

# Databases, Glossary, and Conversions

## Chapter 12

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## Available Digital Databases

Table 1. Listing of base maps relevant to northwest Alberta. Modified from information provided by Information Centre, Data Services Section, Alberta Environmental Protection.

Coverage Title	General Scale	Government Contact
Federal Boundaries Maps		
National Parks	1:1,000,000	Doug Knight 422-0221
Metis Settlements	1:1,000,000	Doug Knight 422-0221
Provincial Base		
Large Scale	1:20,000	Doug Knight 422-0221
Medium/Small Scale	1:250,000	Doug Knight 422-0221
Small Scale	1:1,000,000	Doug Knight 422-0221
Access	1:50,000	Doug Knight 422-0221
Digital Elevation Model (DEM)	1:20,000	Doug Knight 422-0221
Hydrology	1:1,000,000	Doug Knight 422-0221
Parcel Mapping	5,000 Twps	Carol Kennedy 427-6467
Digital Terrain Elevation Modeling	1:1,000,000	Ken Ewchuk 427-5955
Municipal Integrated Survey & Mapping Program	1:1000,1:5000	Gary Ryder 427-6467

Table 2. Listing of geoadministrative maps relevant to northwest Alberta. Modified from information provided by Information Centre, Data Services Section, Alberta Environmental Protection.

Coverage Title	General Scale	Government Contact
Registered Fur Management Areas	1:1,000,000	Della Clish 427-6729
Wildlife Management Units	1:1,000,000	Della Clish 427-6729
Fish and Wildlife Districts and Regions	1:1,000,000	Della Clish 427-6729
Municipalities and Improvement Districts	1:1,000,000	Della Clish 427-6729
LFS Forest Management Areas (Leases)	1:1,000,000	Gavin Noonan 427-9044
Forest Management Units	1:1,000,000	Gavin Noonan 427-9044
Forest Management Areas	1:1,000,000	Gavin Noonan 427-9044
Public Lands General Classification	1:1,000,000	Gavin Noonan 427-9044
Corporate Regional Boundaries	1:1,000,000	Gavin Noonan 427-9044

Table 3. Listing of thematic datasets relevant to northwest Alberta. Modified from information provided by Information Centre, Data Services Section, Alberta Environmental Protection.

Coverage Title	General Scale	Government Contact
Natural Regions and Subregions of Alberta	1:1,000,000	Bob Anderson 427-3533
Environmentally Significant Areas	1:1,000,000	
Foothills Natural Region	1:500,000	Lucy Faferek 427-7222
Boreal Region	1:500,000	Lucy Faferek 427-7222
Range Inventory Reserves	various scales	Al Benner 422-0963
Reconnaissance Vegetation Inventory	1:100,000	Elaine Anderson 427-0476
LFS Fire Protection Areas	1:1,000,000	Gavin Noonan 427-9044
Alberta Vegetation Inventory (AVI)	1:20,000	Phil Mackenzie 427-3138
AVI Status Map	1:4,000,000	Diane Olson 427-3524
Old Growth Forest F9	1:20,000	Alberta Parry 427-3524
Points of Interest	1:1,000,000	Lucy Faferek 427-7222
Natural Areas	1:100,000	Ken Lowe 427-8522
Timber Development Areas	1:250,000	Ken Lowe 422-4858
Provincial Recreational Areas	1:1,000,000	Gavin Noonan 427-9044
Lookout Tower Markers	1:1,000,000	Gavin Noonan 427-9044
Navigation Grid - Air Operations	1:1,000,000	Gavin Noonan 427-9044
NTS Grid - Reference	1:1,000,000	Gavin Noonan 427-9044
Critical Wildlife Habitat Area Maps	1:50,000	Heather Wilson 422-4908
Climate Information System	100000 records	Livio Fent 427-0708
Native Prairie Vegetation Inventory	1:250,000	Elaine Anderson 427-0476
Ecological Site Information System	11,305 records	Elaine Anderson 427-0476
Landsat Imagery Catalogue	in progress	Elaine Anderson 427-0476
RDD Reports Bibliography	662 report files	Elaine Anderson 427-0476
Current Vegetation Typing	1:1,000,000	Elaine Anderson 427-0476
Quarter Section Soil Inventory (SIDMAP)	1:250,000	Leon Marciak 422-4385
Special Places 2000 Nominated	1:1,000,000	John Rintoul 427-5209
Fire Incidence	1:250,000	Rick Strickland 427-????
Agriculture Canada - Old Soil Survey	1:250,000	Wayne Pettipiece 495-5539
LSAS	1:250,000	
CAESA - Soil Inventory Project	1:250,000	Larry Nikiforuk 462-2434

## Glossary

The terms in this glossary were taken from, or adapted from, the glossaries of:

- Agriculture Canada Expert Committee on Soil Survey. 1987. The Canadian system of soil classification. 2nd edition. Agriculture Canada Publishing. 1646. 164 pp.
- Agriculture Canada. 1986. The Canadian System for Soil Classification, 2nd ed. 164 pp.
- Alberta-Pacific Forest Industries Inc. 1989. Alberta Pacific Forest Industries Inc. Environmental Impact Assessment. Bleached Kraft Mill Main Report. Alberta, Canada.
- Allaby, M. 1989. MacMillan Dictionary of the Environment, 3rd ed. New York University Press, New York, U.S.A. 423 pp.
- Allaby, M., ed. 1984. The Concise Oxford Dictionary of Ecology. Oxford University Press, New York, NY.
- Anonymous. 1990. Webster's New World Encyclopedia. Prentice Hall General Reference, New York, NY.
- Anonymous. 1995. Demographic characteristics of the Mackenzie region. Prepared by Mackenzie Municipal Services Agency.
- Crouch, J. E. 1985. Functional Human Anatomy. 4th Edition. Lea & Febiger, Philadelphia.
- Federal-Provincial Subcommittee on Drinking Water of the Federal-Provincial Advisory Committee on Environmental and Occupational Health. 1993. Guidelines for Canadian Drinking Water Quality, 5th ed. Ottawa, Ontario, Canada. 24 pp.
- Hale, W.G. and Margham, J.P. 1988. Collins Reference Dictionary of Biology. Collins, London, England.
- Hayward, A.L. and Sparkes, J.J. 1984. The Concise English Dictionary, 5th ed. Omega Books, London, England. 1348 pp.
- Kent, M; and Coker, P. 1992. Vegetation description and analysis. CRC Press, Boca Raton, FL.
- Krebs, C.J. 1985. Ecology, The Experimental Analysis of Distribution and Abundance, 3rd ed. Harper & Row Publishers, New York.
- Levine, J.S.; and Miller, K.R. Biology: Discovering life. 2nd edition. D.C. Heath, Toronto, Ontario, Canada. 988 pp.
- Little, R.J.; and Jones, C.E. 1980. A dictionary of botany. Litton Educational Publishing, Inc. New York, N.Y.
- McGraw-Hill. 1994. Concise Encyclopedia of Science and Technology, 3rd edition. McGraw-Hill, Toronto, Canada.
- Mitchell, L.G., Mutchmore, J.A. and Dolphin, W.D. 1988. Zoology. The Benjamin/Cummings Publishing Company, Inc., Toronto, Ontario, Canada.
- Mitchell, P. and Prepas, E. (Editors). 1990. Atlas of Alberta Lakes. The University of Alberta Press. Edmonton, Alberta, Canada. 675 pp.
- Morris, C. 1992. Academic Press Dictionary of Science and Technology. Academic Press, Toronto, Ontario, Canada.
- Peterson, E.B.; Peterson, N.M. 1992. Ecology, management, and use of aspen and balsam poplar in the prairie provinces. Northwest Region, Forestry Canada, Special Report 1.
- Raven, P.H.; Evert, R.F.; and Eichhorn, S.E. 1986. Biology of plants. Fourth edition. Worth Publishers Inc., New York, N.Y.
- Ford- Robertson, F.C. (Editor) 1983. Terminology of Forest Science Technology Practice and Products. Society of American Foresters. The Multilingual Forestry Terminology Series No.1. Addendum Number One.
- Thomas, J.W. (editor). 1993. Forest ecosystem management: an ecological, economic, and social assessment. Report of the Forest Ecosystem Management Assessment Team. U.S. Department of Agriculture, Forest Service.
- Vitt, D.H.; Marsh, J.E.; and Bovey, R.B. 1988. Mosses, lichens & ferns of Northwest North America. Lone Pine Publishing, Edmonton, AB.
- Webster's New Collegiate Dictionary. 1975. G.&C. Merriam Company, Springfield, Massachusetts. U.S.A. 1535 pp.
- Westworth & Associates Ltd. 1991. A biophysical overview and resource assessment of the proposed Lakeland Provincial Park and Provincial Recreational Area. Prepared for Alberta Recreation and Parks, Provincial Parks Service Edmonton, AB.
- Wolf, H.R. (Editor). 1981. Webster's new collegiate dictionary. G. & C. Merriam Company, Springfield, MA.

**aesthetic objective:** defined under the Guidelines for Canadian Drinking Water Quality as the highest recommended level of a particular substance in water that does not cause an objectionable taste, smell, etc. to consumers

**aesthetic:** dealing with those aspects that are perceivable by the senses

**age structure:** the distribution of people in a population by age intervals.

**algae:** a large group of mainly aquatic one-celled or multi-celled plants, lacking true stems, roots and leaves

**annual allowable cut (AAC):** 1) the annual amount of timber that can be harvested on a sustainable basis within a defined planning area, 2) the gross amount of timber volume, including salvage, that may be harvested from a specific area over a stated period from guidelines of the Lands and Forest Service, 3) the volume of forest produce that may be harvested on an annual basis from a specified area in accordance with management regulations

**anoxic:** depleted of oxygen, anaerobic

**aquifer:** permeable rock capable of yielding groundwater to wells and springs

**arboreal:** living in or on trees.

**aromatic compounds:** organic compounds incorporating a closed chain or ring nucleus in its structure

**arthropod:** animal from the phylum Arthropoda, e.g., insect, spider, crustacea.

**aspect:** the direction a slope faces.

**associated species:** a species found to be numerically more abundant in a particular forest successional stage or type compared to other areas.

**autecological:** the study of the ecology of a single species.

**autogenic:** produced by internal forces or mechanisms.

**b horizon:** that stratum of the soil termed the zone of accumulation in which clay, cations and chemicals are deposited.

**baby boom:** the dramatic rise in the birth rate following World War II and lasting well into the 1950's.

**basal area:** the cross section area of a tree stem including the bark.

**baseline data:** information describing select characteristics of the existing environment, serving as a base against which future changes in the environment can be compared

**benthic invertebrates:** spineless, insect-like organisms that live in the bottom sediments of lakes and rivers

**benthos:** the plant or animal life whose habitat is the bottom of a sea, lake or river

**Beringia:** ice bridge which connected North America and Siberia during the last ice age.

**bioaccumulation:** a process by which substances are ingested and retained by organisms, either from the environment directly or through the consumption of food containing the chemicals

**biochemical oxygen demand (BOD):** the quantity of dissolved oxygen used in the breakdown of organic matter by bacteria and in the oxidation of minerals such as ferrous iron

**biodiversity:** the variety of life forms and processes, including the complexity of species, communities, and gene pools.

**bioindicators:** living organisms used to monitor changes in an ecosystem

**biological legacies:** large trees, down logs, snags, and other components of the forest stand left after a stand-initiating disturbance.

**biology:** the study of life

**biomagnification:** a cumulative increase in the concentration of a persistent substance in successively higher levels of the food chain

**biomarker:** a physiological measure used to indicate a toxic event in an animal

**biomass:** the total mass of living organisms of one or more species per unit of space.

**biophysical:** pertaining to both living and non-living attributes.

**biota:** all living organisms, the flora and fauna of a region.

**bleached kraft pulp mill:** an industrial plant that manufactures pulp from wood, using a process that relies on strong and highly alkaline chemicals to break down wood chips and whiten pulp; chlorine is often employed as a bleaching agent in this process

**bloom:** an unusually large number of organisms per unit of water, usually algae, made up of one or a few species

**blowdown:** trees felled by high winds.

**bole:** the unbranched trunk or stem of a tree.

**breast height:** A standard height from ground level (1.5) for recording diameter, girth, or basal area of a tree.

**bryophyte:** green land plants that consist of mosses, liverworts, and hornworts. This group has poorly developed water and food conducting systems.

