoricarpus albus*
Herb Layer	*Aster laevis*	*Solidago spp.*	*Hieracium umbellatum*
Moss Layer	*Cladina mitis*	*Cladina rangiferina*	*Pleurozium schreberi*

Additional comments:





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Prince Albert (PAL)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Prince Albert (PAL)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
LFH	2.5	0.0	0						4.7	No effervescence; Lichen and litter primary organic material
Ah	0.0	7.0	0			Medium Sand		10YR3/2		No effervescence; Some charcoal present; 7.6% soil moisture, 1.23 g/cm^3 bulk density
BC	7.0	63.0	0			Medium Sand		10YR5/6		No effervescence; Maybe a Bmj?; 2.7% soil moisture, 1.39 g/cm^3 bulk density
C1	63.0	85+	0			Medium Sand		10YR5/4		No effervescence; 2.5% soil moisture, 1.46 g/cm^3 bulk density

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Prince Albert (PAL)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
.	LFH	.	.	.	20.93	0.3675	0.0435	1825.00	193.50	17.500	119.500	20.65
1	LFH	2.5	400	128.5	37.96	0.7125	0.0653	2880.00	350.00	26.000	199.500	38.05
2	LFH	2.5	400	173.9	30.85	0.7275	0.0615	2215.00	358.50	8.500	136.000	27.15
3	LFH	2.5	400	125.6	15.19	0.3300	0.0450	1485.00	280.50	52.330	105.500	16.00
4	LFH	2.5	400	111.0	35.69	0.8400	0.0705	2890.00	397.00	54.140	224.500	31.70

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ah	1	0.0	5.0	5.8	6.5	2.10	0.00	0.105	236.0	74.0	12.26	4.90	8.75	1.00	0.00	0.13
1	BC	2	5.0	20.0	5.5	6.5	0.34	0.00	0.019	223.0	18.0	3.72	1.95	2.40	0.33	0.00	0.08
2	Ahe	1	0.0	4.0	5.5	6.3	1.86	0.00	0.086	177.0	47.0	8.45	6.07	7.10	0.61	0.00	0.03
2	BC	2	4.0	20.0	4.9	6.0	0.32	0.00	0.011	296.0	12.0	3.81	2.95	1.48	0.20	0.00	0.01
3	Ah	1	0.0	5.0	5.4	6.2	1.05	0.00	0.062	238.0	25.0	6.13	4.25	3.49	0.50	0.00	0.10
3	BC	2	5.0	20.0	5.3	6.3	0.27	0.00	0.013	325.0	6.0	3.42	2.05	1.35	0.22	0.09	0.09
4	Ah	1	0.0	3.0	5.4	5.9	2.26	0.00	0.088	176.0	68.0	10.36	6.73	8.30	0.57	0.00	0.15
4	BC	2	3.0	20.0	5.1	5.9	0.38	0.00	0.016	193.0	6.0	3.78	2.40	1.81	0.85	0.00	0.06

Canadian Intersite Decomposition Experiment
Basic Mensuration Data by Plot for Prince Albert (PAL)

					MENSURATION						
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGH	MAGE	SPEC1	SPEC2	SPEC3
–	–	49	966.3	14.1	15.2	12.0	14.6	65.3	Pinubank	-	-
PAL	ALL	49	966.3	14.1	15.2	12.0	14.6	65.3			
PAL	Pj	49	966.3	14.1	15.2	12.0	14.6	65.3			
PAL1	ALL	14	1077.4	16.1	15.1	12.7	14.0	58.0			
PAL1	Pj	14	1077.4	16.1	15.1	12.7	14.0	58.0			
PAL2	ALL	12	943.5	13.8	14.9	11.5	14.6	71.0			
PAL2	Pj	12	943.5	13.8	14.9	11.5	14.6	71.0			
PAL3	ALL	10	510.5	11.5	17.4	12.9	13.6	67.0			
PAL3	Pj	10	510.5	11.5	17.4	12.9	13.6	67.0			
PAL4	ALL	13	1333.9	14.9	13.7	10.1	10.1	.			
PAL4	Pj	13	1333.9	14.9	13.7	10.1	10.1	.			

Appendix 2.15:

Site Information and Maps for Petawawa (PET)

L. Duchesne, Canadian Forest Service, Great Lakes Forestry Centre, Sault Ste. Marie, ON. P6A 5M7

Canadian Intersite Decomposition Experiment
Basic Site Description Data for Petawawa (PET)

Site Information

Map: NTS 31-F/13	Lat: 45 55 30	Long: 77 35 05	UTM Zone: 18	Easting: 299700	Northing: 5088700
Datum: NAD 27	Year: 1975	Aspect: N/A	Slope: 0%	Elevation: 173m	
Macro site position:	g) plain	Meso site position:	g) level		
Site surface shape:	c) straight	Microtopography:	a) smooth		

Meteorological Yearly Means and 30 Year Normal(51-80) for Petawawa Nat Forestry:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	48.8	48.6	55.2	61.5	67.3	88.6	76.5	83.2	79.6	71.6	71.5	69.3	821.7
Temperature ˚C	-12.9	-11.0	-4.0	4.3	11.6	16.6	19.0	17.7	13.0	7.0	0.0	-9.6	4.3

Soil Classification: Humo-Ferric Podzol

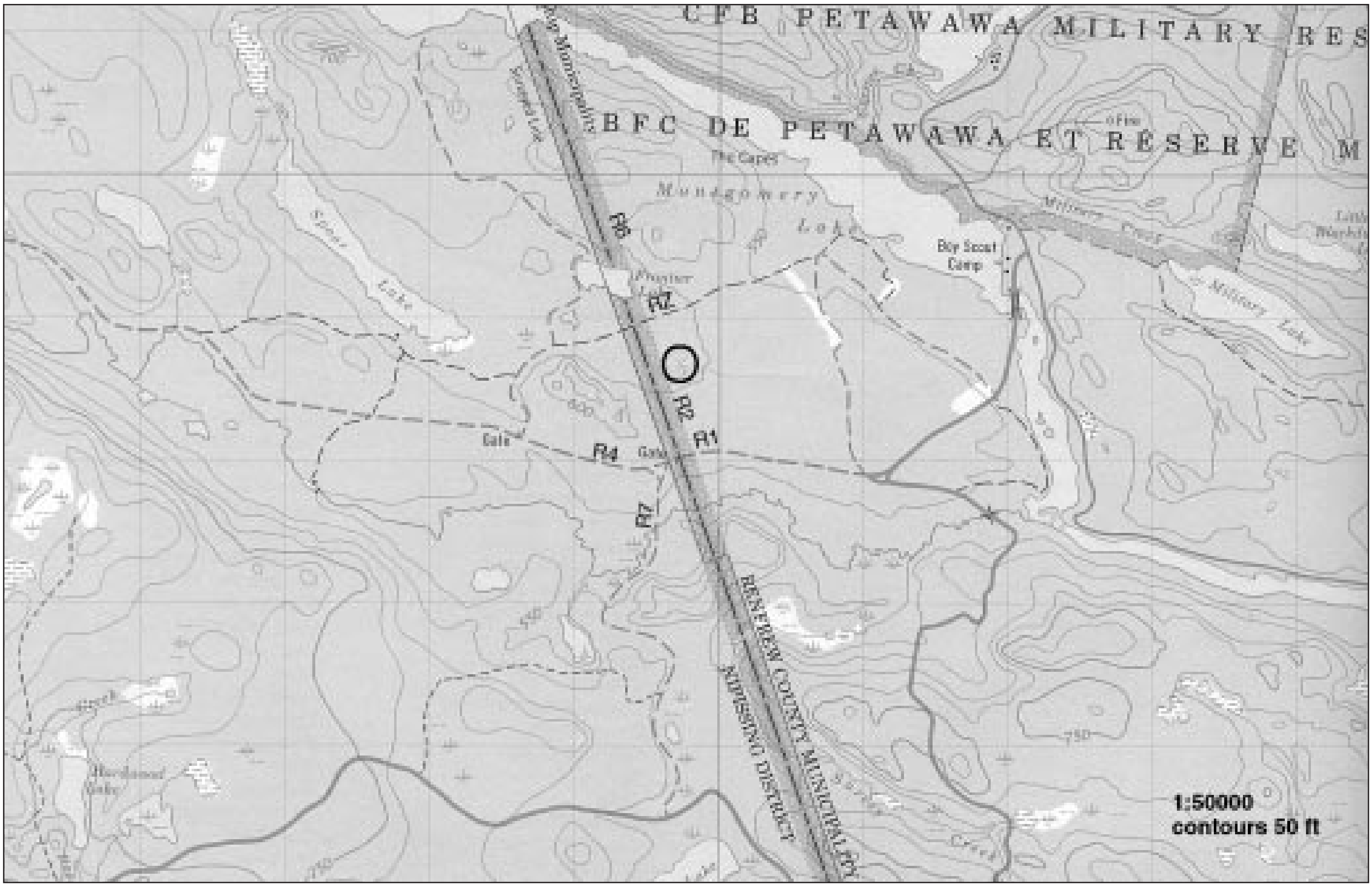
Ecological Classification:
Canada Ecoclimatic Regions: Humid High Cool Temperate   Holdridge Lifezone: Cool Temperate Moist Forest

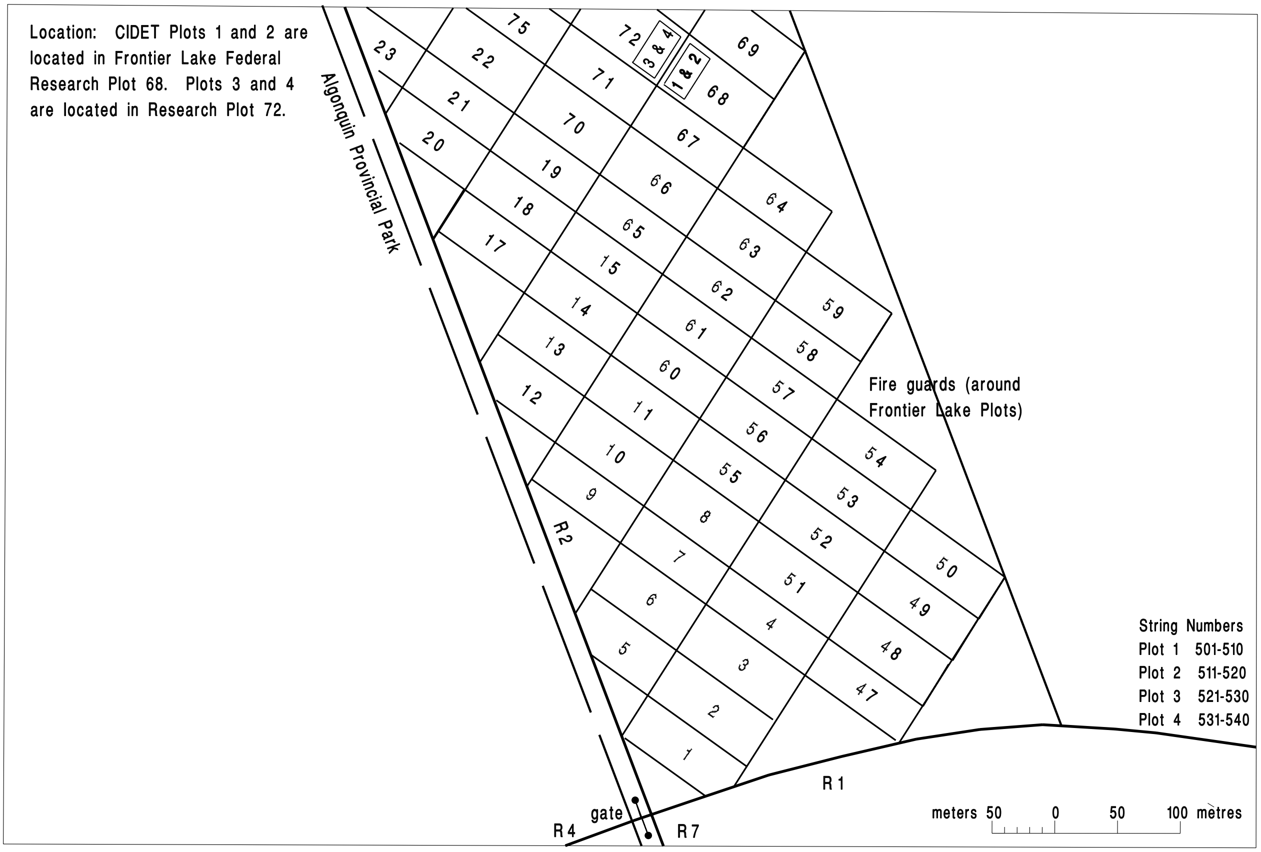
Mensuration Summary:

