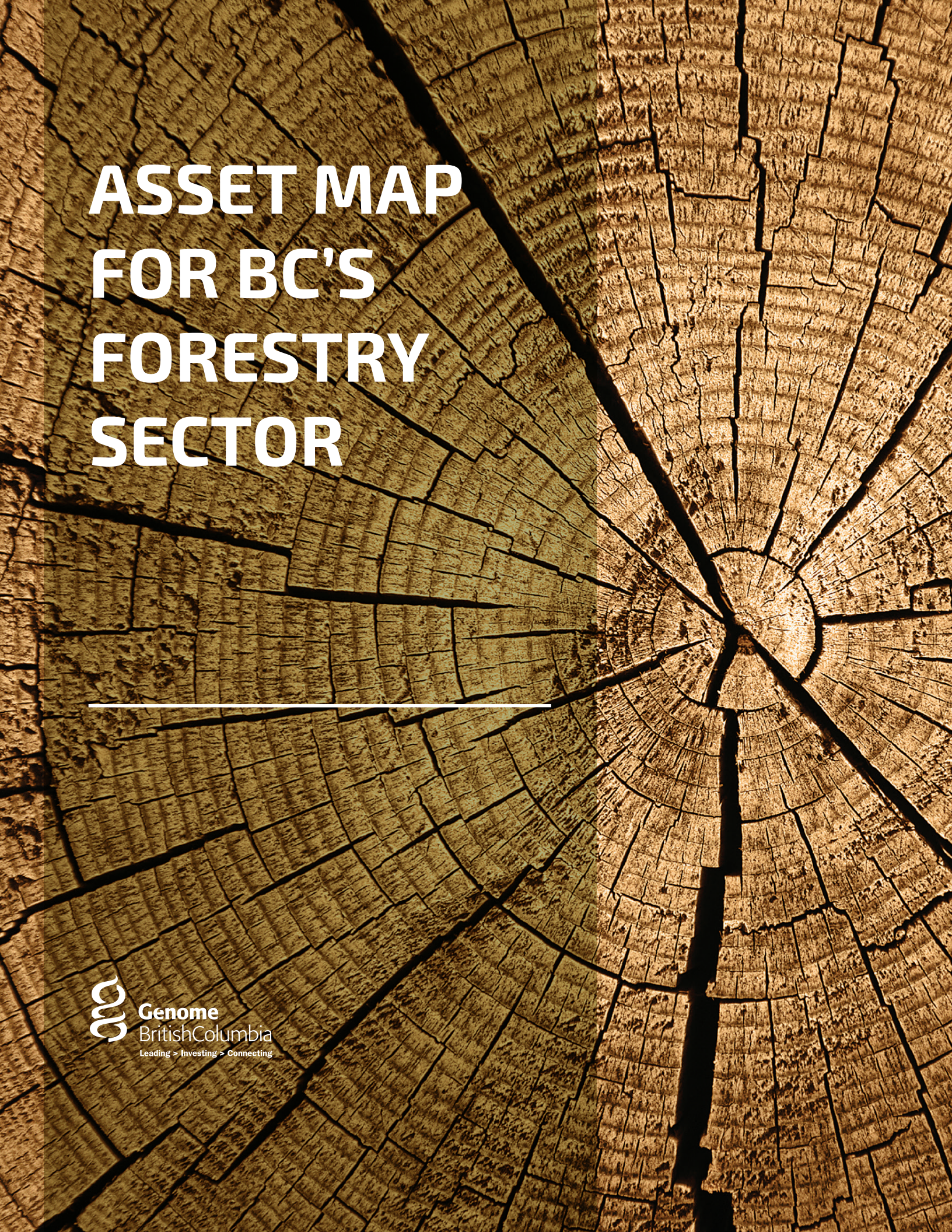

ASSET MAP FOR BC'S FORESTRY SECTOR

Genome BritishColumbia

Leading > Investing > Connecting

GENOME BRITISH COLUMBIA

Vision

Genomics will revolutionize many aspects of our lives and provide solutions to humankind's challenges.

Mission

Genome British Columbia leads academia, government and industry in the growth of a world-class genomics R&D cluster to deliver sustainable social and economic benefits to British Columbia, Canada and beyond, through:

- Excellent projects and technology platforms,
- Innovative applications for the life sciences cluster,
- Strategic regional, national & international collaborations, and
- Proactive leadership in exploring societal impacts of genomics.

Genomics is the science that aims to decipher and understand the entire genetic information of an organism (i.e. microorganisms, plants, animals and humans) encoded in DNA and corresponding complements such as RNA, proteins and metabolites.

The knowledge and innovations emerging from this field are finding solutions to complex biological challenges, while at the same time raising questions of societal and economic importance.

Genomics has already brought huge economic and societal gains to Canadians through better healthcare, improving food quality, safety and production and protecting our environment and natural resources.

Looking ahead, genomics will be the foundation of Canada's growing bio-economy (all economic activity derived from life science-based research), which is estimated to be responsible for some 2.25 per cent of GDP, or about $38 billion, by 2017.

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EXECUTIVE SUMMARY

British Columbia contains vast and diverse forests, 95% of which are publically owned. Almost 60% (55million hectares) of B.C.'s 95 million hectares is classified as forest land. Provincial forests contain a rich mix of tree species and stand ages growing on a wide range of ecosystems. Most of B.C.'s forests (83%) are dominated by conifers. Lodgepole pine, spruce, true fir, hemlock, and Douglas-fir are the most common forest types. Overall, less than 3% of B.C.'s original forest has been converted to human (non-forest) use. Currently, the annual rate of forest land conversion in the province is very low. Roughly 34 million hectares of public land is classified as rangeland and 80% of it is forested[1].

Forests contribute directly to the BC economy (almost 3% of provincial GDP)[2] by supplying a world-class forest industry that competes across the world and practises sustainable forest management at home. In addition to provincial revenues derived from commercial use of the forest, BC's forests provide a backdrop for a multi-billion dollar tourism industry as well as essential environmental services in terms of natural habitats, conserving water quantity and quality and the important role forests play in the culture, history and traditions of BC's indigenous peoples.

BC's annual forest industry production represents over 30% of Canada's annual total, provides over 55,000 direct jobs and contributes almost 3% to provincial GDP. Forest conservation, bio-diversity protection and ecosystem integrity are equally as important. Almost 15% of BC's forests are protected by legislation and all forest operations are highly regulated and monitored to some of the highest standards of sustainable forest management in the world.

The forest industry in BC is not only an integral part of the regional rural economies of many communities across the province, it also has a highly visible presence in the corporate community of Vancouver, which hosts national and international headquarters of over a dozen forest products companies, the most in Canada. Across the province, some 40% of local areas derive a substantial portion of basic income reliant on both timber and tourism. Some 8% of BC's rural population is First Nations and over the years they have become more directly engaged in many aspects of the forest products economy[1]. As of January 2012 First Nations held forest tenures representing 15.1 % of the province's allowable annual cut[3]. First Nations and aboriginal

[1] http://www.for.gov.bc.ca/hfp/sof/2010/SOF_2010_Web.pdf
[2] http://www.bcstats.gov.bc.ca/StatisticsBySubject/Economy/EconomicAccounts.aspx
[3] https://www.for.gov.bc.ca/mof/forestsectorstrategy/Forest_Strategy_WEB.PDF

peoples continue to play an increasingly significant role in the sustainable management of BC's forests and share the commitment to both productive and sustainable forests.