**canopy closure:** the degree to which the forest canopy blocks sunlight or obscures the sky.

**canopy:** a layer of foliage in a forest stand. This most often refers to the uppermost layer of foliage, but it can be used to describe lower layers in a multistoried stand.

**cardinal:** North, East, South, or West compass directions.

**carnivore:** any strictly flesh-eating organism; a secondary consumer in the food chain

**cavity excavator:** wildlife species that digs or chips out cavities in trees or snags to provide nesting, roosting, or foraging sites.

**cavity nester:** wildlife species that require cavities (holes) in trees for nesting and reproduction.

**census of population:** an official enumeration of an entire population usually with details as to age, sex, occupation, etc.

**census subdivision:** refers to the general term applying to municipalities, Indian Reserves, Indian settlements and unorganized territories.

**cervid:** a hoofed mammal of the deer family.

**chemithermomechanical pulp (CTMP) mill:** an industrial plant that manufactures pulp from wood, using a process that combines heat, mild chemicals and mechanical action to break down wood chips into a soft pulp

**chironomid:** midge; an insect in the family Chironomidae

**clearcut harvest:** a timber harvest method in which all trees are removed at one time from an area, to create an even-aged stand.

**clearcut:** a harvest in which all of the trees are removed at one time.

**climax:** the culminating stage in plant succession for a given site where the vegetation has reached a stable condition.

**clone:** any group of plants derived from a single individual by vegetative reproduction. All members of a clone have the same genetic makeup and consequently tend to be uniform.

**cohort:** individuals all resulting from the same birth-pulse, and thus all of the same age.

**co-management:** management shared by more than one individual or party

**commercial fishery:** the catching of fish for sale and profit

**community:** pertaining to plant or animal species living in close association and interacting as a unit.

**competition:** interactions that exist among individuals that use similar limited resources.

**confidence interval:** a range, calculated using statistics, that indicates the upper and lower bounds of a parameter.

**confidence level:** the probability that the true value for a parameter is included within the confidence interval.

**conifer:** a tree belonging to the evergreen order (Gymnospermae). Conifers bear cones and needle-shaped or scalelike leaves.

**conk:** a hard, spore-bearing structure that projects outwards from the bark of a tree, caused by wood-destroying fungi.

**contaminant:** any foreign or unwanted substance.

**cover type:** a group of trees of similar composition that can be differentiated from other such groups. Forest cover types are usually separated and identified by species composition and often by height and crown closure classes. In detailed typing, the age and site may also be recognized. Typing is usually done using aerial photographs supplemented by field data.

**cover:** vegetation used by wildlife to hide from predators, to mitigate weather conditions, or to reproduce. May also refer to the protection of the soil and the shading provided by herbs and forbs by vegetation.

**crown cover:** the percentage of the ground surface that would be covered by a downward vertical projection of foliage in the crowns of trees.

**crown:** the upper part of a tree or other woody plant where the branches and foliage are found.

**crude birth rate:** number of births in a given year divided by the total population of that year.

**crude death rate:** number of deaths in a given year divided by the total population of that year.

**cryptogams:** bryophytes and lichens.

**cumulative effects:** the sum total of environmental impacts resulting from a number of individual developments

**cutover:** refers to a logged site.

**database:** a collection of information on a particular topic

**decadence:** trees that are deformed (i.e., broken tree tops, irregular boles and branching).

**deciduous:** trees or shrubs that generally shed their leaves annually. The wood of deciduous trees is usually known as hardwood.

**defoliators:** insects and other organisms that feed on foliage and remove some or all of the foliage from a tree, shrub, or herb.

**delta:** the body of sediment deposited at the mouth of a river.

**demography:** the quantitative analysis of age and sexual structure of a population.

**detritivores:** organisms that consume refuse (detritus) such as dead plant material, faeces and animal remains

**df:** Degree of freedom, a statistical term that is used to calculate significance level and power.

**diameter at breast height (DBH):** the diameter of a tree 1.5 m above the ground on the uphill side of the tree.

**discharge:** the rate of flow in a stream or river, or flow of effluent from a point source.

**dispersal:** the movement, usually one way, of plants or animals from their point of origin to another location where they subsequently produce offspring.

**dissolved oxygen:** molecular oxygen that is in solution in a liquid.

**disturbance:** a force that causes significant change in structure and/or composition of a habitat.

**diversity:** the variety, distribution, and abundance of different plant and animal communities and species within an area.

**domestic fishery:** the catching of fish for individual needs.

**down log:** portion of a tree that is lying on or near the ground.

**down woody material (DWM):** all woody material lying on or near the ground.

**downstream:** away from the source of a stream (i.e., downriver).

**drainage basin:** the land surrounding a water body that contributes surface water to that body.

**duff layer:** the layer of loosely compacted material underlying the litter on the forest floor.

**ecology:** the study of the interaction among plants, animals and their environment.

**ecoregion:** one part of an ecoprovince characterized by regional ecological interactions between the four major environmental components of the ecosystem: air, water, land and biota.

**ecosystem approach:** an approach to ecosystem management that emphasizes the need to collect and synthesize information on ecosystem structure and function, recognizes that different levels within the ecosystem are interrelated and interdependent, and necessitates management strategies that are ecological, anticipatory and ethical.

**ecosystem health/integrity:** the adequate structure and functioning of an ecosystem, as described by scientific information and societal priorities.

**ecosystem indicators:** a measure (physical, chemical, biological, sociological) that provides evidence as to the state of the ecosystem.

**ecosystem:** 1) the interaction between organisms, including humans, and their physical environment, 2) a unit comprising interacting organisms and their environment.