Species: Jack Pine, White Pine	No. of trees measured: 31
Mean density #/ha: 1,370	Basal Area m^2/ha: 17.5
Mean DBH cm: 16.9	Mean Height m: 13.7
Maximum Height m: 19	Mean Age years: 53

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Pinus banksiana (86%)*	*Pinus strobus (14%)*	*Pinus resinosa*
Shrub Layer	*Vaccinium myrtilloides*	*Comptonia peregrina*	*Gaultheria procumbens*
Herb Layer	*Pteridium aquilinum*		
Moss Layer	*Pleurozium schreberi*	*Polytrichum commune*	

Additional comments:





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Petawawa (PET)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Petawawa (PET)

DESCRIPTION

HOR	DEPTH UP	LOW	COARSE FRAGMENT <7.5	7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
L	5.5	3.5								
F	3.5	0.5								
H	0.5	0.0								
Ae	0.0	1.5								
B	1.5	31.5	10			Sand				
C	31.5+		10			Sand				

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Petawawa (PET)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
.	LFH	5.5	30	2392.8	7.58	0.2625	0.0285	520.00	78.50	51.360	83.000	12.85
1	LFH	5.5	.	.	43.53	1.0500	0.1127	2497.44	328.76	120.439	704.026	32.20
2	LFH	5.5	.	.	36.92	1.0400	0.0891	1507.65	153.95	39.229	426.742	19.46
3	LFH	5.5	.	.	43.34	1.3100	0.1042	3061.67	357.43	57.507	927.737	32.88
4	LFH	5.5	.	.	43.73	1.4700	0.1017	4407.47	469.76	39.813	779.355	38.46

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
.	Ae	1	0.0	1.5	3.3	3.9	1.45	0.00	0.049	70.0	46.0	6.27	7.05	1.08	0.09	0.02	0.00
.	B	2	1.5	30.0	4.0	4.3	1.12	0.00	0.052	180.0	54.0	8.01	10.00	0.15	0.04	0.01	0.00
1	Ae	1	0.0	1.5	3.4	4.5	2.04	.	0.086	579.0	134.0	3.40	9.90	0.60	0.40	0.00	0.20
1	B	2	1.5	31.5	3.8	4.7	1.08	.	0.058	444.0	119.0	2.10	7.50	0.00	0.10	0.00	0.10
2	Ae	1	0.0	1.5	3.1	4.0	2.68	.	0.118	237.0	178.0	4.10	12.30	0.30	0.20	0.00	0.10
2	B	2	1.5	31.5	4.1	4.7	1.35	.	0.056	239.0	89.0	7.30	9.10	0.20	0.00	0.00	0.00
3	Ae	1	0.0	1.5	3.2	4.0	2.55	.	0.068	149.0	120.0	2.20	7.70	0.20	0.10	0.00	0.00
3	B	2	1.5	31.5	3.9	4.5	0.89	.	0.042	269.0	135.0	2.10	8.20	0.00	0.10	0.00	0.00
4	Ae	1	0.0	1.5	3.5	4.0	9.10	.	0.174	175.0	219.0	13.70	13.70	3.90	0.60	0.00	0.40
4	B	2	1.5	31.5	3.7	4.5	1.58	.	0.074	254.0	135.0	3.30	10.30	0.60	0.10	0.00	0.00

Canadian Intersite Decomposition Experiment

Basic Mensuration Data by Plot for Petawawa (PET)

				MENSURATION							
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGH	MAGE	SPEC1	SPEC2	SPEC3
–	–	31	781.0	17.5	16.9	13.7	19.0	.	Pinubank	Pinustro	Pinuresi
PET	ALL	31	1370.5	29.2	14.3	13.7	19.0	.			
PET	Jp	22	972.6	17.2	14.0	15.7	18.5	.			
PET	Rp	5	221.0	4.5	10.5	6.6	19.0	.			
PET	Wp	4	176.8	7.4	20.9	11.5	17.0	.			
PET8	ALL	15	1326.3	24.7	14.0	13.3	18.5	.			
PET8	Jp	11	972.6	20.3	15.6	16.1	18.5	.			
PET8	Rp	2	176.8	0.4	5.2	4.3	5.5	.			
PET8	Wp	2	176.8	4.1	14.4	7.0	10.0	.			
PET9	ALL	16	1414.7	33.6	14.6	14.1	19.0	.			
PET9	Jp	11	972.6	14.1	12.4	15.3	18.5	.			
PET9	Rp	3	265.3	8.7	14.1	8.2	19.0	.			
PET9	Wp	2	176.8	10.8	27.5	16.0	17.0	.			

Appendix 2.16:

Site Information and Maps for Port McNeill (PMC)

C. Prescott, Dept. Forest Science, University of British Columbia, Vancouver B.C. V6T 1Z4

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Port McNeill (PMC)

Site Information

Map: NTS 92-L/11	Lat: 50 36 35	Long: 127 20 35	UTM Zone: 9	Easting: 617300	Northing: 5607500
Datum: NAD 27	Year: 1976	Aspect: 30˚	Slope: 0-7%	Elevation: 100m	
Macro site position: g) mid-slope		Meso site position: g) level			
Site surface shape: c) straight		Microtopography: e) strongly mounded			

Meteorological Yearly Means and 30 Year Normal(51-80) for Port Hardy Airport:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	211.2	159.4	141.8	107.5	68.6	70.7	52.0	69.0	136.2	244.8	244.7	276.9	1782.8
Temperature ˚C	2.4	3.9	4.4	6.6	9.3	11.8	13.6	13.8	11.8	8.7	5.3	3.5	7.9

Soil Classification: Humo-Ferric Podzol

Ecological Classification:

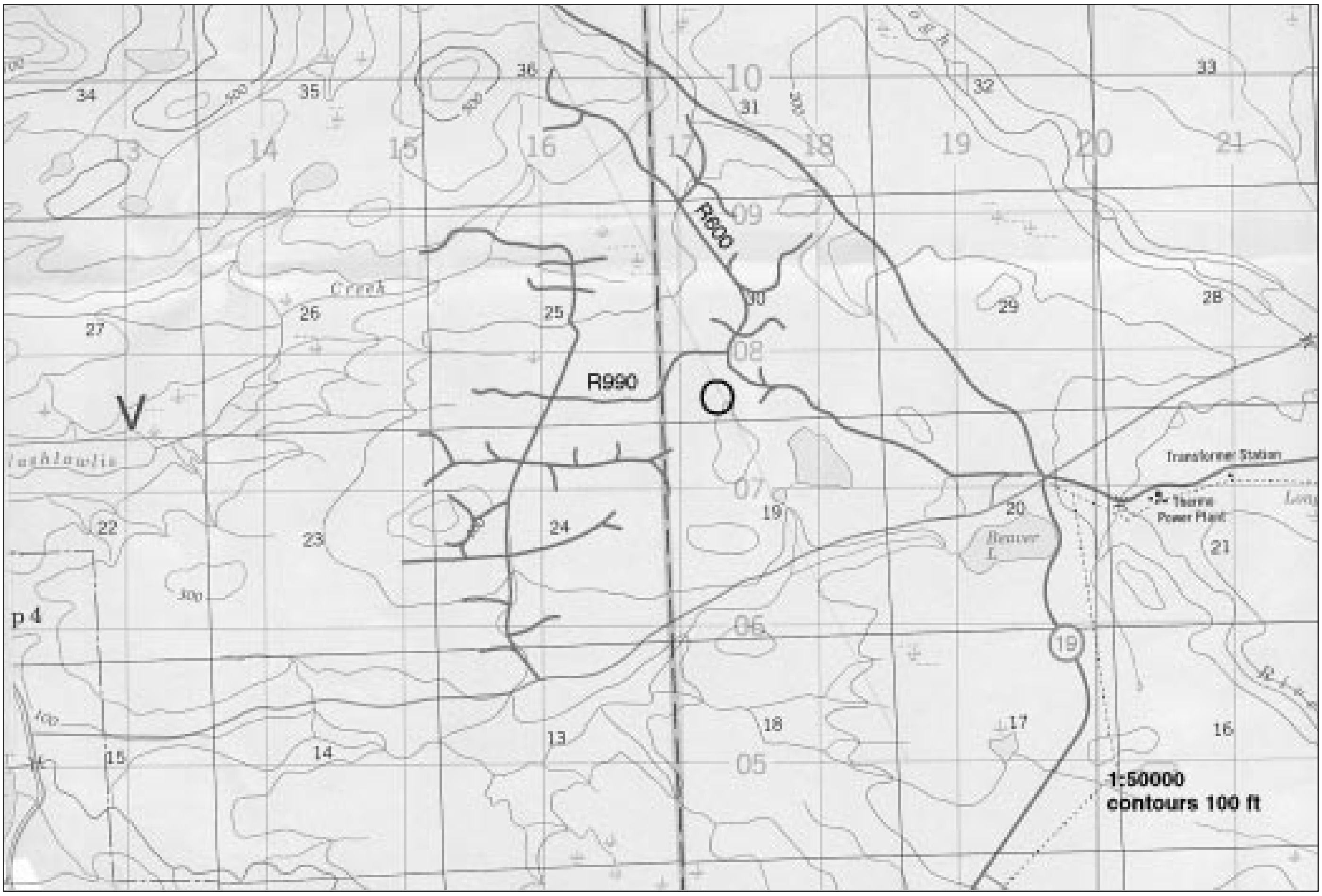
Canada Ecoclimatic Regions: Maritime South Pacific Cordilleran Holdridge Lifezone: Cool Temperate Wet Forest

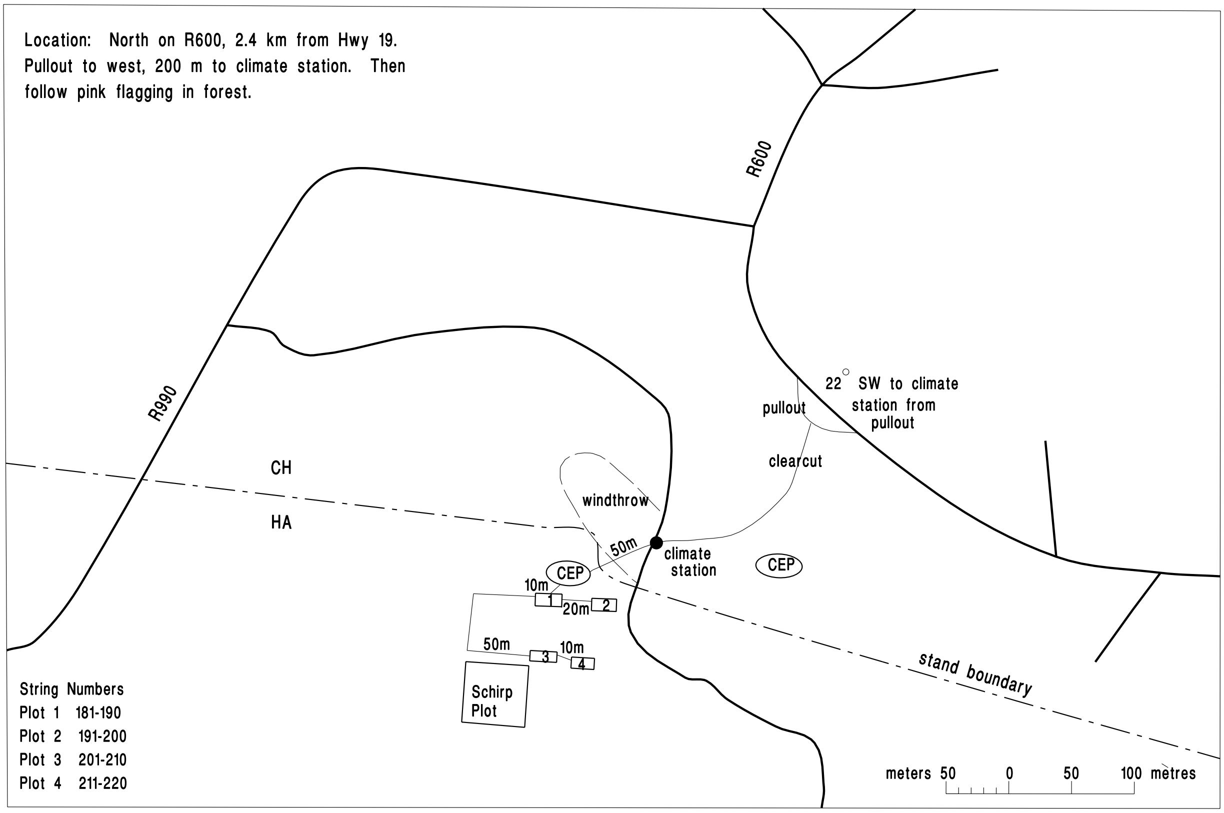
Summary Mensuration:

Species: Western Hemlock, Amabilis Fir	No. of trees measured: 121
Mean density #/ha: 484	Basal Area m^2/ha: 86.9
Mean DBH cm: 40	Mean Height m: 42.5
Maximum Height m: 137.1	Mean Age years: 70-100

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Tsuga heterophylla*	*Abies amabilis*	
Shrub Layer	*Vaccinium spp.*	*Tsuga heterophylla*	*Gaultheria shallon*
Herb Layer	*Blechnum spicant*	*Dryopteris expansa*	
Moss Layer	*Kindbergia bregana*	*Hylocomium splendens*	*Rhytidiadelphus loreus*

Additional comments: Even-aged stand windthrow origin, 1908. Biogeoclimatic zone CWHvm1. Site association 01-HwBa-Blueberry.





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Port McNeill (PMC)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Port McNeill (PMC)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
L	29	28								Mor/mor-moder humus form
F	28	15								
H	15	0								
Ae	0	4					weak,massive	10YR3/2		Roots: plent. fine with rooting depth of 40 cm
Bf	4	20	70	30	0	silty clay loam	mod., fine	10YR4/4		Roots: few fine, no med.
BC	20	40	30	70	0		sub-ang. blocky	2.5Y6/4		
C	40+						strong,coarse platy	2.5Y6/2		Roots: none. Note: Duric horizon

Additional Notes: gently-sloping mid-slope (<5%). Moderately pervious, imperfectly-drained. Soil greyish yellow and mottled. Water table fluctuating. Thin weathering layer, of similar colour, just above duric horizon.

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Port McNeill (PMC)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LF	9.0	.	.	47.01	1.1850	0.0608	794.00	372.00	61.000	160.000	31.30
2	LF	10.0	.	.	49.27	1.0800	0.0563	765.00	297.00	14.000	114.000	32.80
3	LF	9.6	.	.	46.37	1.1175	0.0623	501.00	266.00	14.500	131.000	33.80
4	LF	8.7	.	.	45.29	1.0800	0.0825	933.50	258.00	51.000	131.000	25.25

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	H	1	15.0	0.0	3.8	4.2	11.93	0.00	0.461	579.0	608.0	26.78	45.00	0.38	0.95	0.12	0.05
2	H	1	15.0	0.0	2.8	3.4	49.86	0.00	1.160	456.0	1354.0	57.33	62.35	1.79	9.72	0.90	0.24
3	H	1	15.0	0.0	2.7	3.3	49.13	0.00	1.410	578.0	1659.0	48.21	58.00	2.45	6.81	0.83	0.31
4	H	1	15.0	0.0	2.8	3.2	51.90	0.00	0.644	418.0	1044.0	52.20	59.20	4.58	6.00	0.80	0.36

Appendix 2.17:

Site Information and Maps for Schefferville (SCH)

T. Moore, Department of Geography, McGill University, Montreal, PQ. H3A 2K6

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Schefferville (SCH)

Site Information

Map: NTS 23-J/15	Lat: 54 52 37	Long: 66 39 00	UTM Zone: 19	Easting: 650700	Northing: 6083400
Datum: NAD 27	Year: 1979	Aspect: n/a	Slope: 0%	Elevation: 500m	

Macro site position: a) apex — Meso site position: g) level

Site surface shape: c) straight — Microtopography: c) slightly mounded

Meteorological Yearly Means and 30 Year Normal(51-80) for Schefferville:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	46.9	43.0	41.6	45.4	49.4	73.7	96.8	98.2	83.4	75.6	65.7	49.0	768.7
Temperature ˚C	-22.8	-21.2	-15.1	-7.2	1.2	8.6	12.6	10.8	5.2	-1.4	-9.0	-19.0	-4.8

Soil Classification: Gleyed Dystric Brunisol GL.DYB

Ecological Classification:

Canada Ecoclimatic Regions: Low Subarctic

Holdridge Lifezone: Cool Temperate Subalpine Rain Tundra/Wet Forest

Mensuration Summary:

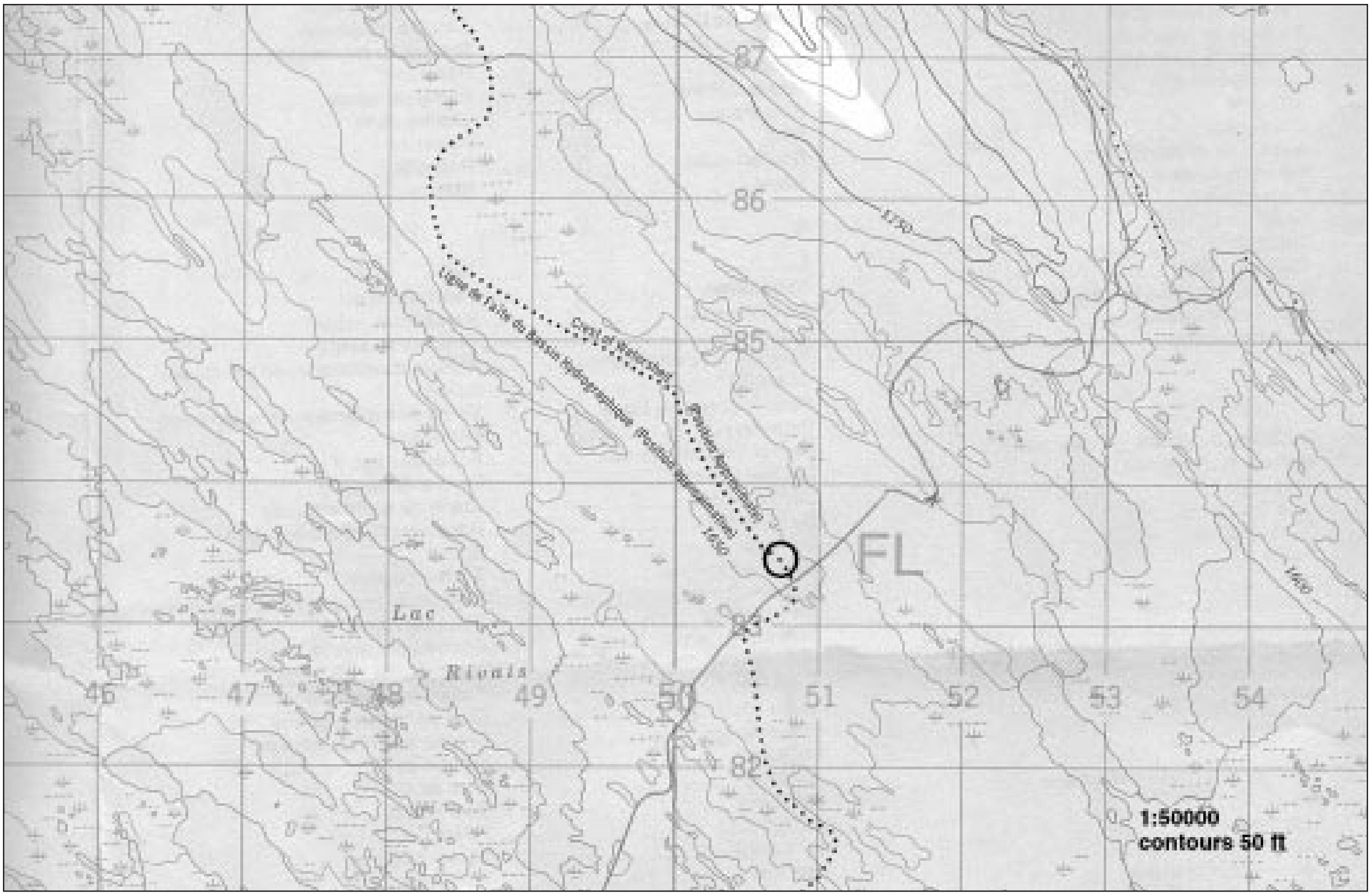
Species: Black Spruce, White Spruce, Tamarack
Mean density #/ha: 614
Mean DBH cm: 12.2
Maximum Height m: 10.6

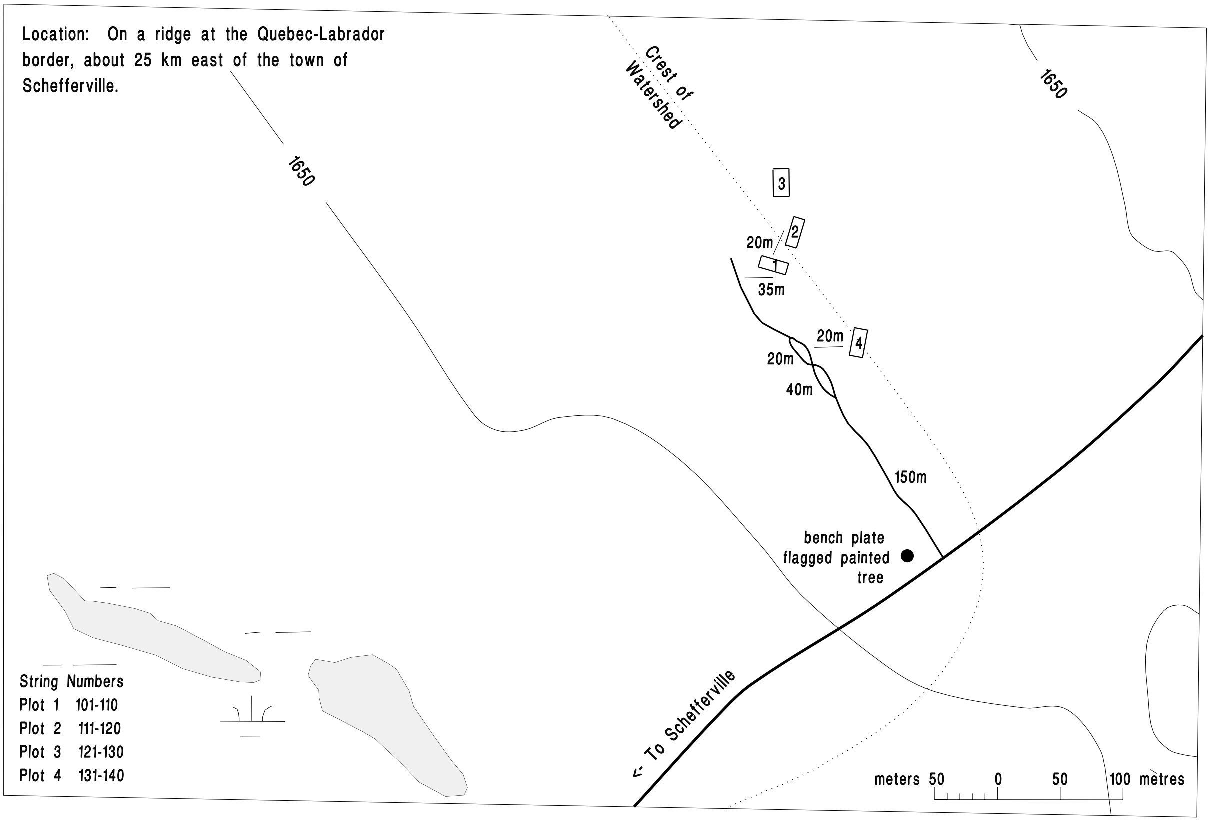
No. of trees measured: 150
Basal Area m^2/ha: 99.8
Mean Height m: 6.8
Mean Age years: 78

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Picea mariana*	*Picea glauca*	*Larix laricina*
Shrub Layer	*Betula glandulosa*	*Ledum groenlandicum*	
Herb Layer	*Empetrum nigrum*	*Vaccinium spp*	
Moss Layer	*Cladina stellaris*	*Cladonia rangiferina*	

Additional comments: Site developed from a burn about 1840.