Key assets of BC's forest sector

Forest resources

- 55 million hectares of forest (larger than the country of Germany)
- 33% of all BC plant and animal species rely on forests
- Over 14% of forests officially protected
- 41% of protected forests are 140 years or older
- 49 different trees species in BC[1]

Industry

- BC's forest industry contributes almost 3% of provincial GDP
- BC has the largest forest industry in Canada; value of 2010 production $15.4 billion
- Over 55,000 directly employed in the sector (2012)
- More than 40% of BC's regional economies forest based
- Over 90% of forest products are exported; represents over 30% of BC's overall exports[1 & 4]

Infrastructure

- Annual allowable cut of 64.6 M cubic meters/year from all provincial timber supply areas
- Unique access to growing Asian and Chinese markets
- BC has 33.2% of national wood products manufacturing sales
- Over 20 industry associations (provincial, national, international)
- 29 forest seedling nurseries across BC
- Over 265 mills in BC[5]

Science

- Over 12 colleges and universities with relevant expertise, research and/or training programs in forestry, natural resource management or required skilled trades.
- Largest forestry faculty in Canada at the University of British Columbia (UBC); University of Northern British Columbia (UNBC); FP Innovations research expertise in pulp, paper and bio-products, solid wood and forest operations; UBC Pulp and Paper Research Center; Centre for Advanced Wood Processing (CAWP)

[4] http://www.cofi.org/wp-content/uploads/2011/12/COFI-BC-Ind-At-A-Glance-2012.pdf
[5] http://www.for.gov.bc.ca/ftp/het/external/!publish/web/mill%20list/Public%20Report%202009.pdf

- More than 200 researchers in public institutions working across a wide array of disciplines from forest management to manufacturing/processing to market analysis

Opportunities for genomics to support sector productivity and sustainability

BC's bio-based assets (industry, scientific and infrastructural) that have developed to conserve, manage and protect BC's bountiful forest resources provide innumerable opportunities to improve the sustainability and productivity of the sector including:

- Improving the productivity of forests, for example, by using marker-aided selection in tree breeding programs to increase yield, improve wood quality and promote traits that increase pest and drought resistance.
- Maintaining and enhancing the health of BC's forests is particularly challenging in the face of a changing climate and the increased uncertainty that creates around domestic and invasive pests and pathogens.
- Applications in bio-remediation will provide improved and new green technologies for the remediation of polluted soils utilizing genomics to better understand the interactions between plants and microorganisms in the presence of contaminants and to determine the best approaches to extraction and degradation of these contaminants.
- Bio-processing of forest based fiber with the applications of genomics tools provides opportunities for the identification of naturally occurring or development of modified organisms for use in processes as alternatives to current practices to lighten environmental footprint, improve efficiency and reduce costs.

Application of genomics in these areas will speed the delivery of innovations and associated economic and social benefits to the citizens, municipalities, businesses and governments of BC.

AN OVERVIEW OF BC'S FOREST SECTOR

BC's forests contain almost 11 billion cubic meters (m^3) of commercial timber, 60% of which is spruce, lodgepole pine and hemlock. Over 50% of this volume is on land available for harvesting. In the interior, a massive outbreak of the mountain pine beetle (MPB) has attacked over 18 million hectares destroying over 700 million m^3 of commercial lodgepole pine. In the past, annual harvests were as high as 90 million m^3/year, while more recently they have been around 70 million m^3/year from public land. The effect of the MPB epidemic was to temporarily increase annual cuts to salvage affected timber but that impact will rapidly decrease such that annual harvests

will be reduced to between 50-60 million m^3/year, with some parts of the interior facing severe reductions in the next few decades.

Overall, in the last 12 years forest products (primarily commodities) have declined from almost 50 % of the total annual value of BC's exports to 23% in 2012. Over that same period the sector's contribution to annual provincial revenues (direct and indirect) has declined by 20%, from $2.6 billion to $1.1 billion. Although this is a reflection of an increasingly diversified BC economy (energy growth particularly), it also highlights the decreasing size of the traditional BC forest industry. However, over the same period, the increase in bio-energy demand, primarily to meet environmental objectives domestically and in Europe, has seen Canadian wood pellets exports rise to almost 2 million tons in 2011, with 65% of this capacity being in BC.

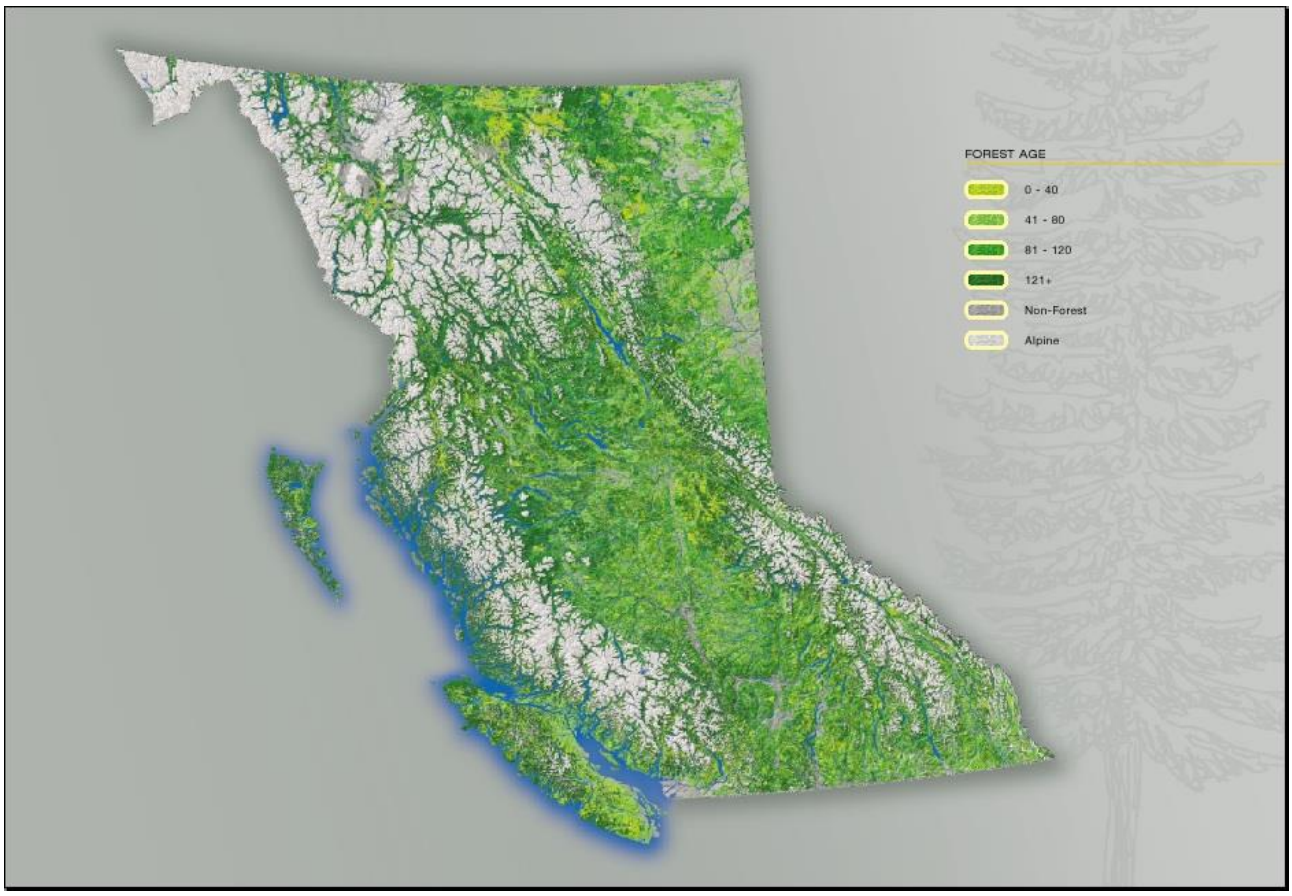

Figure 1. Map of BC's forests

Lumber Production

BC is a global player in lumber production and exports well over 80% of the average annual volume of 12 billion board feet to markets in the US, China, Japan and other destinations in Asia and Europe. BC's lumber industry produces over $6 billion of product/year. It also provides a residue fiber source for the provincial pulp and paper industry as well as a fast growing bio-energy industry for domestic and export customers, producing and exporting pellets to meet expanding European demand for sources of renewable energy. BC exports almost 50% of Canada's softwood production to its largest market, the US, although Canada's share of that market now hovers around 28%, down from the highs of the mid-2000s.