**ecotone:** a transition area between two communities which has characteristics of both, as well as characteristics of its own.

**edaphic:** referring to the soil. The influence of the soil upon plant growth is referred to as an edaphic factor.

**edge:** where distinctive plant communities meet.

**effluent:** a waste material (e.g., sewage or industrial discharges) discharged to the environment.

**eluvial horizon:** soil layer characterized by the eluviation of clay, iron, aluminum or organic matter alone or in combination.

**eluviation:** the transportation of dissolved or suspended material in the soil by the movement of water.

**endemic:** a species that is unique to a specific locality.

**endomycorrhizal fungi:** a mycorrhizal fungi in which fungal hyphae penetrate the root cells of plants.

**epiphyte:** a plant that grows upon another plant and is nonparasitic, merely using the host as a means of support.

**epixylic:** a plant which grows upon dead wood.

**erosion:** the breakdown of rock into smaller particles and its removal by wind, water or ice.

**eutric brunisol:** a soil type described by the Canadian system of soil classification. These soils are in an early developmental stage, lack a well-developed mineral-organic surface horizon, and occur mainly on parent material under forest or shrub vegetation.

**eutrophic waters:** waters with a good supply of nutrients capable of supporting rich organic productions, such as algal blooms.

**eutrophication:** the process whereby water bodies become biologically more productive due to an increased nutrient supply.

**even-aged forest:** a forest stand comprising trees with less than a 20-year difference in age.

**ex-situ:** out of its original place, used to describe experiments that are not conducted in the field.

**extant:** refers to species that are alive today.

**extended rotation age:** a point in time when trees are harvested or planned to be harvested that is beyond the age when harvest ordinarily would occur.

**extended rotation:** a period of years that is longer than the time necessary to grow timber crops to a specific condition of maturity.

**fertility:** reproductive performance rather than the mere capacity; one of the three basic demographic processes of fertility, mortality and migration.

**fire regime:** the characteristic frequency, extent, intensity, severity, and seasonality of fires in an area.

**fire return interval:** average number of years required for fire to burn an area over.

**fire severity:** the degree to which a site has been altered or disrupted by fire.

**fire suppression:** the practice of control and extinguishing of fires.

**flood plain:** lowland and relatively flat areas adjacent to a river channel, formed from sediments deposited by the river during floods

**flyway:** a geographic migration pathway for birds, including breeding and wintering areas

**food chain:** a specific nutrient and energy pathway in ecosystems proceeding from producer to consumers; along the pathway, organisms in higher trophic levels gain energy and nutrients by consuming organisms at lower trophic levels

**food web:** the complex intermeshing of individual food chains in an ecosystem

**forest canopy:** the cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

**forest fragmentation:** the change in the forest landscape, from extensive and continuous forests.

**forest inventory:** a survey of a forest area to gather such data as area, condition, volume and species, for specified purposes such as planning, purchase, evaluation, management or harvesting.

**forest landscape:** land presently forested or formerly forested and not currently developed for nonforest use.

**forest management agreement (FMA):** in Alberta, an agreement between the government and a company regarding timber harvesting access, rights and obligations in a given area.

**forest management unit (FMU):** an area of forest land managed as a unit for wood fibre production and other renewable resources.

**forest succession:** the orderly process of change in a forest as one plant community or stand condition is replaced by another, evolving toward the climax type of vegetation.

**forest:** a collection of stands that occur in similar space and time.

**fragmentation:** the process of reducing size and connectivity of stands that compose a forest.

**fungi:** a kingdom of filamentous terrestrial organisms.

**gall:** a plant tumor made up of modified tissue structure, often in response to damage by an insect or some other agent.

**geomorphology:** the physical shape and configuration of landforms.

**geomorphology:** the study of the physical features of the earth's surface.

**glacial till:** unstratified, poorly sorted material deposited directly by ice; consisting of clay, silt, sand, gravel and boulders.

**green tree:** a live tree.

**groundwater:** that portion of the total precipitation that is passing through or standing in the soil and the underlying strata and is free to move under the influence of gravity.

**groundwater:** water that occupies pores and crevices in rock and soil, below the surface and above a layer of impermeable material.

**habitat:** 1) the environment in which a population or individual occurs, including the particular characteristics of that place (climate, food availability) that make it especially well-suited to that species, 2) the place where a plant or animal naturally or normally lives and grows.

**hard snag:** a recently dead standing tree that typically still has an intact top, a high degree of bark cover, and most limbs. A hard snag is composed primarily of sound wood, and is generally merchantable.

**hardwood:** the wood of a deciduous species of tree.

**headwaters:** the upper reaches of a drainage system.

**heartwood:** the inner core of a woody stem composed of non-living cells and usually differentiated by its darker color than the outer wood layer.

**herb:** a nonwoody seed plant.

**herbicide:** a chemical used to destroy or deter plant growth.

**herbivores:** strictly plant-eating animals; primary consumers in the food chain.

**heterogeneity:** Variation in the environment over space and time.

**hiding cover:** any vegetation used by wildlife for security or to escape from danger.

**home range:** that area that an animal traverses in the scope of normal activities, the general area of an organisms' normal activity.

**horizon:** a layer in the soil profile approximately parallel to the land surface with more or less well-defined characteristics that have been produced through the operation of soil forming processes.

**humification:** the process of decomposing organic matter.

**humus:** the fraction of the soil organic matter that remains after most of the added plant and animal residues have decomposed. It is usually dark colored. It may also refer to all the dead organic material on and in the soil that undergoes continuous breakdown, change, and synthesis.

**hydrograph:** a graph indicating the flow (discharge), stage (level), velocity, or other characteristics of flowing water at a given location over time.

**hydrology:** the science of water, its properties, phenomena, laws and distribution.

**hypoxia:** the failure of oxygen to gain access to, or to be utilized by the body.

**hypsihermal:** historic periods of warmer, dryer weather.

**ice jam:** an accumulation of broken river or sea ice caught in a narrow channel.

**immigration:** movement of individuals into a population.

**improved land:** the area of improved land consists of the total of the areas reported for the following four land categories: crop land, improved pasture, summerfallow and other improved land, such as farm yards, idle land, gardens, lanes and roads.