The Schefferville meteorological station that was supplying the yearly data was automated, and precipitation data is no longer available. So Schefferville Airport provides the temperature data and La Grande IV A provides the precipitation data. The precipitation data for these two sites, does vary, and some sort of regression analysis may be used in the future.





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Schefferville (SCH)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Schefferville (SCH)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
PLOT 1										
LFH	4.0	0.0								Decomposing lichen, needles, leaves at surface to well decomposed at base; strong root component
Bm	0.0	10+			50	Silty Loam	weak subangular blocky	5YR4/4		Few roots and organics; abrupt horizon boundary; moist; some bleaching of minerals at abrupt organic:mineral interface
PLOT 2										
LFH	4.0	0.0								Decomposing lichen, needles, leaves at surface to well decomposed at base; strong root component
Bm	0.0	10+			50	Silty Loam	weak subangular blocky	5YR4/4		Few roots and organics; abrupt horizon boundary; moist; some bleaching of minerals at abrupt organic:mineral interface
PLOT 3										
LFH	4.5	0.0								Decomposing lichen, needles, leaves at surface to well decomposed at base; strong root component
Bm	0.0	10+						5YR4/4		Faint evidence of mottling, otherwise similar to subsoils at plots 1 and 2; moist
PLOT 4										
LFH	4.5	0.0								Decomposing lichen, needles, leaves at surface to well decomposed at base; strong root component
Bm	0.0	10+			40	Silty Clay Loam	weak subangular blocky	5YR4/2		Some evidence of organic matter staining; few roots; wetter and cooler than subsoil at other plots

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Schefferville (SCH)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LFH	4.0	.	.	31.50	0.8475	0.0870	140.00	79.50	2.500	140.500	19.80
2	LFH	4.0	.	.	40.61	0.6900	0.0765	105.00	76.00	2.000	94.500	14.60
3	LFH	4.5	.	.	34.22	0.6450	0.0795	115.00	109.00	0.500	130.000	3.10
4	LFH	4.5	.	.	40.22	0.8550	0.0720	435.00	164.00	2.500	246.500	10.90

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Bm	1	0.0	10.0	4.3	5.1	1.64	0.00	0.086	461.0	178.0	10.38	16.40	0.00	0.00	0.01	0.00
2	Bm	1	0.0	10.0	4.3	5.3	1.57	0.00	0.073	356.0	101.0	11.22	15.50	0.00	0.00	0.01	0.00
3	Bm	1	0.0	10.0	3.9	4.4	1.66	0.00	0.084	329.0	82.0	14.16	15.25	0.00	0.00	0.01	0.00
4	Bm	1	0.0	10.0	4.0	4.9	2.67	0.00	0.121	327.0	109.0	14.55	18.80	0.06	0.02	0.02	0.00

Appendix 2.18:

Site Information and Maps for Shawnigan Lake (SHL)

J.A. Trofymow, Canadian Forest Service, Pacific Forestry Centre, Victoria, BC. V8Z 1M5

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Shawnigan Lake (SHL)

Site Information

Map: NTS 92-B/12	Lat: 48 38 08.1	Long: 123 42 40.1	UTM Zone: 10	Easting: 447000	Northing: 5387000
Datum: NAD 27	Year: 1980	Aspect: 360	Slope: 5%	Elevation: 355m	
Macro site position:	d) middle slope	Meso site position:	c) middle slope		
Site surface shape:	b) convex	Microtopography:	b) micro mounded		

Meteorological Yearly Means and 30 Year Normal(51-80) for Shawnigan Lake:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	213.3	139.5	113.2	57.3	34.5	33.3	22.6	28.7	50.7	109.4	179.9	232.9	1215.3
Temperature ˚C	1.8	3.8	4.9	7.9	11.6	14.6	17.1	17.0	14.3	9.7	5.2	3.1	9.3

Soil Classification: Orthic Dystric Brunisol O.DYB

Ecological Classifications:

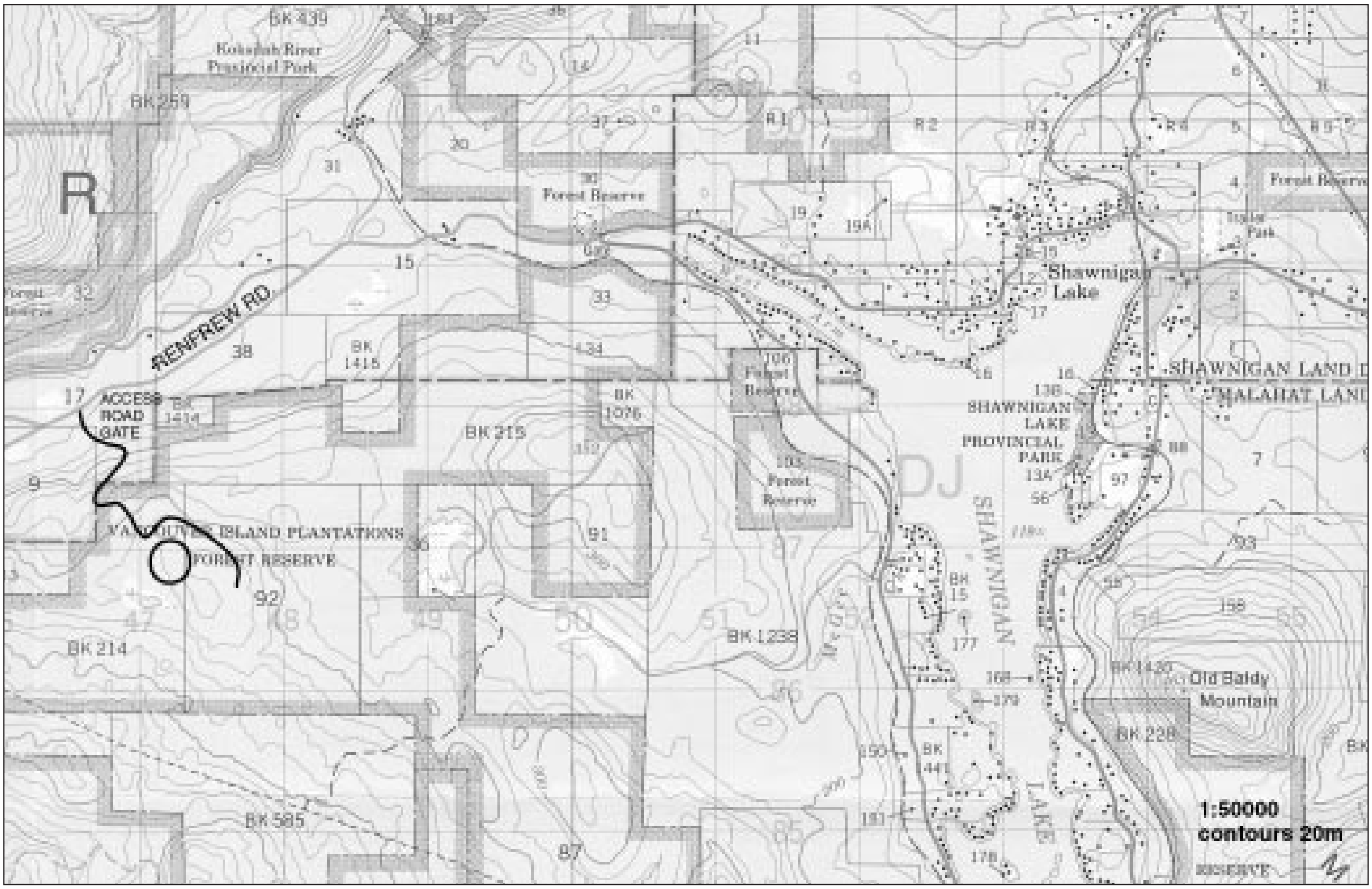
Canada Ecoclimatic Regions: Coastal South Pacific Cordilleran   Holdridge Lifezone: Cool Temperate Wet Forest

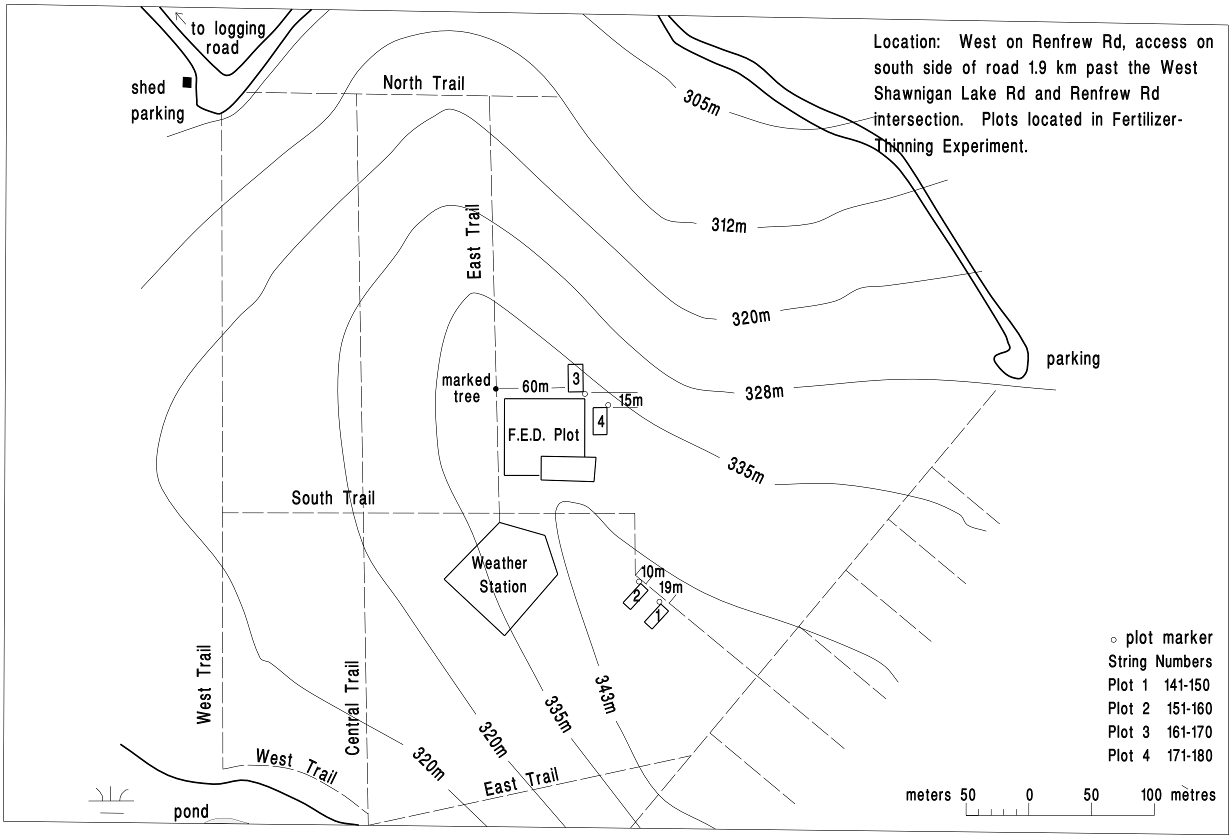
Mensuration Summary:

Species: Douglas Fir	No. of trees measured: 49
Mean density #/ha: 2080	Basal Area m^2/ha: 48.6
Mean DBH cm: 16.4	Mean Height m: 18.2
Maximum Height m: 23.5	Mean Age years: 42

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Pseudotsuga menziesii*		
Shrub Layer	*Gaultheria shallon*	*Mahonia nervosa*	
Herb Layer	*Pteridium aquilinum*		
Moss Layer	*Kindbergia oregana*		

Additional comments: Site burned in 1927, salvaged, logged, burned, and planted in 1948.