Pulp and Paper Production

BC's pulp and paper industry relies on an important symbiotic relationship with the sawmill sector that provides chips and mill residues as primary inputs to pulp and bio-energy production. Over the years BC's newsprint industry has suffered as a result of steeply declining North American demand (as has Canada's overall), in response to growing digital news and advertising. This has reduced the value of BC pulp and paper production from $7.5 billion in 2000 to less than $4.5 billion in 2012. On the other hand, the BC Northern Bleached Softwood Kraft (NBSK) pulp sector, which represents some 50% of Canadian pulp production, has seen capital investment of over $500M, primarily from the federal government, to improve environmental performance and competitiveness. This not only reduced costs of production generally but specifically reduced, or even eliminated, mills' need for grid delivered electricity and in some cases created a new revenue stream from "green" power.

Figure 2. An Overview of the Forest Products Value Chain (FPInnovations)

Market Based Forest Certification

Starting in the early 1990's and gaining momentum ever since, the demand for independent, third party scrutiny of forest management across the world has given rise to the development of a number of forest certification systems. The three most common globally and also used in BC are: the Canadian Standards Association (CSA 808/809); Sustainable Forestry Initiative (FSC); and, the Forestry Stewardship Council (FSC). Across Canada there are over 153 million hectares of forest certified to one of these three systems and some 35% of those forest areas are in BC. These certification schemes are voluntary and adopted by companies to provide market-based assurances to customers that the products are sourced from sustainably managed forests.

Table1. Certification in BC[6]

Certification Type	Area certified (hectares)	Volume Certified (cubic metres)
CSA	27.1 M	29.1 M
SFI	24.4 M	24.6 M
FSC	2.9 M	0.16 M
Total	*54.4 M*	*53.86 M*

Innovation & Investment Landscape

Nationally, the Canadian Council of Forest Ministers (http://www.ccfm.org/) in 2008 produced a national innovation framework founded on 3 themes: people and institutions; competitiveness; and sustainability. This was followed by the establishment of the national NSERC Forest Sector R&D Initiative which initially saw the establishment of 4 new University based research networks which joined with 4 existing networks to form FIBRE (Forest Innovation By Research and Education) which included strong alliances with industry and FPInnovations, Canada's national public-private forest research partnership. Over much of that period, with increasing global competition and the relentless cost/price squeeze, most large Canadian integrated forest products companies closed most of their 'in-house' research and technology development facilities and relied heavily on suppliers to acquire embedded innovation in technology and equipment. More recently, as markets improved, a renewed interest and

[6] http://www.certificationcanada.org/_documents/status_reports/BC%20SFM%20Status%20Report%202011%20Yearend_Jan29.pdf

investment in forest sector innovation is evident. In 2012/13 the collective investment from governments and industry in FPInnovations was over $90.0M.

During this period, British Columbia demonstrated very active innovation leadership through efforts including: dramatically expanding the Chinese market for wood products; introducing Wood First legislation to expand the use of wood in construction; building the Wood Innovation and Design Centre in Prince George; embracing opportunities provided by the emerging bio-economy; and through the Forest Investment Initiative (FII) investing millions to expand opportunities for BC wood products domestically and across the world. BC based post-secondary institutions, such as the University of British Columbia (UBC), University of Northern British Columbia (UNBC), BC Institute of Technology (BCIT) are engaged in world class research, applications and education and attract students and researchers from across the globe. UBC, UNBC and BCIT are involved in the Forest Innovation by Research and Education (FIBRE) forest research network funded by the Natural Sciences and Engineering Research Council of Canada (NSERC). B.C. has 25 publicly funded post-secondary institutions – 11 universities, 11 colleges and three institutes that offer over 1,900 programs many of these relevant to a career in the forest sector.

FPInnovations, located on the UBC campus, provides research and application programs in: pulp, paper and bio-products; wood products; and forestry operations. In addition, Natural Resources Canada (NRCan) - Canadian Forest Service (CFS) (research facility in Victoria) collaborates with forest industry and FPInnovations through the Canadian Wood Fibre Centre and their programs of biological research, economics and information and technology development. The province of BC, through the Ministry of Forests, Lands and Natural Resource Operations invests millions annually in forest science and applications to support conservation and management of BC`s forest resources.

In terms of capital investment in the BC forest industry since a low of $312.0M in 2009, the re-capitalization of the industry has increased by over 93% to $602.0M in 2011[7]. Public revenue to BC (2012/13) derived for the forest sector was $562.0M [8]

A more complete list of major funders of research, development and commercialization in the forest sector in BC can be found in Appendix 1.

To date Genome BC/Genome Canada have invested in 19 projects in forest genomics in BC, for a total value of $92.2 M, that span discovery, applied and translational research (these projects are listed in Appendix 2). Sustainable forestry in Canada can greatly benefit from a genomic understanding of trees. The projects supported by Genome BC

[7] http://www.for.gov.bc.ca/ftp/het/external/!publish/web/economic-state/Economic-State-of-BC-Forest-Sector-2011.pdf
[8] http://www.fin.gov.bc.ca/tbs/F&Ereview13.pdf

have dealt with the ability of trees to successfully adapt to different stresses, such as forest pests, ecosystem diversity and the multiple effects of climate change. This research can be used by tree breeders to improve the quality of trees to be planted, by managers to evaluate the health of current stands and by planners to determine which species to plant to maintain productivity.

International partnerships

BC with Canada`s largest port and a strong export based economy, particularly in forest products, is well linked to trading partners and other nations across the world. Over the last five years with the plateauing of the Japanese market and the decline in the US housing markets, BC has aggressively cultivated the Chinese market and increased lumber sales from under 500,000 cubic meters in 2006 to over 7.0 million recently, a value of over $1.1 Billion[9].

BC's Forest Investment Initiative (FII) is a crown corporation dedicated to advancing wood use both domestically and internationally and in 2012/13 invested close to $18.0M with government and industry partners to grow wood markets for BC. FII has been a reliable international partner and has engaged with: China after the Wenchuan earthquake in 2008; with Indonesia following the devastating earthquake and tsunami in 2004; and, in 2013 in Japan after the deadly tsunami. More recently FII in partnership with BC industry and the Government of Canada have launched market development initiatives in India.

BC's forest research community has collaborations across the world through institutions such as: International Union of Forest Research Organizations (IUFRO); the UN Food and Agriculture Organization (FAO) - Forestry Department; MegaFlorestais (a network of global forestry leaders); North American Forestry Commission; a host of international standards setting bodies; and works closely with other governments on trade and sustainable forest management activities.

BC SECTOR ASSETS

Forest Assets

British Columbia contains vast and diverse forests and rangelands. Almost 60% (55million hectares) of B.C.'s 95 million hectares is classified as forest land. Most of

[9] http://www.bcbudget.gov.bc.ca/Annual_Reports/2012_2013/pdf/agency/fiil.pdf

B.C.'s forests (83%) are dominated by conifers. Lodgepole pine, spruce, true fir, hemlock, and Douglas-fir are the most common forest types. Forests over 140 years old exist in all 16 biogeoclimatic zones and cover 23 million hectares (41% of B.C.'s forests). Overall, less than 3% of B.C.'s original forest has been converted to human (non-forest) use. Currently, the annual rate of forest land conversion in the province is very low. Roughly 34 million hectares of public land is classified as rangeland and 80% of it is forested.[1]

British Columbia's vast and diverse forests and rangelands sustain a high level of biological diversity. Protected areas now include 7.6 million hectares (14%) of B.C.'s forests. With 41% of protected forests over 140 years old, older forests are well represented in B.C.'s network of protected areas. The current estimate is that roughly one-half of B.C.'s forest lands will never be harvested. British Columbia has a rich diversity of species. About 33% (1,345) of the plant and animal species in B.C. (vascular plants and non-marine vertebrates) rely on forests for some portion of their life cycle. Of these forest-associated species, 35% are known to use old-growth forests.