**incidental conifer:** conifer timber harvest from land defined as deciduous landbase.

**inconnu:** a game fish belonging to the family Salmonidae found in Alaska and northwest Canada

**indicator species:** an animal species used to indicate the presence or absence of any particular factor, such as heavy metals.

**inorganic:** referring to a substance that is neither plant nor animal in origin

**in-situ:** in its original site or position, commonly used to describe "in the field"

**insolation:** Solar radiation received on a horizontal plane at the earth's surface

**integrated resource management:** a coordinated approach to land and resource management, which encourages multiple-use practices

**intercardinal:** Northeast, Northwest, Southeast and Southwest compass directions

**interspecific:** occurring among members of different species

**intraspecific:** occurring among members of a single species

**kraft pulping:** a pulping process, also known as the sulfate process, which uses an alkaline cooking liquor comprised of sodium hydroxide and sodium sulfide in the approximate proportions of two to one. The term kraft refers to strength and the main products of this process are strong wrapping papers, paper bags, and cardboard boxes. It is the standard chemical pulping used commercially in Canada to date.

**lacustrine:** pertaining to lakes

**laggs:** depressed margin of a domed bog

**land drainage:** the removal of water from wet or waterlogged land to render it suitable for cultivation, building development

**LANDSAT:** a specific satellite or series of satellites used for earth resource remote sensing. Satellite data can be converted to visual images for resource analysis and planning

**landscape diversity:** the size, shape, and connectivity of different ecosystems across a large area.

**landscape:** a heterogeneous land area with interacting ecosystems

**leachate:** a liquid that has filtered slowly through a solid and dissolved parts of the solid; also, leakage from a landfill site

**leaf area index (LAI):** the total projected leaf area per unit area of ground surface

**lichen:** a symbiotic association between a fungus and an alga; the algae serves to photosynthesize and the fungi provides structural support, nutrients, and protection from the environment

**litter layer:** the loose, relatively undecomposed organic material on the surface of the forest floor typically made up of leaves, bark, small branches, and other fallen material

**liverworts:** small, inconspicuous plants that are part of the bryophyte group

**loading:** a quantity of a particular chemical entering the environment, calculated over time (e.g., tonnes per month)

**luvisolic soils:** soil developed on a wide range of parent materials under mixed deciduous-coniferous forests in moderately well-drained to imperfectly drained sites

**luvisolic:** soil classification where silicate clay has accumulated in the B horizon.

**macroinvertebrate:** invertebrate that can be seen with the naked eye

**mainstem:** the primary path of a river

**management inventory:** a detailed, intensive forest inventory for management purposes, of an area managed as one unit; the forest cover types are usually mapped in detail with estimates given for each type. Precision estimates are given for the total inventory volume

**matrix:** the most extensive and connected landscape that plays the dominant role in landscape functioning.

**mature stand:** a stand of trees for which the annual net rate of growth has peaked

**mean:** average of a series of values

**median:** value dividing a series into two equal parts: those of greater and those of lesser value

**Merchantability:** tree or stand that has attained sufficient size, quality or volume to make it suitable for harvesting.

**mesic:** pertaining to or adapted to an area that has an intermediate supply of water; neither wet nor dry.

**microhabitat:** a restricted set of distinctive environmental conditions that constitute a small habitat, such as the area under a log.

**microorganism:** a living organism that is too small to be seen with the naked eye.

**microtine:** Small rodents (e.g., voles and lemmings).

**migration (human):** are people who, on Census Day, were residing in a different census subdivision (CSD) within Canada five years earlier (internal migrants) or who were living outside Canada five years earlier (external migrants).

**mixedwood stand:** A land area which has both coniferous and deciduous trees.

**mixedwood:** a forest composed of trees of two or more species. Usually at least 20% of the trees are other than the leading species.

**model:** an idealized representation of reality developed to describe, analyze, or understand the behavior of something; a mathematical representation of the relationships under study.

**monitoring:** the process of checking, observing, or keeping track of something for a specified period of time or at specified intervals.

**monoculture:** raising crops of a single species, generally even-aged.

**monotonic:** the family of relationships where minimums and maximums are not present (i.e., if the slope is positive it remains positive throughout and if the slope is negative it remains negative throughout).

**mortality:** deaths in a population; one of the three demographic processes.

**multilayered canopy:** Forest stands with two or more distinct tree layers in the canopy; also called multistoried stands.

**multiple use:** land area is managed in order to support integrated use with timber and non-timber interests, including water, grazing, industrial development, recreation and wildlife issues.

**municipality:** a town, city or district having a charter of incorporation or possessing self-government

**muskeg:** wetland in boreal forests, typified by sphagnum moss which accumulates to form peat, and black spruce

**mycorrhizal fungi:** Fungi with a symbiotic relationship with the roots of plants.

**nivean:** pertaining to the snowpack.

**nocturnal:** referring to organisms that are active or functional at night.

**non-productive forest land:** Land not capable of meeting the specific productive and potentially productive growth time lines. Non-productive forest land includes treed muskegs and coniferous and deciduous scrub.

**nonvascular:** mosses, lichens, liverworts and algae (algae were not included in this study).

**nutrients:** chemicals necessary for the growth and reproduction of plants; the major plant nutrients include carbon, nitrogen and phosphorus

**obligate species:** a plant or animal that occurs only in a narrowly defined habitat such as tree cavity, rock cave, or wet meadow.

**obligatory symbiont:** a close relationship between two species that is necessary for survival.

**oil sands:** a surface or near-surface sand or sandstone containing a high percentage of very viscous hydrocarbons.

**old-growth associated species:** plant and animal species that exhibit an association with old-growth forest.

**old-growth forest:** a forest greater than rotation age with moderate to high canopy closure; a multilayered, multispecies canopy dominated by large overstory trees; some with broken tops and other decay; numerous large snags; and accumulations of DWM.

**operational inventory :** an intensive forest inventory of a small area for harvesting purposes. Individual stands are mapped with estimates for each stand.