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Shawnigan Lake (SHL)

Canadian Intersite Decomposition Experiment

Site Level Soil Descriptions for Shawnigan Lake (SHL)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
LFH	4.0	0.0								Plentiful fine horizontal roots; 2 to 5 cm thick
Ae	0.0	2.5				Sandy Loam	Weak to moderate medium subangular blocky	5.0YR5/6	4.7	Plentiful fine and medium oblique roots; thin discontinuous; 0-3 cm thick
Bh	2.5	16.5		5	20	Sandy Loam	Weak to moderate medium subangular blocky	7.5YR4/4	4.5	Plentiful fine oblique roots; Progressive breaks down;
Bm1	16.5	21.5		5	20	Sandy Loam	Weak to moderate medium subangular blocky	10.0YR5/4	4.5	Plentiful fine oblique roots; 9 to 19 cm thick; 2° colour 5.0YR6/6
Bm2	21.5	50.0		10	30	Sandy Loam		–	–	Plentiful fine oblique roots; Pocket inclusion of grey Ae or clay; 0 to 10 cm thick; Essentially same as above but has a greater percentage of rocks
BC	50.0	65.5		10	30	Sandy Loam	Weak medium subangular blocky	5.0Y6/4	4.6	Plentiful fine oblique roots; 27 to 30 cm thick
C1	65.5	74.5				Sandy Loam		5.0Y6/4	4.8	Few fine oblique roots; Root restricted layer at bottom containing cemented chunks of till; mottles; zone of maximum water discharge when saturated; lower boundary abrupt
C2	75	+						2.5Y6/2		Compact massive gravelly sandy loam till. Extremely hard and impermeable to roots and water.

Canadian Intersite Decomposition Experiment

Surface Organics (LFH) and Mineral Soil Chemistry for Shawnigan Lake (SHL)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LFH	2.9	.	.	34.98	1.0350	0.1470	3450.00	328.00	2.000	348.000	31.30
2	LFH	4.1	.	.	43.70	0.9800	0.1220	7723.25	630.30	55.594	959.903	56.70
3	LFH	3.8	.	.	38.75	0.7875	0.1380	3555.00	268.00	0.000	337.000	34.50
4	LFH	9.6	.	.	47.53	0.5775	0.0653	2525.00	235.00	17.000	206.000	32.35

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ae	1	0.0	10.0	4.6	5.0	3.94	0.00	0.104	973.0	135.0	15.69	20.45	4.59	0.41	0.02	0.19
2	Ae	1	0.0	10.0	4.6	5.2	2.55	0.00	0.068	662.0	110.0	10.95	15.85	3.51	0.51	0.02	0.11
3	Ae	1	0.0	10.0	4.6	5.1	2.66	0.00	0.082	943.0	118.0	13.65	15.50	4.52	0.48	0.02	0.12
4	Ae	1	0.0	10.0	4.4	4.9	4.26	0.00	0.095	1181.0	108.0	14.88	21.55	2.23	0.33	0.02	0.13

Appendix 2.19:

Site Information and Maps for Termundee (TER)

D. Anderson[1] and L. Kozak[2], College of Agriculture[1] and Agriculture Canada Research Saskatchewan Land Resource Unit[2], University of Saskatchewan, Saskatoon, SK. S7N 0W0

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Termundee (TER)

Site Information

Map: 72-P/15	Lat: 51 50 39	Long: 104 55 03	UTM Zone: 13	Easting: 505722	Northing: 5743437
Datum: NAD 83	Year: 1993	Aspect: 152.5	Slope: 3.25 %	Elevation: 536.5	

Macro site position: g) plain
Meso site position: plot 1&2 e) toe, plot 3 c)-d) middle-lower slope, plot 4 c) middle slope
Site surface shape: c) straight
Microtopography: b) micro mounded

Meteorological Yearly Means and 30 Year Normal(51-80) Saskatoon SRC:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	22.6	21.9	22.3	21.4	39.6	59.9	56.2	35.1	32.2	17.5	16.0	25.8	370.5
Temperature ˚C	-19.1	-14.5	-8.5	3.4	11.2	15.6	18.4	17.2	11.5	5.2	-5.5	-13.9	1.8

Soil Classification: plot 1: Orthic black chernozem, plot 2: Eluviated black chernozem, plot 3: Humic luvic gleysol, plot 4: Orthic humic gleysol

Ecological Classification:

Canada Ecoclimatic Regions: Transitional Grassland
Holdridge Lifezone: Cool Temperate Steppe

Summary Mensuration:

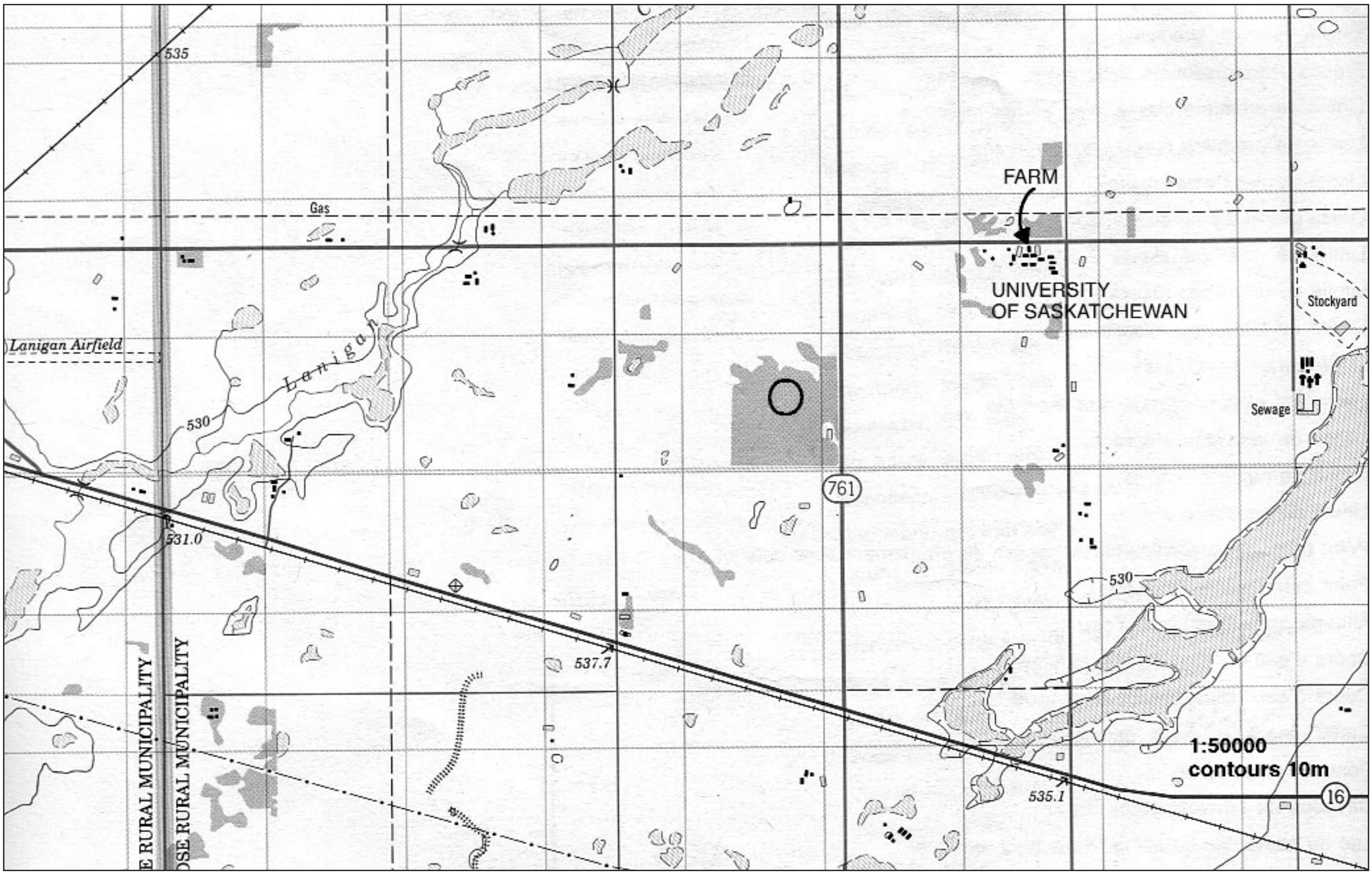
Species: Aspen
Mean density #/ha: 5658.8
Mean DBH cm: 8.51
Maximum Height m: 11.6
No. of trees measured: 32
Basal Area m^2/ha: 35.01
Mean Height m: 8.72
Mean Age years: 37

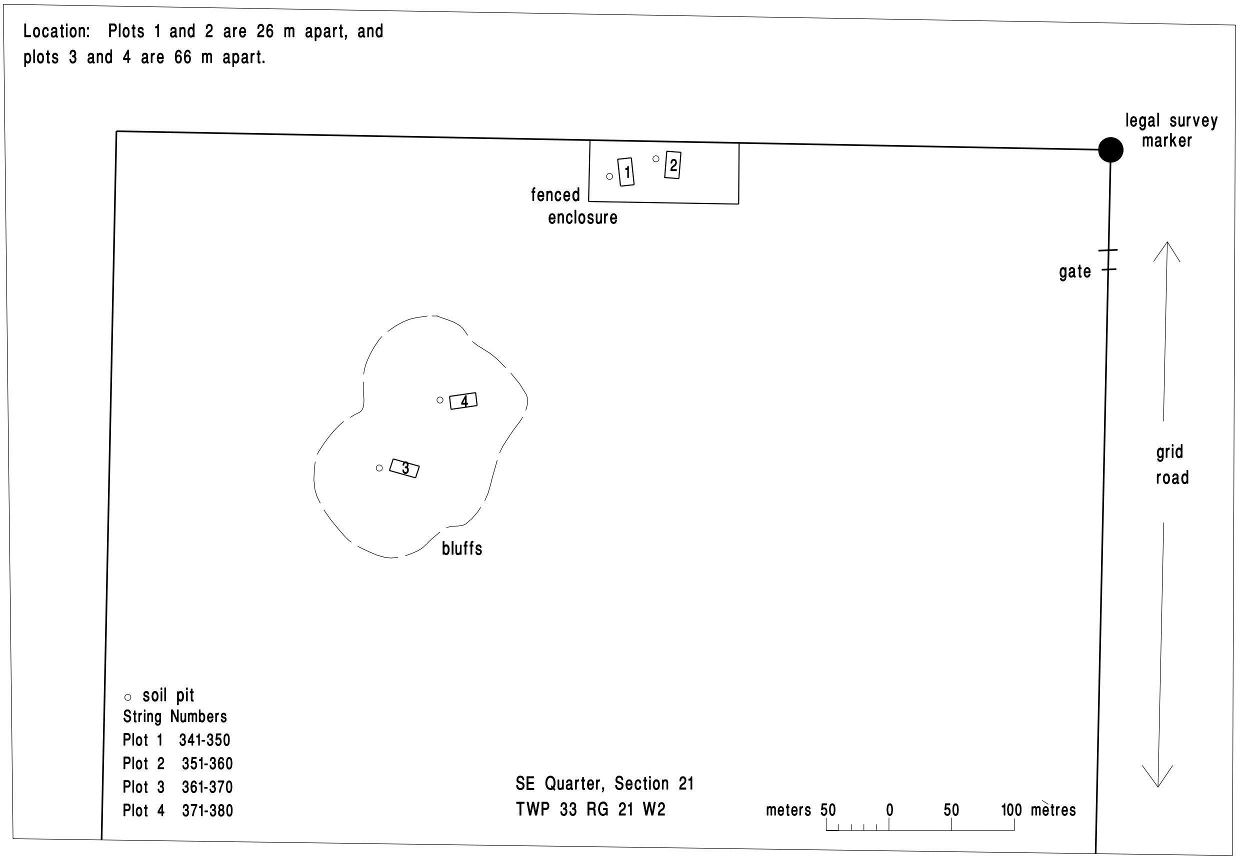
Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Populus tremuloides*		
Shrub Layer	*Symphoricarpos occidentalis*	*Rosa woodsii*	*Rubus idaeus*
Herb Layer	*Bromus anomalus*	*Anemone canadensis*	*Thalictrum venulosum*
			Smilacina stellata
Moss Layer	*None*		

Additional comments:

	latitude	longitude	easting	northing	aspect	slope	elevation
Plot 1	51 50 42	104 54 58	505790	5743535	70	3 %	538
Plot 2	51 50 42	104 54 56	505830	5743550	130	2 %	538
Plot 3	51 50 34	104 55 06	505610	5743310	250	3 %	535
Plot 4	51 50 36	104 55 04	505660	5743350	160	5 %	535

Note: trees in plots 1&2 noticeably healthier than trees in plots 3&4.