B.C.'s forests are genetically diverse, with 49 native tree species growing in a wide range of environmental conditions. In B.C., through protected areas, gene conservation sites, and careful management of tree seed production in seed orchards, the genetic resources of trees are considered fairly well conserved. Among seedlings planted in harvested areas, the level of genetic variation is similar to that among seedlings regenerating naturally. Since the 1980s, the proportion of harvested area reforested by natural regeneration has declined, and the proportion regenerated by planting has increased. Since the 1990s, planted seedlings derive increasingly from seed produced in tree seed orchards where parent trees are bred to improve tree growth, quality, and health.

The amount of timber harvested annually in B.C. increased greatly over the last century until the mid-1980s and has fluctuated since then. Peak annual harvests of 90 million cubic metres were reached in both 1987 and 2005. Since 2007, as the U.S. housing market collapsed and a global economic downturn took hold, timber harvesting has declined significantly. Over the last 10 years, the timber harvest on public land averaged 69 million cubic metres per year. About 96% of this harvest came from the province's timber supply areas and tree farm licences. From private land, an average 9 million cubic metres per year were harvested over this period. Recently, in response to the mountain pine beetle outbreak, temporary increases in the allowable harvest levels were authorized on many public forests. Over the next decade, available timber supply and allowable harvest levels are forecast to decline in many forest management units in the B.C. Interior. By 2025, the provincial timber supply is forecast at 50–60 million cubic metres per year for several decades. Over the long term, timber supply is expected to recover. On B.C.'s public forest land, the long-term sustainable harvest level is currently

estimated at 70 million cubic metres per year. The area harvested each year translates to 0.4% of the forest area in B.C. and 0.8% of the forest area that is suitable for harvesting.

Over the years BC's forests have been affected by pest infestations, often followed by fire outbreaks. More recently large areas in the B.C. Interior have been killed by a massive outbreak of the mountain pine beetle. At the peak of the outbreak in 2007, over 10 million hectares were under attack. In total, the current outbreak had spread over 14 million hectares by 2008 and killed roughly one-half of the mature pine in B.C. The forest area disturbed by the beetle greatly exceeds the area disturbed by harvest, fire, and all other factors totalled over many years. Climate change and fire suppression may have helped create favourable conditions for this outbreak which is of a size unprecedented in the historical record. Over the last 30 years in B.C., the number of wildfires averaged 2,300 per year and the area burned averaged 67,500 hectares per year.

Over many years, non-native (alien invasive) insects, plants, and plant diseases have been introduced into B.C.'s forests and rangelands. Current estimates for the number of forest-associated exotic species that have established in B.C. are 124 insect species, 144 plant species, and 6 plant diseases. Gypsy moth, knapweed, and white pine blister rust are among the more prominent of the alien invasive species. Alien invasive plant species are estimated to occur on 145,000 hectares of Crown forest and rangeland in B.C. A small fraction (approximately 0.01%) of the area reforested each year is planted to non-native tree species.

Commercial Production Assets

The top companies in BC in the forest, paper and packaging industry are listed in Table 2 below. See Appendix 3 for a more complete list of companies.

Table 2: Major companies involved in BC's forest products sector ranked by 2012 sales ($)[10]

Name and 2012 sales ($)	Website	Locations in BC	Products

[10] PwC Top 100 Global Forest, Paper & Packaging Industry Survey: 2013 edition – survey of 2012 results (http://www.pwc.com/en_GX/gx/forest-paper-packaging/assets/pwc-global-forest-paper-packaging-industry-survey-2013-edition-survey-of-2012-results.pdf)

Name and 2012 sales ($)	Website	Locations in BC	Products
WestFraser 2012 sales $3.0B	http://www.westfraser.com/	858 Beatty Street, Suite 501 Vancouver, BC Canada V6B 1C1 1250 Brownmiller Road Quesnel, British Columbia Canada V2J 6P	Lumber, plywood, wood pulp
Canfor 2012 sales $2.7 B	http://www.canfor.com/	100–1700 West 75th Ave Vancouver, B.C. V6P 6G2 Canada 230 - 1700 West 75th Ave Vancouver, B.C. V6P 6G2 Canada 5162 Northwood Pulp Mill Road PO Box 9000 Prince George, B.C. V2L 4W2 Canada	Lumber, wood pulp, paper
Mercer 2012 sales $1.07B	http://www.mercerint.com/s/Home.asp	Suite 1120, 700 West Pender Street Vancouver, BC Canada V6C 1G8	Wood pulp
Catalyst Paper Corporation 2012 sales $1.06B	http://www.catalysttpaper.com/	2nd Floor, 3600 Lysander Lane Richmond, BC Canada	Paper
Western Forest Products 2012 sales $0.93B	http://www.westernforest.com/	510 – 700 West Georgia Street Vancouver, British Columbia P.O. Box 10032, V7Y 1A1 Canada 495 Dunsmuir Street, Unit 201 Nanaimo, British Columbia V9R 6B9, Canada	Logs, lumber, from five quality tree species in BC
Interfor 2012 sales $0.85B	http://www.interfor.com/	9355 Alaska Way Delta, BC V4C 4R7 9200 Holding Road	Lumber

Name and 2012 sales ($)	Website	Locations in BC	Products
		Chase, BC V0E 1M2 2705 Arrow Lakes Drive Castlegar, BC V1N 3W4 442 Highway 6 West Nakusp, BC V0G 1R0 1250A Ironwood Street Campbell River, BC V9W 6H5 P.O. Box 39 570 68th Ave. Grand Forks, BC V0H 1H0 20580 Maple Crescent Maple Ridge, BC V2X 1B1	
Tolko Industries Ltd. ***2012 sales not publicly available***	http://www.tolko.com/	3000 - 28th Street Vernon, BC, V1T 6M1	lumber, paper, panel products, co-products, biomass power, specialty wood products

More specific data on the industrial complex:
The websites below provide additional information on: the overall economic, structural and size of the sector; markets, shipments and exports of forest products; other forest product companies and their locations; and, suppliers to the forest industry in BC.

- 2011 Economic State of the B.C. Forest Sector (http://www.for.gov.bc.ca/ftp/het/external/!publish/web/economic-state/Economic-State-of-BC-Forest-Sector-2011.pdf)
- naturally:wood (http://www.naturallywood.com/supplierdirectory/default.asp)
- Council of Forest Industries: British Columbia's Forest Industry Positioned to Succeed through Transformation and Innovation (http://www.cofi.org/pdf/cofi_bc_forest_industry.pdf)
- Council of Forest Industries: Member Mills (http://www.cofi.org/wp-content/uploads/2011/12/cofi_millmembers2013.zip)
- Council of Forest Industries: B.C. Forest Products Industry At a Glance (http://www.cofi.org/wp-content/uploads/2011/12/COFI-BC-Ind-At-A-Glance-2012.pdf)

Industry Support

Industry Associations

The interests of companies operating within the sector are supported by a number of industry associations (Table 3). These bodies provide a range of functions, primarily to represent the interests of association members regionally, nationally and sometimes internationally. These organizations provide a means for the industry to 'speak with one voice', but also to provide a forum for members to meet and exchange information.

Table 3. Industry Associations operating in BC

Association	Website	Description
Association of BC Professional Foresters	http://www.abcfp.ca/	The ABCFP has various membership classes and categories i.e. Professional Foresters, Registered Forest Technologists, and members who have changed their status and of members who are no longer entitled to practice professional forestry in BC.
BC Community Forests Association	http://www.bccfa.ca/	A network of rural community based organizations engaged in community forest management, and those seeking to establish new community forests.
BC Forest Safety	http://www.bcforestsafe.org/	Membership includes forest industry organizations i.e. any firm, corporation, agency, governmental authority, society, other person, whether incorporated or unincorporated, which, as its primary purpose, participates in, regulates or provides services to the British Columbia forest industry; including forest sector companies that financially contribute to a classification unit(s) that support the BC Forest Safety Council activities; representing workers, employers, government and Crown Corporations.
BC Wood Specialties	http://www.bcwood.com/	BC businesses that manufacture wood products.