**organic:** describing material originating from living organisms, or chemicals based on carbon and hydrogen

**organism:** any living animal or plant.

**orthic Gray Luvisol:** a soil type described by the Canadian system of soil classification and predominating in the boreal mixedwood zone of Northern Alberta. It is loosely characterized as having a light-colored eluvial

horizon, a well-developed B horizon in which silicate clay has accumulated, sandy loam to clay-based parent materials, and an organic surface horizon.

**overburden:** earth material overlaying foundation rock.

**overstory:** those trees that form the upper canopy in a multi-layered forest.

**paludification:** the gradual rising of water table as peat accumulation impedes drainage, is responsible for the majority of peat development.

**PAR:** photosynthetically active radiation (wavelength; 400–700 nm).

**partial cutting:** Removal of selected trees from a forest stand.

**pathogen:** any disease-producing substance or microorganism.

**pathology:** branch of medical science dealing with the essential nature of disease, especially the changes to the structure and function of tissues and organs.

**periphyton:** algae living on rocks or sediments at the bottom of a river or lake.

**pesticide:** a chemical used to destroy, deter or mitigate unwanted plants or animals.

**pH:** a measure of acidity; on a scale of 1 to 14, solutions with a pH less than 7 are acidic, those with a pH greater than 7 are basic, and those with a pH of 7 are neutral

**phenology:** the annual recurrence of plant and animal phenomena that is influenced by seasonal changes (e.g., flowering of plants, ripening of fruit).

**photosynthesis:** the synthesis of living cells of organic compounds from simple inorganic compounds using light energy

**physiognomy:** the external appearance or morphology of a plant community.

**physiography:** a general description of nature and natural phenomena.

**plant community:** an association of plants of various species found growing together.

**point-source:** any discernible, confined and discrete conveyance, such as a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, landfill leachate collection system or vessel from which pollutants are discharged.

**population density:** number of individuals of a species in an area.

**population dynamics:** changes that occur during the life of a population including all phases of recruitment and growth, senility, mortality, seasonal fluctuations in biomass, persistence of each year class and its relative dominance, and the effects that any or all of these factors exert on the population.

**population:** a collection of individuals of the same species that potentially interbreed.

**potentially productive forest land:** land where disturbance has removed the tree cover, but which still has the capability to grow trees if reforested. This includes areas that were recently harvested or burned over by forest fires. Productive forest land. Land which is capable of yielding at least 50 m<sup>3</sup>/ha of wood volume within a 120 year rotation. The period of years required to establish and grow even-aged timber stands to a specified condition of maturity.

**precautionary approach:** a principle of ecosystem management that emphasizes the minimization of risk

**predator:** an animal that preys on other animals as a food source, any animal that preys on other animals by hunting, killing, and feeding on a succession of hosts.

**productivity:** the rate of organic matter production by organisms for maintenance; usually measured as the increase in growth or carbon content over a time interval.

**pyrogenic:** referring to forest stands that originated from a fire event.

**range (of a species):** the area or region over which a species occurs.

**recruitment:** the increase of a population from all causes (i.e., reproduction, immigration, and stocking).

**reference site:** an area used as a control in a scientific experiment.

**refugia:** locations and habitats that support populations during adverse conditions. Refugia usually are limited to small fragments of the population's previous geographic range.

**regeneration:** the process of establishing young trees naturally or artificially.

**reservoir:** an artificial lake created behind a dam for storing water or producing hydroelectric power.

**respiration:** breathing; the use of oxygen to provide energy.

**riparian area:** a geographic area containing an aquatic ecosystem and adjacent upland areas that directly affect it.

**riparian:** related to, living in, or located on the bank of a river or lake.

**river reach:** a relatively uniform section of a river.

**river stage:** the level of the water surface.

**rotation age:** the number of years between successive forest harvest.

**rotation:** the planned number of years between regeneration of a forest stand and its final harvest (regeneration cut or harvest).

**runoff:** the portion of the total precipitation on an area that flows away into surface streams

**rural:** of or pertaining to the countryside. Rural populations are generally defined as those that are non-urban in character.

**sapling:** a young tree a few meters tall and 5–10 cm diameter at breast height.

**saproxyl:** an organism that is dependent during some part of its life cycle upon wood, phloem or bark of dead trees.

**sapwood:** the light-colored wood that appears on the outer portion of a cross-section of a tree stem. These more recently formed annual rings are usually more active physiologically than the inner portion of the stem.

**scale:** level of spatial resolution.

**scarification:** Silvicultural practice involving the mechanical disruption of the ground surface to expose mineral soil and to improve survival of conifer seedlings.

**sediment:** material such as sand, silt and clay that is suspended in moving water but will settle to the bottom in still water.

**seismic lines:** strips where the land surface has been bulldozed for the purpose of seismic exploration of petroleum reserves; where survey crews travel along these strips to map the underlying geological structure by measuring seismic vibrations.

**selection:** occurs when a resource is used differently in relation to the availability of that resource.

**self-thinning:** High mortality of aspen suckers as they compete for limited amounts of light or water.

**senescence:** the process of aging.

**sensory:** of sensation or the senses.

**seral stages (sere):** the series of relatively transitory communities that develop during ecological succession from bare ground to the climax community.

**sex ratio:** the ratio of the number of one gender to that of the other.

**silt:** fine sediments deposited by water.

**silviculture:** the science and practice of controlling the establishment, composition, and growth of the vegetation of forest stands. It includes the control or production of stand structures such as snags and down logs, in addition to live vegetation.

**snag:** any standing dead, or partially dead tree.

**snag-dependent species:** birds and mammals dependent on snags for nesting, roosting, or foraging.

**snowmelt:** water resulting from melting snow.

**soft snag:** a soft snag is composed primarily of wood in advanced stages of decay and deterioration, and is generally not merchantable.

**softwood:** the wood of a conifer.

**soil structure:** the combination or arrangement of primary soil particles into secondary particles, units, or peds.

**solenetzic soils:** moderately well-drained to imperfectly drained soils developed on saline parent material in cool sub-humid to sub-arid climates under grassland vegetation.