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Termundee (TER)

Canadian Intersite Decomposition Experiment

Site Level Soil Descriptions for Termundee (TER)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE FRAGMENT DESC. <7.5	7.5-25	>25	SOIL TEXTURE	STRUCTURE	COLOUR(WET)	PH	NOTES
PLOT 1										Orthic Black Chernozem. Oxbow Association
LFH	7	0					Single grained	10YR3/2		
Ah	0	13	1				Weak medium subangular blocky	10YR2/1		
Bm	13	25	2				Weak to moderate, medium to coarse columnar	10YR3/4		Also larger roots present
Cca	25	40	15	5			Weak medium columnar	10YR5/3		
Ck1	40	68	3				Massive	10YR5/4		Also odd coarse root
Ck2	68	100	2				Massive	2.5Y5/4		Also the odd coarse root
PLOT 2										Eluviated Black Chernozem. Blaine Lake Association.
LFH	7	0					Single Grained	10YR3/2		Also many medium roots-blanket
Ah	0	12					Weak, medium to coarse subangular blocky	10/YR2/1		Also many larger roots
Ahe	12	24					Weak, medium to coarse subangular blocky	10/YR3/2		Also a few larger roots
AB	24	33					weak medium prismatic	10YR4/2.5		
Bt	33	68					Moderate to strong, medium prismatic	10YR3/2		
Ck	68	74					moderate medium prismatic	2.5Y3/2		
IICk	74	92					Single grained	10YR5/4.5		
IIICk	92	110					Massive	2.5Y5/4		
PLOT 3										Humic Luvic Gleysol
LFH	5	0					Single grained	10YR2/1		
Ah	0	10					Massive	10YR2/1		
Aeg	10	21					Moderate, medium to coarse platy	10YR5/3		
ABg	21	33					Weak to moderate, medium columnar	10YR4/2		
Btg	33	60	3				Moderate to strong, medium to coarse columnar	10YR3/2		
Bmg	60	88	2				Weak coarse columnar	2.5Y3.5/2		
Ckg	68	105	2				Massive	2.5Y5.5/2		
PLOT 4										Orthic Humic Gleysol
LFH	4	0					Single grained	10YR2/2		
Ah	0	14					Single grained	10YR2/1		
Bmg1	14	30	1				Weak very coarse columnar	10YR3/2		Variable colors (matrix)
Bmg2	30	50	2				Weak very coarse columnar	10YR4/2		Variable colors (matrix)
Ckg1	50	74	2				Weak very coarse columnar	2.5Y5.5/2		Could be a Cca Horizon?
Ckg2	74	100	3				Weak very coarse columnar	10YR5/4		

Canadian Intersite Decomposition Experiment

Surface Organics (LFH) and Mineral Soil Chemistry for Termundee (TER)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LFH	7.0	.	1675.7	9.56	0.5550	0.0810	2650.00	781.00	121.500	202.000	31.15
2	LFH	7.0	.	1324.7	15.30	0.9600	0.0975	3930.00	839.00	0.000	215.000	48.70
3	LFH	5.0	.	1222.0	15.22	0.9000	0.1050	4090.00	839.00	1.260	273.500	47.65
4	LFH	4.0	.	1234.2	20.08	1.2000	0.1035	4470.00	815.00	10.590	378.000	56.00

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ah	1	0.0	13.0	6.6	7.2	5.27	0.00	0.442	565.0	446.0	32.16	5.75	24.22	12.57	0.03	1.50
1	Bm	2	13.0	25.0	6.8	8.2	1.26	0.00	0.122	222.0	110.0	17.52	2.25	7.08	8.80	0.02	1.21
1	Cca	3	25.0	40.0	8.2	8.9	0.39	21.17	0.045	329.0	344.0	11.86	0.00	7.77	11.81	0.04	0.65
1	Ck1	4	40.0	68.0	8.4	9.1	0.31	26.50	0.024	296.0	415.0	10.59	0.00	12.77	12.14	0.03	0.59
1	Ck2	5	68.0	100.0	8.3	9.0	0.22	19.83	0.015	340.0	369.0	8.13	0.00	7.89	7.90	0.03	0.59
2	Ah	1	0.0	12.0	6.0	6.8	3.65	0.00	0.284	416.0	208.0	25.62	9.55	16.30	5.06	0.03	1.11
2	Ahe	2	12.0	24.0	5.4	6.5	1.30	0.00	0.111	254.0	88.0	12.84	5.50	6.16	1.91	0.04	0.64
2	AB	3	24.0	33.0	5.7	7.1	0.60	0.00	0.073	223.0	63.0	15.29	5.00	7.24	3.80	0.02	0.85
2	Bt	4	33.0	68.0	6.6	7.5	0.77	0.00	0.069	311.0	84.0	24.33	3.57	12.76	7.14	0.05	0.81
2	Ck	5	68.0	74.0	7.5	8.4	0.58	9.21	0.049	375.0	240.0	13.23	0.00	10.55	4.34	0.04	0.38
2	IICk	5	74.0	92.0	7.4	8.5	0.08	4.51	0.014	239.0	87.0	2.49	0.13	1.53	0.71	0.02	0.08
2	IIICk	6	92.0	110.0	7.7	8.5	0.27	14.42	0.027	537.0	298.0	8.56	0.00	6.99	3.70	0.04	0.33
3	Ah	1	0.0	10.0	5.8	6.6	3.75	0.00	0.286	659.0	300.0	25.78	10.80	16.17	4.24	0.06	0.94
3	Aeg	2	10.0	21.0	5.1	6.9	0.36	0.00	0.036	224.0	33.0	5.72	2.80	1.83	1.21	0.04	0.41
3	ABg	3	21.0	33.0	5.1	7.3	0.48	0.00	0.054	401.0	58.0	15.85	6.95	7.18	4.58	0.04	0.92
3	Btg	4	33.0	60.0	6.0	7.5	0.27	0.00	0.028	355.0	47.0	12.84	4.40	5.66	3.80	0.05	0.73
3	Bmg	5	60.0	88.0	7.4	7.7	0.26	0.00	0.029	569.0	51.0	10.62	3.00	5.53	3.00	0.04	0.39
3	Ckg	6	88.0	105.0	7.7	8.5	0.19	19.71	0.017	464.0	449.0	8.84	0.00	10.45	2.75	0.03	0.29
4	Ah	1	0.0	14.0	5.8	7.5	3.74	0.00	0.299	387.0	328.0	26.64	9.40	16.35	5.02	0.08	1.07
4	Bmg1	2	14.0	30.0	5.8	6.4	0.81	0.00	0.066	225.0	88.0	14.32	4.07	7.37	3.08	0.04	0.61
4	Bmg2	3	30.0	50.0	6.8	7.6	0.38	0.00	0.043	269.0	73.0	14.19	2.30	9.25	3.60	0.05	0.68
4	Ckg1	4	50.0	74.0	7.7	8.6	0.23	11.08	0.029	403.0	358.0	8.40	0.00	9.82	2.72	0.05	0.42
4	Ckg2	5	74.0	100.0	7.9	8.6	0.23	19.58	0.019	448.0	463.0	9.33	0.00	11.55	3.91	0.06	0.45

Canadian Intersite Decomposition Experiment
Basic Mensuration Data by Plot for Termundee (TER)

					MENSURATION						
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGH	MAGE	SPEC1	SPEC2	SPEC3
–	–	32	5658.8	35.0	8.5	8.7	11.6	37.0	Poputrem	-	-
TER	All	32	5658.8	35.0	8.5	8.7	11.6	37.0			
TER	At	32	5658.8	35.0	8.5	8.7	11.6	.			
TER1	All	16	5658.8	36.6	8.6	8.5	11.5	38.0			
TER1	At	16	5658.8	36.6	8.6	8.5	11.5	.			
TER3	All	16	5658.8	33.5	8.4	9.0	11.6	36.0			
TER3	At	16	5658.8	33.5	8.4	9.0	11.6	.			

Appendix 2.20:

Site Information and Maps for Topley (TOP)

M. Kranabetter[1] and R. Trowbridge[2], B.C. Ministry of Forests, Prince Rupert Region[1] and

Boreal Research and Development[2], Smithers, B.C. V0J 2N0

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Topley (TOP)

Site Information

Map: NTS 93-L/9	Lat: 54 36 20	Long: 126 18 40	UTM Zone: 9	Easting: 673500	Northing: 6054100
Datum: NAD 27	Year: 1975	Aspect:	315	Slope: 2-12%	Elevation: 1100m

Macro site position: e) valley floor — Meso site position: e) toe

Site surface shape: c) straight — Microtopography: a) smooth

Meteorological Yearly Means and 30 Year Normal(51-80) for Topley Landing:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	62.5	30.3	22.5	16.5	35.8	50.9	55.4	48.3	32.7	40.6	59.7	57.7	512.9
Temperature ˚C	-12.3	-7.1	-3.0	2.5	7.7	11.8	14.1	13.4	9.4	3.8	-2.9	-8.0	2.5

Soil Classification: Hemimor/Orthic Gray Luvisol over morainal blanket

Ecological Classification:

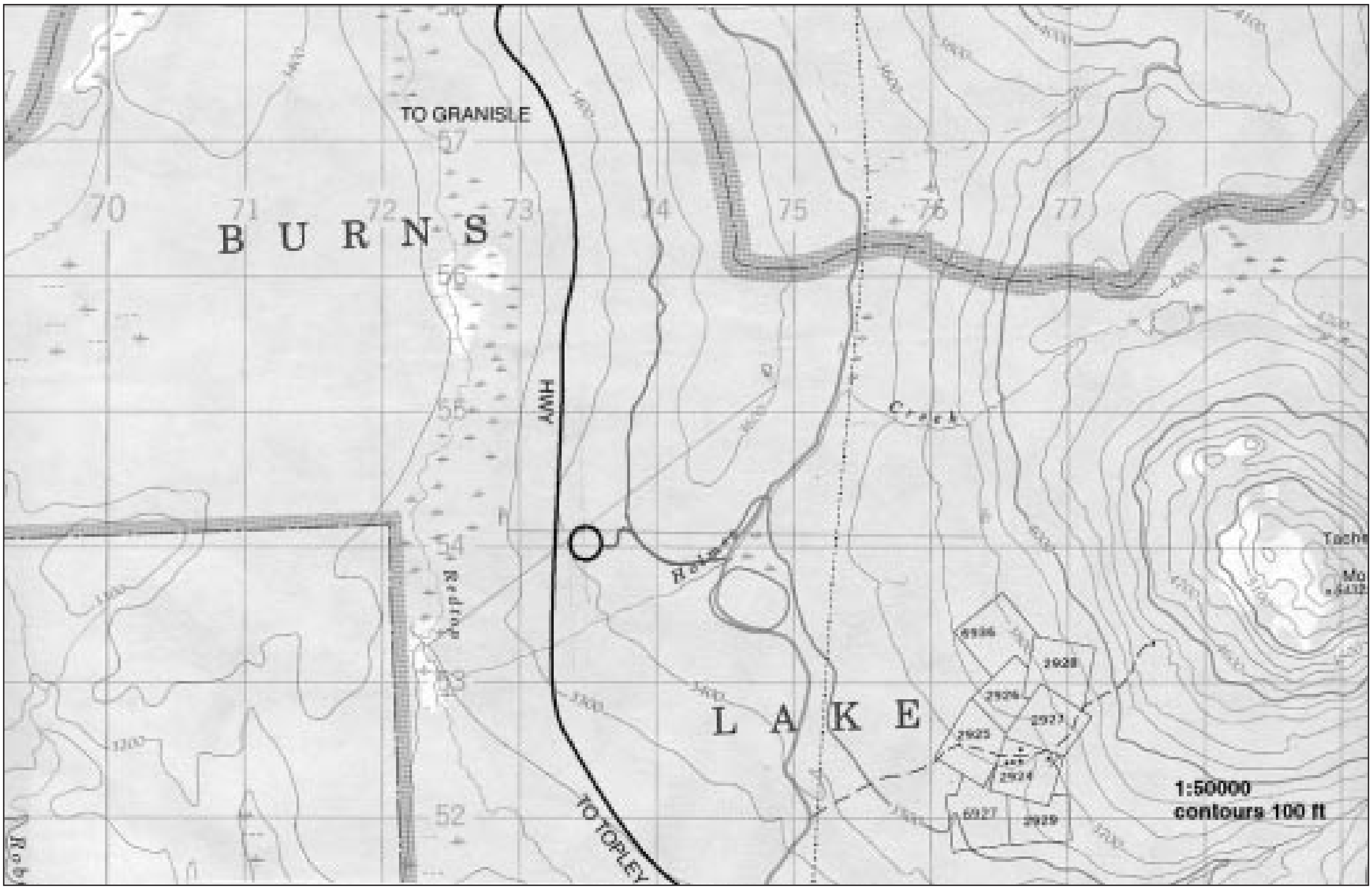
Canada Ecoclimatic Regions: Boreal Southern Cordilleran — Holdridge Lifezone: Cool Temperate Subalpine Moist Forest