Association	Website	Description
Canada Wood	http://www.canadawood.org/index.php	The objective of Canada Wood is to expand the offshore export opportunities of Canadian wood products in traditional and emerging markets by supporting industry associations in their efforts to work collaboratively overseas and by developing a Team Canada approach to market development.
Canadian Lumber Standards Accreditation Board	http://www.clsab.ca/	Monitors the quality of Canada's lumber grading and identification system. It controls the identification and certification of lumber, accredits and supervises lumber grading agencies, reviews and approves grading rules and product standards related to grading agencies, promotes acceptance of the Canadian lumber grading system in foreign markets.
Canadian Wood Council	http://cwc.ca/	Represents manufacturers of Canadian wood products used in construction.
Canadian Wood Truss Association	http://www.cwta.net/	Represents metal plate connected wood truss and structural wood component manufacturers. It is the voice of the industry on all issues that link the truss manufacturers, Truss Plate Institute of Canada (TPIC), industry suppliers and related organizations.
CanBio	http://www.canbio.ca/	Promotes industry development of bioenergy, biomaterials and biochemicals. Members are leading companies, major utilities, start-ups, consultants, manufacturers, project developers, researchers, public sector agencies, and individuals.

Association	Website	Description
CanPly	http://www.canply.org	A non-profit organization that represents 8 member companies who operate 12 Canadian Softwood Plywood mills in Western Canada and New Brunswick. They promote, certify and maintain quality control of members, plywood and provide technical and promotional assistance to customers.
Central Interior Logging Association	http://www.cila.ca/	Members include independent logging, log-hauling, road building, bio-mass producers and processors, woodlot owners, silviculture contractors and service and supply companies. The CILA represents its members on safety, government policy and environmental issues, and provides liaison with First Nations, forest companies and various interest groups to encourage a strong and progressive forest contracting and supply sector.
Coast Forest Products Association	http://www.coastforest.org/	Association that works on behalf of its members companies in BC's coastal forestry sector i.e. companies that produce logs, lumber and pulp and paper, through focused government relations and forest policy work, and good relationship with coastal communities, First Nations and numerous forest stakeholders and organizations.

Association	Website	Description
Composite Panel Association	http://compositepanel.org/	The CPA represents the North American composite panel industry on technical, regulatory, quality assurance and product acceptance issues, bringing together the entire value chain affiliated with composite panels. General members include leading manufacturers of particleboard, medium density fiberboard and hardboard. Associate members include manufacturers of decorative surfaces, furniture, cabinets, and doors and mouldings, as well as laminators, distributors and equipment suppliers.
Council of Forest Industries	http://www.cofi.org/	COFI is the voice of the BC interior forest industry. Works with governments, communities, organizations and individuals to ensure that forest policies in BC support the forest sector and, as a result, those who are dependent on the sector for business income or family supporting jobs. Members range from large integrated global scale public companies to medium sized family owned operations to smaller independent niche players. They produce a range of products including lumber, pulp and paper, panels and engineered wood.

Association	Website	Description
Federation Of BC Woodlot Associations	http://www.woodlot.bc.ca/	Promotes the economic and social interests of woodlot licensees, private forest landowners and others involved in small-scale forest management in British Columbia. Woodlots vary greatly in size, in ownership, and in legal status. They can be forest lands managed by individuals, groups of individuals, First Nations or public institutions. Woodlot operators contribute stability and leadership within their communities, create local employment, produce a wide variety of products from the forest and offer environmental protection.
Forest Products Association of Canada	http://www.fpac.ca/index.php/en/	The FPAC is the voice of Canada's wood, pulp and paper producers nationally and internationally in government, trade, and environmental affairs.
Interior Logging Association	http://interiorlogging.org/	Association for interior independent logging contractors, sub-contractors, log haulers and silviculture workers. LA members are loggers involved in harvesting, moving wood fibre products or machinery, building and maintaining logging roads; while some are in the consulting field or supplying goods and services to the men and women in the logging industry.
Interior Lumber Manufacturers Association	http://www.ilma.com/	The ILMA represents local forestry companies working in British Columbia's southern interior. Most of these companies are small, and many are family owned. ILMA develops and communicates position on forest policy issues of critical importance to members and works with people who live in communities, local politicians, First Nations, environmental organizations, and provincial MLAs.

Association	Website	Description
National Lumber Grades Authority	http://nlga.org/	Responsible for the establishment, issuance, publication, amendment and interpretation of Canadian lumber grading rules and standards. The membership consists of all the independent lumber grading agencies in Canada (which are accredited by the CLSAB and ALSC) that oversee the grading activities of certified Canadian lumber producing facilities.
NCASI	http://www.ncasi.org/	The National Council for Air and Stream Improvement (NCASI) is an independent, non-profit research institute that focuses on environmental and sustainability topics relevant to forest management and the manufacture of forest products. Companies that manufacture pulp, paper, or solid wood products in Canada are eligible to become Canadian Members of NCASI, as are companies that own or manage industrial forestlands in Canada.
North West Loggers Association	http://www.northwestloggers.org/	NWLA members include contractors, log haulers and associated industries, licensees, small sawmillers, log brokers, silviculture companies and First Nation Band Corporations involved in the forest industry. NWLA represents members in industry conferences, regional summits and roundtable discussions, on political issues affecting the forest and trucking industry, provides support for contract issues, liaises with other provincial logging associations. Also acts on behalf of members on ICBC Advisory Committee, BCFSC (BC Forest Safety Council) and BC Timber Sales Advisory Board.

Association	Website	Description
Structural Board Association	http://osbguide.tecotested.com/aboutsba	Structural Board Association (SBA), founded in Canada, represented leading Oriented Strand Board (OSB) mills around the world. The SBA efforts were targeted at gaining building code acceptance, developing product standards, and coordinating the promotional and technical activities of those mills. In late 2008, SBA was acquired by TECO of Sun Prairie, Wisconsin U.S.A.
Truck Loggers Association	http://www.tla.ca/	Official voice in policy and legislation of independent forest contractors, located throughout B.C.'s coastal region. Members include truck loggers and forestry contractors.
Western Fallers Association	http://wfabc.tripod.com/	WFA gives its members, Independent Contract Fallers from throughout B.C., representation with the Assessments, Prevention, Claims and Policy and Research Divisions of WCB, the Provincial Forest Safety Task Force and BC Forest Safety Council.
Western Red Cedar Lumber Association	http://www.realcedar.com/	WRCLA is a non-profit association representing 27 quality producers of Western Red Cedar lumber products in British Columbia, Washington, Oregon and Idaho. WRCLA operates customer service programs throughout Canada and the United States to support its members' cedar products with information, education and quality standards. Activities also include research and new product development.

Association	Website	Description
Western Silvicultural Contractor Association	http://www.wsca.ca/	Represents the silvicultural contracting industry to both federal and provincial governments on forest policy, industry regulation, and health and safety. Members include tree planting, stand tending, wildfire fighting, site preparation and ecosystem restoration contractors.
Western Wood Truss Association	http://www.wwtabc.com/	WWTABC is an association of manufacturers actively engaged in the production of metal gusset plated wood trusses and individuals or firms engaged in related activities.
Wood Pellet Association of Canada	http://www.pellet.org/	The Wood Pellet Association of Canada is an organization advancing the interests of Canadian wood pellet producers. Goal is to help members grow through promoting the role of wood pellets in the Canadian and global markets, supporting market and technical research, and encouraging fair and open energy trade. The association has two types of membership: Producing members i.e. pellet producing companies in Canada and Associate members i.e. Suppliers, consultants, service providers and others allied to the field.
Wood Works BC	http://wood-works.ca/bc/	Wood WORKS! is a national campaign to increase the use of wood in commercial, industrial and institutional construction. The Canadian Wood Council leads Wood WORKS! with funding support from the wood industry, the federal government and provincial governments across Canada.