**species diversity:** the number, different types, and relative abundance of species.

**species richness:** the number of different species occupying a given area.

**species:** a group of individuals that share certain identical physical characteristics and are capable of producing fertile offspring, or a group of individuals that have their major characteristics in common and are potentially interfertile.

**spring freshet:** the annual spring rise in the water level of streams in cold climates as a result of the influx of water from melting snow.

**stakeholder:** any individual or group that affects, or is affected by, management decisions in a specific area

**stand age:** the number of years since a stand experienced a stand replacing disturbance event (i.e., fire, logging).

**stand density:** the number and size of trees on a forest site.

**stand:** a community of trees possessing sufficient uniformity in composition, age, arrangement or condition to be distinguishable from the forest or other growth on adjoining area, thus forming a management or ecological entity; an aggregation of trees occupying a specific area and sufficiently uniform in composition, age, arrangement, and condition so that it is distinguishable from the trees in adjoining areas.

**structure (stand structure):** the various horizontal and vertical physical elements of the forest. The physical appearance of canopy and subcanopy trees and snags, shrub and herbaceous strata, and down woody material.

**subnivean:** Beneath the snowpack.

**succession:** a series of dynamic changes by which one group of organisms succeeds another through stages leading to a climax community.

**successional stage:** a stage or recognizable condition of a forest community that occurs during its development from bare ground to climax.

**sucker (suckering):** a shoot arising from a root system or from the underground part of a stem.

**summerfallow:** land left unsown, usually for a season, to conserve moisture in the soil and allow accumulation of nitrogen.

**suppression:** the action of extinguishing or confining.

**supranivean:** above the snowpack.

**surface water:** water that remains at, or close to the land surface (e.g., a river).

**survivorship:** the proportion of individuals that are alive at a later age.

**suspended solids:** small particles of solids distributed through water.

**sustained yield:** the yield that a forest can produce continuously at a given intensity of management. Management of forest land for continuous production with the aim of achieving, at the earliest practicable time, a balance between net growth and harvest.

**taxonomy:** the science of classification of organisms into systematic groups: species, genus, family, and order.

**terrestrial ecosystem:** an interactive relationship among all land plants and animals (including humans) and the non-living environment.

**terrestrial:** land-based.

**territory:** the area that an animal defends, usually during breeding season, against intruders of its own species.

**thermal cover:** cover used by animals to lessen the effects of weather.

**thermoregulation:** the physiological and biological process whereby an animal regulates its body temperature.

**timber disposition:** an agreement between a forest products company and the provincial government, giving the company the rights to harvest timber on public forest land. There are two primary types of dispositions: the Forest Management Agreement and the Timber Quota.

**timber quota:** a long-term right to harvest a percentage share of the allowable harvest in an FMU. Most quotas are for the harvesting of coniferous timber. However, deciduous quotas have also been established.

**total dissolved solids:** a measure of the concentration of solids dissolved in water.

**township:** a land area of 6 x 6 miles.

**toxic:** a substance or concentration of a substance that is harmful to a living organism.

**toxicology:** the branch of medical science devoted to the study of poisons, including their modes of action, effects, detection and counter-measures.

**tributary:** a stream that joins, feeds or flows into a lake or larger stream.

**trophic level:** functional classification of organisms in a community according to feeding relationships; the first trophic level includes green plants, the second level includes herbivores, and so on.

**turbidity:** the cloudiness in a fluid caused by the presence of finely divided, suspended material.

**understory:** those trees or other vegetation in a forest stand below the main canopy level.

**ungulate:** any hoofed mammal such as deer, wapiti, moose, bison.

**upstream:** towards the source of a river (i.e., upriver).

**urban:** cities, towns and villages.

**volume.** amount of wood in a tree, stand or other specified area, according to some unit of measurement.

**watershed:** the area that supplies water to a stream by surface or groundwater runoff

**watertable:** the upper limit of the part of the soil or underlying rock material that is wholly saturated with water.

**wildfire:** any fire that is not a prescribed fire.

**wildlife tree:** a tree retained because of its use or potential use by wildlife.

**windfall:** trees or parts of trees felled by high winds.

**windthrow:** trees uprooted or felled by the wind.

**witches' broom:** fungal disease in deciduous and conifer trees which speeds growth in small branches causing a tight ball of entwined branches to form.

**xeric:** referring to habitats in which plant production is limited by availability of water.

## List of Abbreviations

### Units

nm	nanometre
mm	millimetre
cm	centimetre
m	metre
km	kilometre
s	second
h	hour
d	day
g	gram
kg	kilogram
m a.s.l.	metres above sea level
$m s^{-1}$	metres per second
$m^2$	square metre
$m^3$	cubic metre
m/s	metres/second
kph	kilometre per hour
ha	hectare
$ha^{-1}$ or /ha	per hectare
$km^2$	square kilometer
pj	petajoule
$^{\circ}C$	degrees Celsius

## List of Conversions

1 tonne (metric tonne) = 1000 kg

1 kg (kilogram) = 1000 g

1 g (gram) = 1000 mg

1 mg (milligram) =  $10^{-3}$  g = 1000  $\mu$ g

1  $\mu$ g (microgram) =  $10^{-6}$  g = 1000 ng

## List of Equivalents

1 part in 1 000 parts = 1 g/L = 1 g/kg =  $10^{-3}$  g/g = 1 part per thousand

1 mg/L = 1 mg/kg =  $10^{-6}$  g/g = 1 part per million

1  $\mu$ g/L = 1  $\mu$ g/kg =  $10^{-9}$  g/g = 1 part per billion

1 L of water = 1 kg at 4 $^{\circ}C$

1  $m^3$  = 6.293 barrels

1  $m^3$  = 635.5 cubic feet

1  $m^3$  of water = 1000 L = approx. 1 tonne

1  $m^3$  of water = 1000 L = approx. 1 tonne

## List of Acronyms

AAC	annual allowable cut
AFORISM	Alberta Forest Service Inventory Storage and Maintenance System
ANOVA	analysis of variance
AOP	Annual Operating Plan
AVI	Alberta Vegetation Inventory
CanFor	Canadian Forest Products Limited
DBH	diameter at breast height
df	degrees of freedom
DFMP	Detailed Forest Management Plan
DMI	Daishowa-Marubeni International Ltd.
DOM	depth of organic matter
DWM	down woody material
F	F Statistic
FMA	Forest Management Agreement and/or Forest Management Area
FMA	Fish Management Area
HLFP	High Level Forest Products Ltd.
N	number of samples
NA	not analyzed
NS	not significant
P	Probability of significance level
PRPD	Peace River Pulp Division
r	Pearson's correlation
R <sup>2</sup>	Correlation of determination
S	significant
S.D.	standard deviation
S.E.	standard error
S.E.M.	standard error of the means
TSS	Total Suspended Solids
$\chi^2$	Chi-Square Value

## Reference Material

Table 4. Selected references for physical attributes of northwest Alberta.