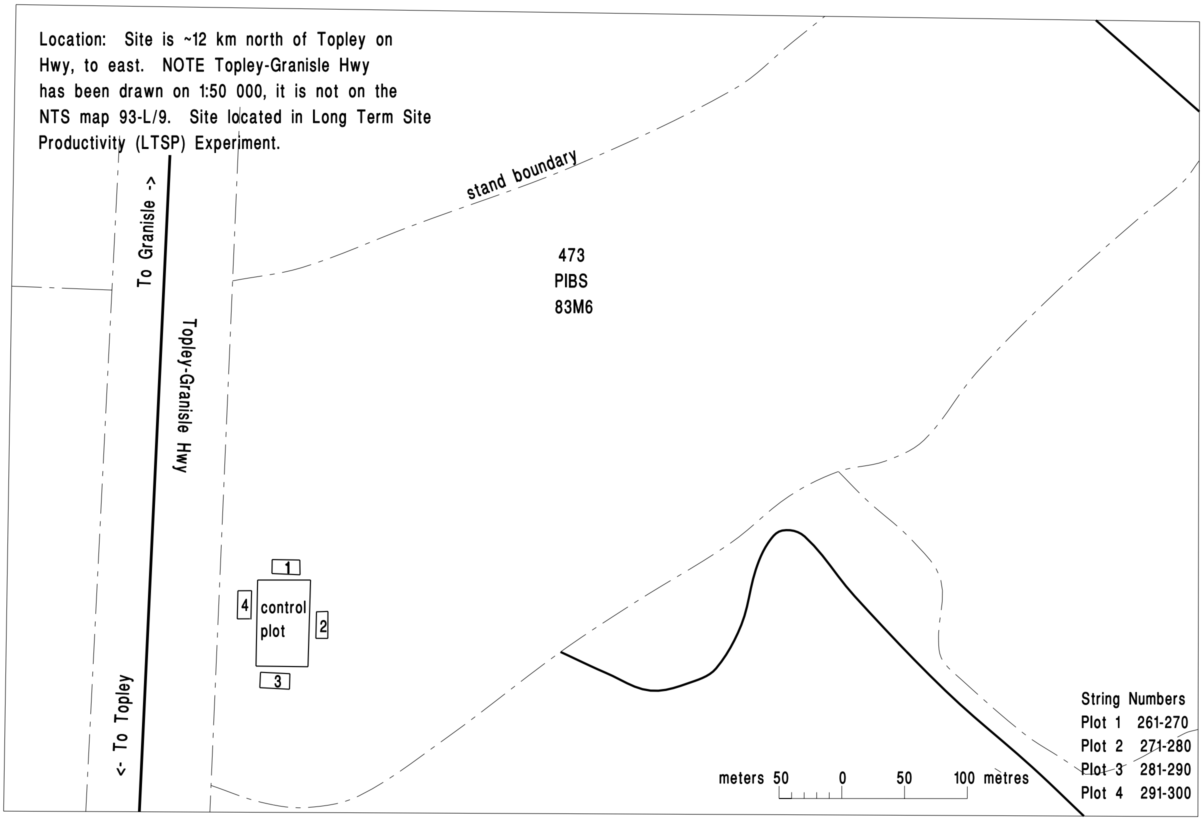
Summary Mensuration:

Species: Lodgepole Pine, Alpine Fir — No. of trees measured: 366.8
Mean density #/ha: 634 — Basal Area m^2/ha: 27.38
Mean DBH cm: 23.45 — Mean Height m: 21.78
Maximum Height m: 28.5 — Mean Age years: 144.6

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer A	*Pinus contorta 23%*	*Abiea lasiocarpa 25%*	*Picea glauca x engelmannii 16%*
Tree Layer B	*Abiea lasiocarpa 25%*	*Picea glauca x engemannii 5%*	*Alnus viridis 3%*
Shrub Layer	*Vaccinium membranaceum 10%*	*Lonicera involucrata 4%*	*Rubus parviflorus 7%*
Herb Layer	*Cornus canadensis 20%*	*Rubus pedatus 2%*	*Linnaea borealis 2%*
Moss Layer	*Pleurozium schreberi 50%*	*Ptilium crista-castrensis 30%*	*Hylocomium splendens 3%*
Epiphytic Layer	*Parmelia sulcata*	*Hypogymnia physodes*	*Hypogymnia enteromorpha*

Additional comments:





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Topley (TOP)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Topley (TOP)

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
S/L	8	7								Bryophyte layer with individual particles of coniferous litter; abrupt,smooth boundary; slightly dry.
Fm1	7	6					compact matted, firm, fibrous			Origin mostly moss; abrupt, smooth boundary; slightly dry; plentiful, medium, horizontal roots; gray mycelia.
Fm2	6	2					compact matted, firm, fibrous			Moss, needles, and leaves; abrupt, smooth boundary; slightly dry; plentiful, medium, horizontal roots; abundant white and yellow mycelia.
Fw	2	0					blocky, loose			Clear, broken; slightly dry; plentiful to abundant fine, few to many coarse horizontal and random roots.
Bm	0	2		15		loam	loose, friable, slightly sticky and plastic	10YR 4/4 (m)		Abundant, medium, horizontal in matrix and plentiful, fine, oblique inped roots; abrupt, wavy boundary; 1-3 cm thick
Ae	2	12		35		loam to clay	slightly hard, sticky	10YR 5/3(m)		Plentiful, medium, horizontal in matrix and few, coarse, loam sticky and plastic horizontal exped roots; abrupt wavy boundary; 5-18 cm thick.
Bt	12	40+		35		clay loam	hard, sticky and plastic	10YR 3/3 (m)		Few medium horizontal roots.

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Topley (TOP)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LF	8.0	.	.	39.83	1.1700	0.1800	2405.00	275.00	14.000	406.500	40.25
2	LF	8.0	.	.	40.46	1.0800	0.1560	2525.00	395.00	0.180	275.000	3.65
3	LF	8.0	.	.	40.09	0.9975	0.1545	1780.00	275.50	9.000	294.000	21.10
4	LF	8.0	.	.	38.20	0.9675	0.1335	2550.00	513.00	9.500	227.500	28.90

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	Ae&Bm	1	0.0	10.0	4.2	4.6	2.82	0.00	0.098	637.0	77.0	19.47	15.35	4.07	1.09	0.05	0.15
2	Ae&Bm	1	0.0	10.0	4.4	5.0	1.23	0.00	0.062	488.0	59.0	12.82	8.85	4.15	1.79	0.05	0.05
3	Ae&Bm	1	0.0	10.0	4.3	4.9	1.22	0.00	0.058	614.0	57.0	13.83	13.05	3.15	0.88	0.04	0.03
4	Ae&Bm	1	0.0	10.0	4.3	4.7	5.50	0.00	0.238	1003.0	165.0	39.79	31.65	13.16	5.50	0.12	0.31

Appendix 2.21:

Site Information and Maps for Whitehorse (WHI)

S. Smith[1] and D. White[2], Agriculture Branch, Government of Yukon[1] and

Dept. Indian and Northern Affairs[2], Whitehorse, YT. Y1A 3V1

Canadian Intersite Decomposition Experiment

Basic Site Description Data for Whitehorse (WHI)

Site Information

Map: NTS 105-D/14 Lat: 60 51 10 Long: 135 12 50 UTM Zone: 8 Easting: 488600 Northing: 6746500
Datum: NAD27 Year: 1984 Aspect: 185 Slope: 2.0% Elevation: 667
Macro site position: f) valley floor Meso site position: g) level
Site surface shape: c) straight Microtopography: a) smooth

Meteorological Yearly Means and 30 Year Normal(51-80) for Whitehorse Airport:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	30 year
Precipitation mm	17.7	13.3	13.5	9.5	12.9	30.7	33.9	37.9	30.3	21.5	19.8	20.2	261.2
Temperature ˚C	-20.7	-13.2	-8.2	0.3	6.7	12.0	14.1	12.5	7.5	0.6	-8.8	-16.6	-1.2

Soil Classification: Orthic Eutric Brunisol O.EB

Ecological Classification:

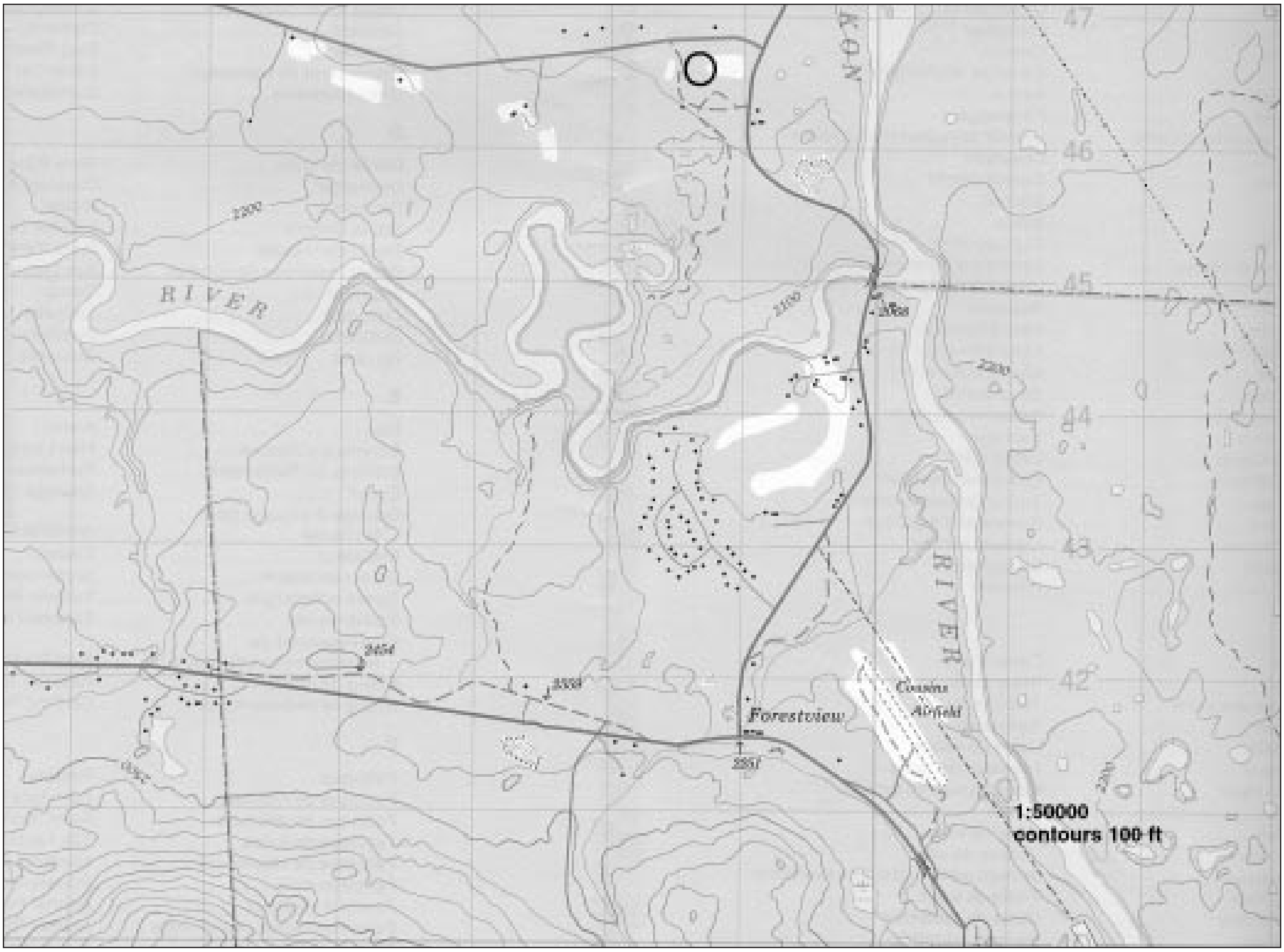
Canada Ecoclimatic Regions: Boreal Northern Cordilleran Holdridge Lifezone: Cool Temperate Subalpine Moist Forest/(Dry Scrub)