Supplier Industry

This is a very broad group including silvicultural contractors, logging contractors, mill suppliers, engineering firms, sawmill and kiln fabricators, trucking companies, repair

and maintenance contractors and all the companies that sell equipment and supplies to them. Larger companies and professional associations are listed in Appendix 4.

Science Assets

Research

BC boasts a significant breadth and depth of researchers across its publically funded institutions including higher education institutions (Table 4).

Table 4: Major research centers in BC

Institution	Website	Location	Description
FPinnovations	http://www.fpinnovations.ca/Pages/home.aspx#.UydF7KhdWSo	2601 & 2665 East Mall, Vancouver BC V6T 1Z4	Private, non-profit forest research centres. The organization helps the Canadian forest industry to develop path breaking solutions based on the attributes of Canada's forest resources, favoring a sustainable development approach.
B.C. Ministry of Forests, Lands and Natural Resource Operations: The Cowichan Lake Research Station	https://www.for.gov.bc.ca/hre/forgen/rstations.htm	7060 Forestry Road, Mesachie Lake, BC V0R 2N0	The centre for coastal tree improvement and genetic conservation, with active research programs being conducted for Douglas-fir, yellow-cedar, western red cedar, western hemlock, and Sitka spruce. Long-term permanent forest productivity plots at the station contribute to understanding coastal stand dynamics and stand development modeling. The nursery staff provides technical expertise and service in the growing of seedlings to be used for both research trials and rootstock for the grafting programs and in the propagation of yellow-cedar donor plants and cuttings. They also maintain gene archives and breeding arboretums for the coastal region.

Institution	Website	Location	Description
B.C. Ministry of Forests, Lands and Natural Resource Operations: The Kalamalka Research Station	http://www.for.gov.bc.ca/hre/forgen/rstations.htm#Kalamalka_Research_Station	Kalamalka Forestry Centre, 3401 Reservoir Road, Vernon BC V1B 2C7	Centre for the interior tree improvement and genetic conservation programs, with active research programs being conducted for interior spruce, lodge pole pine, interior Douglas-fir, western larch, and white pine. Staff provides technical expertise and services in propagation, seed handling, and tree breeding, as well as maintaining the gene archive for the interior. An in-house grower now provides stock for small research trials. Ongoing research projects at the station include: silviculture, forest fertilization, growth and yield, yield estimation, nursery stock production, cone and seed pests, and soil biology and productivity.
B.C. Ministry of Forests, Lands and Natural Resource Operations: Forestry and Technical Services Section	http://www.for.gov.bc.ca/hre/lab/index.htm	Research Branch Laboratory 4300 North Road P.O. Box 9536 Stn Prov Govt Victoria, B.C. V8W 9C4	The Research Branch Laboratory houses laboratory facilities for forestry genetics, stress physiology, biology, forest soil ecology, as well as a state of the art Analytical Chemistry Laboratory. The facility provides a wet and dry laboratory, growth chamber, glass house, seed storage, repository. It support active research programs, including coastal and interior tree improvement and genetic conservation, propagation and seed handling, forest fertilization, growth and yield, and nursery stock production. It offers extensive testing services and supports Ministry initiatives such as the Forest and Range Practices Act Forest Resource Evaluation Program (FRPA/FREP), the Future Forest Ecosystems Initiative and contributes to improving our understanding of the impacts of climate change the mountain pine beetle, second-growth management, and industry competitiveness.

Institution	Website	Location	Description
Natural Resources Canada-Canadian Forest Service	http://www.nrcan.gc.ca/forests/research-centres/pfc/13489	Pacific Forestry Centre 506 West Burnside Road Victoria, BC V8Z 1M5	The Pacific Forestry Centre (PFC) research include: Forest entomology and pathology – Studying various aspects of biology, population dynamics and management options in order to minimize the damage from forest pests. Fire management – Assessing the risks posed by fire and developing forecasting tools for emergency fire response so that fire-related damages can be minimized. Forest inventory and monitoring – Developing tools to monitor and assess change in Canada's forests e.g. forest ecosystem change, contributing to forest sustainability policy. Climate change – Part of the National Forest Carbon Accounting Program, to improve models and predictions of forest carbon. Economic and market research – Analyzing forest sector trends, emerging markets and export opportunities. Canadian Wood Fibre Centre – the Pacific Forestry Centre also houses staff from the Canadian Wood Fibre Centre.
RRU-Centre for Livelihoods and Ecology (CLE)	http://cle.royalroads.ca/home	Royal Roads University 2005 Sooke Road Victoria, BC V9B 5Y2	Strategic and applied research on forest resources and rural economy
Thompson Rivers University	https://www.tru.ca/	900 McGill Rd, Kamloops, BC V2C 6N6	Thompson Rivers University (TRU) is a public post-secondary institution funded by the Province of British Columbia. Canada. It offers students a broad range of courses, career streams, and the ability to ladder credits from diploma programs into full degrees. While the main campus is located in Kamloops, there is a second campus in Williams Lake.

Institution	Website	Location	Description
University of Northern BC (UNBC)	http://www.unbc.ca/	3333 University Way, Prince George, BC V2N 4Z9	The University of Northern British Columbia (UNBC) is a small, primarily undergraduate university, the main campus of which is located in Prince George, British Columbia. UNBC also has regional campuses in the northern British Columbia cities of Prince Rupert, Terrace, Quesnel, and Fort St. John.
UNBC- The Aleza Lake Research Forest	http://web.unbc.ca/~aleza/	Aleza Lake Research Forest 3333 University Way Prince George, BC V2N 4Z9 Canada	Specialize in forest management & Silviculture research, education and implementation of innovative forest practices. Not-for-profit business.
UNBC- John Prince Research Forest	http://researchforest.unbc.ca/jprf/jprf.htm	North central B.C. Situated between Tezzeron (Chuzghun) and Pinchi (Tesgha) lakes in the traditional territory of the Tl'azt'en First Nation.	Jointly managed by UNBC and a First Nation community. Promote inter-disciplinary research, providing education and employment opportunities for the local community. Includes research into: Historical Forest Ecology, Leave-Tree Survival and Wind Damage after partial cutting in the Upland SBS Forests, Mixed Wood Silviculture Trials, Seedling Inoculation, Forest Health and "Beetle Proofing", Dendrochronological and Dendroclimatic Investigations, Site Preparation Trials.
UBC Pulp and Paper Center	http://www.ppc.ubc.ca/	2385 East Mall, Vancouver, BC, V6T 1Z4	The centre is an interdisciplinary, cross faculty research centre with specialized laboratories and offices for graduate students, post doctoral fellows, research engineers and faculty who conduct research for the benefit of the current and future pulp and paper industry.
UBC-Centre for Advanced Wood Processing	http://cawp.ubc.ca/	2424 Main Mall #2900, Vancouver, BC V6T 1Z4	The Centre for Advanced Wood Processing (CAWP) is Canada's national centre for education and training related to wood products processing and advanced wood