Attribute	Authors / Source	Year	Title	Reference
Bedrock Geology	W.N. Hamilton, M.C. Price, D.K. Chao, J.J. Olic, and J. Lutz.	1994	Bedrock geology of northwest Alberta.	Provisional Edition. Alberta Geological Survey Map 225.
Permafrost				
Drift Thickness	J.G. Pawlowicz and M.M. Fenton.	1995	Drift thickness of northwest Alberta. Modified from Drift Thickness of Alberta	Alberta Geological Survey Map No. 227, August.
Bedrock Topography	J.G. Pawlowicz and M.M. Fenton.	1995	Bedrock topography of northwest Alberta. Modified from Bedrock topography of Alberta	Produced by Alberta Geological Survey. Map 226, August.
Surficial Topography				
Hydrology	Hydat CD-Rom	1992	Surface water and sediment data.	Environment Canada. Atmospheric Environment Services.
Elevation	Anonymous	1978.	Elevation (m. a.s.l.) in northwest Alberta.	Modified from Alberta Relief Map produced by the Surveys and Mapping Branch, Alberta Transportation, Edmonton.
Natural Regions	1994		Natural regions and subregions of northwest Alberta. Modified from Natural Regions and Subregions of Alberta	Produced by Land Information Services Division
Hydrological Features	1997		DMI FMA GIS Coverage	
Organic Soils	Edited by B.J. Nicholson and L.A. Halsey; Project Leader D.H. Vitt.	1992	Peatlands distribution in northwest Alberta. Modified from The Peatlands of Alberta Map	Produced by Land Information Services
Climate Variables				
Precipitation	Anonymous	1994	Canadian Monthly Climate Data, 1961–1990 Normals	Environment Canada
Temperature	Anonymous	1994	Canadian Monthly Climate Data, 1961–1990 Normals	Environment Canada
Wind Speed	Anonymous	1994	Canadian Monthly Climate Data, 1961–1990 Normals	Environment Canada
Relative Humidity	Anonymous	1994	Canadian Monthly Climate Data, 1961–1990 Normals	Environment Canada
Station Locations	Anonymous	1994	Canadian Monthly Climate Data, 1961–1990 Normals	Environment Canada

Table 5. Selected references for biological attributes of northwest Alberta.

Attribute	Authors / Source	Year	Title	Reference
Non-vascular Plants	Vitt, D.H., Marsh, J.E. & Bovey, R.B.	1988	Mosses, Lichens and Ferns of Northwest North America	Lone Pine Press
Vascular Plants	Moss, E.H. Johnson, D., Kershaw, L. MacKinnon, A., and Pojar, J.	1997 1995	Flora of Alberta. 2nd Edition Plants of the western Boreal Forest and Aspen Parkland	Lone Pine Publishing, Edmonton
Rare Plants	Wallis, C.	1987	The Rare Flora of Alberta. Volume 2. A Summary of the taxa in Canadian Shield, Boreal Forest, Aspen Parkland and Grassland Natural Regions	Prepared by Cottonwood Consultants Ltd., Calgary for Alberta Forestry, Lands & Wildlife. Publication No. T/164. ISBN 0-86499-529-6
Rare Plants	Wallis, C., Bradley, C., Fairbarns, M. and Loewen, V.	1987	The Rare Flora of Alberta. Volume 3	Prepared for Alberta Forestry, Lands & Wildlife. Publication No. T/155. ISBN 0-86499-492-3
Fishes	Nelson, J. and Paetz, M.	1997	The Fishes of Alberta	University of Alberta Press, Edmonton
Amphibians	Russell, A.P. and Bauer, A.M.	1993	The Amphibians and Reptiles of Alberta	University of Calgary Press, Calgary
Reptiles	Russell, A.P. and Bauer, A.M.	1993	The Amphibians and Reptiles of Alberta	University of Calgary Press, Calgary
Birds (distribution)	Semenchuk, G.P. (editor)	1992	The Atlas of Breeding Birds of Alberta	Published by Federation of Alberta Naturalists, Edmonton
Birds (relative abundance)	BBS web site: <a href="http://www.mbr.nbs.gov/bbs/bbs.html">http://www.mbr.nbs.gov/bbs/bbs.html</a>	1997	The North American Breeding Bird Survey: Results & Analysis 1966-96.	Patuxent Wildlife Research Center, United States Department of the Interior, Laurel, MD, USA
Mammals	Smith, H.			
Distribution of selected wildlife	Alberta Fish and Wildlife Personnel			
Status of Plant Species	Natural Heritage Information Centre	1996	Alberta Natural Heritage Information Centre Plant Species of Special Concern	Natural Heritage Information Centre: contact: Joyce Gould
Status of Wildlife Species	Natural Resources Service	1996	The Status of Alberta Wildlife	Alberta Environmental Protection, Natural Resources Service, Wildlife Mgmt. Division. Contact: Steve Brechtel
Protected Areas Network	Ricketts, T., E. Dinerstein, D.M. Olson, C., Loucks, P., Hedao, K., Carney, S., Walters, and P. Hurley.	1977	A conservation assessment of terrestrial ecoregions of North America.	World Wildlife Fund, Conservation Science Program. Washington, D.C. In preparation.