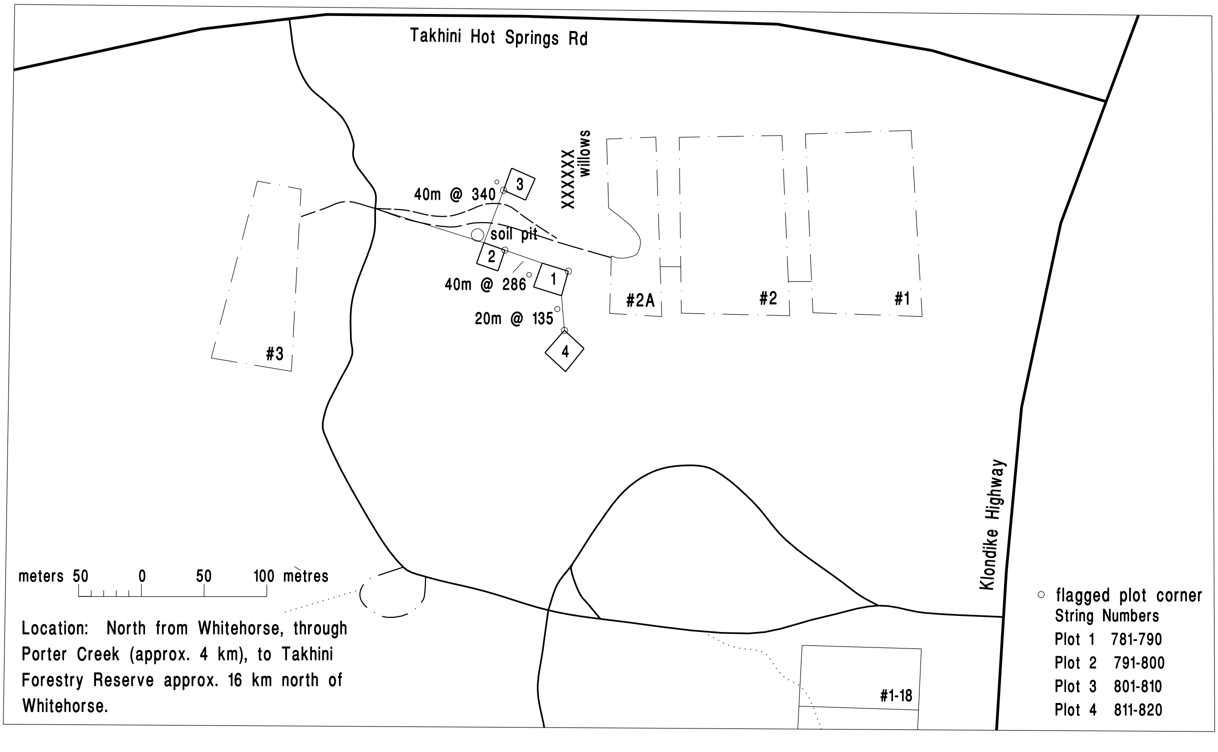
Summary Mensuration:

Species: Lodgepole Pine, White Spruce, Trembling Aspen No. of trees measured: 76
Mean density #/ha: 1197.6 Basal Area m^2/ha: 17.87
Mean DBH cm: 11.97 Mean Height m: 10.29
Maximum Height m: 20.2 Mean Age years: 102.9

Vegetation:	**Primary**	**Secondary**	**Tertiary**
Tree Layer	*Pinus contorta*	*Populus tremuloides*	*Picea glauca*
Shrub Layer	*Arctostaphylus uva-ursi*	*Linnea borialis*	
Herb Layer	*Festuca altaica*	*Epilobium angustifolium*	*Pyrola assarifola/Pediculais groenlandicus*
Moss Layer	*Cladina spp.*	*Hylocomium splendens*	*Peltigera malacea*

Additional comments:





Site location (1:50 000 NTS) and plot layout (1:5 000) maps for Whitehorse (WHI)

Canadian Intersite Decomposition Experiment
Site Level Soil Descriptions for Whitehorse (WHI)

DESCRIPTION

HOR	DEPTH UP	DEPTH LOW	COARSE <7.5	FRAGMENT 7.5-25	DESC. >25	SOIL TEXTURE	STRUCTURE	COLOUR(DRY)	PH	NOTES
L	5	4								Humus form is 3-5cm thick, occasionally missing on disturbed microsites. Litter composed of pine needles and crustose lichens. Fq horizon black in colour, somewhat Felty, plentiful roots fine > coarse. Humus very dry during much of growing season, site is well drained. Much volcanic ash mixed with Fq horizon, difficult to separate.
Fq	4	0								
ASH	0	5		0	0	Silt loam	Weak fine platy	10 YR7/2		Volcanic ash only slightly weathered
Bm1	5	15		0	0	Fine sandy loam	Weak fine subangular blocky	10YR5/4		
Bm2	15	25		0	0	Loamy sand	Very weak medium subangular blocky	10YR6/8		Sandy layer with irregular colours
Bm3	25	52		0	0	Loam	Weak medium subangular blocky	25YR6/4		Irregular horizon
BC	52	59		0	0	Loam	Weak fine subangular blocky	25YR5/2		
Ck	59	+		0	0	Loam	Weak medium Kind: P	25YR5/2		

Canadian Intersite Decomposition Experiment
Surface Organics (LFH) and Mineral Soil Chemistry for Whitehorse (WHI)

SURFACE ORGANICS

PLOT	HORIZON	LFHDEPTH	LFHAREA	TOTWT	CPCT	NPCT	PPCT	CAPPM	MGPPM	NAPPM	KPPM	CECCMLKG
1	LFq	5.0	.	108.6	33.15	0.8550	0.1080	2350.00	432.00	50.780	249.000	31.10
2	LFq	5.0	.	128.9	31.42	1.3350	0.0915	5235.00	508.00	0.000	177.000	54.55
3	LFq	5.0	.	107.0	35.35	1.1700	0.0990	3395.00	340.00	0.000	188.500	37.35
4	LFq	5.0	.	150.9	32.20	1.2450	0.2490	4625.00	508.50	0.000	285.000	56.85

MINERAL SOIL

PLOT	MHORIZ	L	UP	LOW	PHCA	PHH2	ORGC	INORGC	TOTN	TOTP	TOTS	BUFCEC	EXTACID	EXCA	EXMG	EXNA	EXK
1	ASH	1	0.0	5.0	4.5	5.0	2.53	0.00	0.084	611.0	66.0	10.23	9.00	3.53	0.88	0.03	0.29
1	Bm1	2	5.0	15.0	5.0	5.7	0.48	0.00	0.025	429.0	50.0	8.25	2.65	4.80	1.10	0.01	0.15
1	Bm2	3	15.0	25.0	5.8	6.5	0.11	0.00	0.005	568.0	30.0	5.03	0.80	2.60	0.65	0.01	0.15
2	ASH	1	0.0	5.0	5.3	6.2	1.44	0.00	0.054	935.0	56.0	10.35	6.55	6.83	0.75	0.03	0.13
2	Bm1	2	5.0	15.0	4.9	6.1	0.75	0.00	0.026	432.0	51.0	9.57	4.30	5.88	0.88	0.02	0.15
2	Bm2	3	15.0	25.0	5.9	6.7	0.16	0.00	0.011	638.0	50.0	7.05	1.60	4.32	0.80	0.01	0.20
3	ASH	1	0.0	5.0	4.9	5.5	1.96	0.00	0.067	656.0	60.0	10.64	8.20	5.26	0.63	0.05	0.07
3	Bm1	2	5.0	15.0	5.3	6.0	0.48	0.00	0.022	386.0	45.0	8.36	3.10	5.11	0.80	0.03	0.06
3	Bm2	3	15.0	25.0	5.4	6.1	0.32	0.00	0.015	611.0	40.0	6.41	2.13	3.35	0.60	0.02	0.10
4	ASH	1	0.0	5.0	4.9	5.5	1.81	0.00	0.068	388.0	72.0	11.22	7.90	6.38	0.83	0.04	0.20
4	Bm1	2	5.0	15.0	5.8	6.3	0.70	0.00	0.036	311.0	58.0	13.38	2.75	9.99	1.77	0.04	0.15
4	Bm2	3	15.0	25.0	7.4	7.8	0.35	0.42	0.027	387.0	82.0	10.62	0.25	8.93	1.87	0.03	0.23

Canadian Intersite Decomposition Experiment

Basic Mensuration Data by Plot for Whitehorse (WHI)

					MENSURATION						
PLOTSITE	TTYPE	NTRSMEAS	MDENSITY	BAREA	MDBH	MHEIGHT	MAXHEIGH	MAGE	SPEC1	SPEC2	SPEC3
–	–	76	1197.6	17.9	12.0	10.3	20.2	102.9	Pinucont	Piceglau	Poputrem
WHI	ALL	76	1197.6	17.9	12.0	10.3	20.2	102.9			
WHI	Pl	34	535.8	11.5	15.8	13.5	20.2	.			
WHI	Sw	18	283.6	4.9	13.3	11.4	19.2	.			
WHI	A	24	378.2	1.5	5.6	4.9	6.9	.			
WHI1	ALL	21	2673.8	42.6	13.5	12.6	19.2	99.5			
WHI1	Pl	16	2037.2	32.7	13.7	13.0	17.1	.			
WHI1	Sw	3	382.0	9.0	16.6	14.9	19.2	.			
WHI1	A	2	254.6	0.9	6.7	5.5	6.3	.			
WHI2	ALL	17	1104.3	14.7	10.6	8.8	17.4	104.0			
WHI2	Pl	7	454.7	11.5	16.5	12.2	17.4	.			
WHI2	Sw	3	194.9	2.6	12.6	11.9	14.8	.			
WHI2	A	7	454.7	0.6	3.8	4.1	6.6	.			
WHI3	ALL	20	994.7	14.0	11.4	9.5	17.2	105.5			
WHI3	Pl	7	348.2	9.2	18.2	14.4	17.2	.			
WHI3	Sw	6	298.4	3.8	11.2	9.7	14.9	.			
WHI3	A	7	348.2	1.1	5.0	4.4	4.5	.			
WHI4	ALL	18	895.3	14.5	12.1	9.9	20.2	102.5			
WHI4	Pl	4	198.9	5.5	18.4	16.4	20.2	.			
WHI4	Sw	6	298.4	6.2	14.1	11.1	19.2	.			
WHI4	A	8	397.9	2.8	7.6	5.9	6.9	.			