Institution	Website	Location	Description
			products manufacturing. CAWP helps wood products manufacturers to develop, prototype and test new products. Also offers technical mentoring services for industrial designers seeking to create innovative wood-based products.
UBC-Faculty of Forestry	http://www.forestry.ubc.ca/	2424 Main Mall, Vancouver, BC, V6T 1Z4	UBC Faculty of Forestry meet future challenges in forestry through in-depth, cutting edge research, keeping pace with changing social values and an increasing knowledge-based forest sector. It teaches its students topics such as the biology of trees, innovative wood products, forest engineering and ecological and cultural issues related to the forest.
UBC-Michael Smith Labs	http://www.msl.ubc.ca/	Michael Smith Laboratories Vancouver Campus 2185 East Mall Vancouver, BC V6T 1Z4	The Michael Smith Laboratories research medical and animal molecular genetics/biology, plant and forest molecular genetics/biology, bioprocess engineering, chemical biology, proteomics, micro-fluidics, bioinformatics and statistical genomics. Also affiliated is the Centre for High-throughput Biology (ChiBi), an autonomous interdisciplinary research and graduate teaching unit with a focus on the application and development of high-throughput methods for the analysis of biological systems.
UBC- Alex Fraser Research Forest	http://afrf.forestry.ubc.ca/	Alex Fraser Research Forest 72 South 7th Avenue Williams Lake, BC Canada V2G 4N5	Research forest where students, faculty and researchers from UBC and beyond can study in an outdoor setting. Forest management, silviculture, forest harvesting, forest ecology, and conservation figure prominently in studies conducted.
UBC-Malcolm Knapp Research Forest	http://www.mkrf.forestry.ubc.ca/	Malcolm Knapp Research Forest 14500 Silver Valley Road,	Research forest where students, faculty and researchers from UBC and beyond can study in an outdoor setting. Forest management,

Institution	Website	Location	Description
		Maple Ridge, BC, V4R 2R3	silviculture, forest harvesting, forest ecology, and conservation figure prominently in studies conducted.

UBC, UNBC and BCIT have been involved in 7 of the 8 national forest research university networks:

1) ForValueNet (http://www.forvaluenet-foretvaleur.ca/index.php?lg=en&id=1)
2) NewBuilds (http://newbuildscanada.ca/)
3) Sentinel Bio-active paper (http://www.bioactivepaper.ca/?module=page&id=4000)
4) Green Fibre (http://www.greenfibrenetwork.ca/)
5) Value Chain Optimization (http://www.fibrenetwork.org/member-networks-single/value-chain-optimization-network/)
6) Bioconversion (http://www.nsercbioconversion.net/)
7) Lignoworks (http://www.lignoworks.ca/)

Outside BC's higher education system, Natural Resources Canada – Canadian Forest Service and the Canadian Wood Fibre Centre employ almost 100 research scientists and technical experts working in areas from forest health and remote sensing to forest productivity, pest management and invasive species.

See Appendix 5 for a more complete list of BC researchers and organizations.

Genome Canada and Genome BC in particular have catalyzed development of considerable genomic capacity and expertise in the province (Table 5) including development of sequencing, microarray and bioinformatics capabilities that have been utilized for forestry related research. (See Appendix 2 for a list of projects funded in BC).

Table 5. BC-based 'Omics' infrastructure

Facility	Website	Location	Services
Michael Smith Genome Sciences Centre, BC Cancer Agency (BCCA)	www.bcgsc.ca	570 West 7th Ave - Suite 100 Vancouver, BC V5Z 4S6	Sequencing, gene expression and bioinformatics
UVic- Genome BC proteomics Centre	http://www.proteincentre.com/	Vancouver Island Technology Park #3101-4464 Markham St Victoria, BC Canada	Proteomics, metabolomics, bioinformatics

Facility	Website	Location	Services
		V8Z 7X8	
Laboratory for Advanced Genome Analysis (Prostate Centre, Vancouver General Hospital)	http://pctriadd.com/genomic-analysis/services-amp-expertise	2660 Oak Street, Vancouver, BC, Canada V6H 3Z6	Microarrays, sequencing, bioinformatics

Education & Training

Educational institutions that provide forest sector and related training in BC are listed in Appendix 6. These include most community colleges and universities with programs in forest sciences, and environmental management, business, etc.

The Faculty of Forestry at the University of British Columbia (http://www.forestry.ubc.ca/) is one of the world's leading forestry schools, offering a range of programs on science and management of diverse ecosystems and landscapes, and the products and services that they generate. Programs include conservation, forest sciences, strong focus on forest management and wood sciences but also expanding to many other ecosystems. The Faculty's expertise covers many different aspects of sustainability, particularly as they related to the products derived from forests. Today forests are seen as the potential source of an incredible array of products and the sound management and utilization of these will be critical to the future sustainability of BC's forest resources.

The University of Northern British Columbia offers comprehensive programs in forest ecosystem management (http://www.unbc.ca/forestry), exposing students to contemporary knowledge and techniques drawn from a variety of disciplines in the natural and social sciences.

The British Columbia Institute of Technology (BCIT) (http://www.bcit.ca/) offers programs in sustainable resource management with a focus on forestry, arboriculture and natural resource management supporting the growth of sustainable communities; as well as in wood products manufacturing, that is BC's leading industry rapidly adopting advanced technology for the production of lumber and plywood. The BCIT Geographic Information Systems (GIS) technology is used to manage and utilize geographic data, and is increasingly being recognized as an essential tool in such diverse fields as forest management, urban planning, engineering, and municipal management.

Infrastructure Assets

The most substantial and valuable infrastructure asset assoiated with the BC forest industry is its forests which are well described in *'A Genomics Strategy for British Columbia's Forest Sector'* and in pages 12-13 in this document. BC's forest rich in natural habitat and bio-diversity, environmental services and economic opportunity was the high value asset that attracted investments well over a century ago that opened the frontier by creating access, building transportation networks and manufacturing facilities and creating jobs and communities. This same network of infrastructure now supports other natural resource sectors as well as tourism, hunting and fishing and back country adventure.

Ongoing responsible stewardship of the forest asset is ensured through legal agreements between the owner (Province of BC) and forest product companies that spell out, in detail, the obligations of both parties against a backdrop of a comprehensive portfolio of regulation, policy and legislation at all levels of government designed to protect lands, forests and waters of BC. Industry's forest management obligations include growing and planting young seedlings to ensure the next generation of forests continues to be healthy and productive. They rely upon a network of seed orchards for 13 tree species (summarized in Table 6 below), tree breeding capacity and tree nurseries (Appendix 4) to supply approximately 155 million seedlings per year that are planted across the province.

Table 6. BC seed orchards summary by management group (SelectSeed Co. Ltd.)

Operator	# orchards	# ramets establ. *	Approx ha	% orchards	% ramets	% ha
Ministry of Forests, Lands and Natural Resource Operations	41	44,942	140	39%	39%	39%
Licensee	41	32,672	101	39%	28%	28%
Private	8	4,076	13	8%	4%	4%
SelectSeed **	15	34,088	106	14%	29%	29%
Total	*105*	*115,778*	*359*	*100%*	*100%*	*100%*

*Excludes Hc hedge orchards
** Orchards operated under contracts with licensees and private companies

Government

In BC, 94% of forest land is publically owned and as such, governments have strong incentives to commit to responsible stewardship. Provincial and federal government

agencies invest in: research; education; training; forest regulation and protection; forest and environmental monitoring (including air, water and land); forecasting; regulation of processing facilities; establishment and monitoring of codes and standards (eg: building codes; product standards, etc); and, almost any other dimension of utilization of public assets in order to: ensure sustainability; protect both the natural assets as well as workers, consumers and citizens; and, facilitate trade and commerce. Appendix 7 provides an inventory of the public agencies involved in one or a number of the activities identified above.

Appendix 1: Majors funders of Research, Development and Commercialization in the Forest sector in BC

Name	Website	Description
Federal		
Canadian Forest Service (CFS) (Pacific Forestry Centre including Canadian Wood Fibre Centre), Natural Resources Canada (NRCAN)	http://www.nrcan.gc.ca/forests/research-centres/pfc/13489	One of five Canadian Forest Service (CFS) centres across Canada. The CFS promotes the responsible and sustainable development of Canada's forests. It promotes competitiveness , ensures forest sustainability, pursues a sustainable future for rural Canada (where many forest-dependent communities, including Aboriginal communities, are located), grows opportunities through research, development and innovation, and expands Canada's international influence. Its Value to Wood Program helps to improve the competitiveness of Canadian wood manufacturers by developing technologies that improve product value. Forintek Canada Corp. helps to implement the technologies
Department of Foreign Affairs, Trade and Development	http://www.acdi-cida.gc.ca/acdi-cida/acdi-cida.nsf/eng/home	Formally known as the Canadian International Development Agency (CIDA) it supports sustainable development in developing countries in order to reduce poverty and to contribute to a more secure, equitable, and prosperous world. Priorities are social development, economic well-being, environmental sustainability with a focus on climate change, land degradation and water supply
Innovation.Ca (Canadian Foundation for Innovation CFI)	www.innovation.ca	Independent corporation created by the Government of Canada to fund research infrastructure
Canadian Institutes of Health Research (CIHR)	www.cihr-irsc.gc.ca	Government of Canada's health research funding agency. Can be approached for funding to screen forestry products or products from pulp processing for medicinal activity
Environment Canada	www.ec.gc.ca	Preserves and enhances the quality of the natural environment; conserves Canada's renewable resources; conserves and protects Canada's water resources; forecasts weather and environmental change; enforces rules relating to boundary waters; and coordinates environmental policies and programs for the federal government

Name	Website	Description
Genome Canada/Genome BC	www.genomebc.ca	Invests in and manages large-scale genomics and proteomics research projects and science and technology platforms focused on areas of strategic importance such as human health, forestry, fisheries, ethics, agriculture, and the environment
Industry Canada	www.ic.gc.ca	Fosters a growing competitive, knowledge-based Canadian economy. This includes developing industry and technology capability, fostering scientific research. Funds Genome Canada
International Model Forest Network (IMFN)	http://www.imfn.net/	Program works with interested countries and institutions to establish a global network of model forests that will represent the major forest ecosystems of the world. Model forests use locally-based partnerships to develop locally relevant operational visions of sustainable forest management, along with the tools and processes to achieve it
NRC (IRAP)	www.nrc-cnrc.gc.ca	Responsible for undertaking, assisting, or promoting scientific and industrial research in different fields of importance to Canada. Also provides scientific and technological services to the research and industrial communities. This latter mandate is discharged through the NRC Industrial Research Assistance Program, the NRC Canada Institute for Scientific and Technical Information, and the Canadian Technology Network
Natural Sciences and Engineering Research Council of Canada (NSERC)	www.nserc.gc.ca	The national instrument for making strategic investments in Canada's capability in science and technology. NSERC supports both basic university research through discovery grants and project research through partnerships among universities, governments and the private sector, as well as the advanced training of highly qualified people.
Social Sciences and Humanities Research Council (SSHRC)	www.sshrc.ca	Federal research funding agency that promotes and supports postsecondary-based research and training in the humanities and social sciences
Provincial		
BC Knowledge Development Fund (BCKDF)	http://www.aved.gov.bc.ca/researchandinnovation/Funding/BCKDF/	Creates and enhances research infrastructure within BC, building or enhancing an institution's long-term capacity for leading-edge research, provincial economic development, and job creation

Name	Website	Description
BC Ministry of the Environment	http://www.gov.bc.ca/env/	Committed to sustainable environmental management, safeguarding BC's ecosystems, communities and economic well-being. Implementing applied science and research programs to support continued improvement in the conservation of native species and ecosystem
BC Ministry of Forests, Lands and Natural Resource Operations (MOFLNRO)	http://www.gov.bc.ca/for/	Responsible for establishing the conditions for access to and use of the province's forest, land and natural resources. The Ministry incorporates forests and lands policy development with operational resource management while supporting strategic work in all areas of the natural resource sector. Working with stakeholders, the Ministry develops policies, programs and legislation to promote industry competitiveness, and encourage investment in and development of natural resources. It also ensures that ministry activities support sustainable development and protect the public's interest in these resources. The Ministry auctions Crown timber to support the timber pricing system through BC Timber Sales. This includes preparing forest stewardship plans and logging plans; developing timber sale licences; constructing and maintaining logging roads and bridges; undertaking silviculture and forest protection treatments; and ensuring the work is carried out in a safe manner.
BCFIA Forest Science Program (FSP)	http://www.for.gov.bc.ca/hcp/fia/; http://www.fia-fsp.ca/	The FSP funds scientific projects that address gaps in the knowledge needed for the science-based sustainable management of BC's forest resources. It focuses on applied research in the areas of sustainable forest management, timber growth and value, and the more effective use of forest science.
Forest Genetics Council	www.fgcouncil.bc.ca	Is appointed by B.C.'s chief forester to guide the full range of forest genetic resource management activities, including tree improvement (tree breeding and seed orchards), genetic conservation, genecology, climate-based seed transfer, and seed-use policy in the province. Facilitates the cooperative management of tree gene resources in British Columbia consistent with scientific and conservation principles, providing funding for highly ranked projects. Has gene conservation, tree breeding, operational tree improvement, orchard seed, and communication/information management/administrative programs. Funded by the BCFIA Tree Improvement Program (http://www.for.gov.bc.ca/hti/fia/index.htm), the BC Ministry of Forests and Range, and private industry.

Name	Website	Description
Forestry Innovation Investment (FII)	www.bcfii.ca	Government agency that supports the forest sector documenting BC's environmentally progressive forest management, promoting product development and fostering international markets. Partners with universities and researchers to develop new and innovative products and services focused on responding to changing market needs, providing a competitive advantage over products like concrete and steel, and differentiating BC from foreign competitors. Plays a major role in the Mountain Pine Beetle Emergency Response
Canadian Forest Service (CFS) (Pacific Forestry Centre including Canadian Wood Fiber Centre), Natural Resources Canada	http://www.nrcan.gc.ca/forests/research-centres/pfc/13489	One of five Canadian Forest Service (CFS) centres in Canada. The CFS promotes the responsible and sustainable development of Canada's forests. It promotes competitiveness , ensures forest sustainability, pursues a sustainable future for rural Canada (where many forest-dependent communities, including Aboriginal communities, are located), grows opportunities through research, development and innovation, and expands Canada's international influence. Its Value to Wood Program helps to improve the competitiveness of Canadian wood manufacturers by developing technologies that improve product value. Forintek Canada Corp. helps to implement the technologies
Department of Foreign Affairs, Trade and Development	http://www.acdi-cida.gc.ca/acdi-cida/acdi-cida.nsf/eng/home	CIDA was merged with DFAIT to create DFATD. Formally known as the Canadian International Development Agency (CIDA) it supports sustainable development in developing countries in order to reduce poverty and to contribute to a more secure, equitable, and prosperous world. Priorities are social development, economic well-being, environmental sustainability with a focus on climate change, land degradation and water supply
Innovation.Ca (Canadian Foundation for Innovation)	www.innovation.ca	Independent corporation created by the Government of Canada to fund research infrastructure
Canadian Institutes of Health Research (CIHR)	www.cihr-irsc.gc.ca	Government of Canada's health research funding agency. Can be approached for funding to screen forestry products or products from pulp processing for medicinal activity
Environment Canada	www.ec.gc.ca	Preserves and enhances the quality of the natural environment; conserves Canada's renewable resources; conserves and protects Canada's water resources; forecasts weather and environmental change; enforces rules relating to boundary waters; and coordinates environmental policies and programs for the federal government

Name	Website	Description
Genome BC	www.genomebc.ca	Invests in and manages large-scale genomics and proteomics research projects and science and technology platforms focused on areas of strategic importance such as human health, forestry, fisheries, ethics, agriculture, and the environment
Industry Canada	www.ic.gc.ca	Fosters a growing competitive, knowledge-based Canadian economy. This includes developing industry and technology capability, fostering scientific research. Funds Genome Canada
International Model Forest Network (IMFN)	http://www.imfn.net/	Program works with interested countries and institutions to establish a global network of model forests that will represent the major forest ecosystems of the world. Model forests use locally-based partnerships to develop locally relevant operational visions of sustainable forest management, along with the tools and processes to achieve it
NRC (IRAP)	www.nrc-cnrc.gc.ca	Responsible for undertaking, assisting, or promoting scientific and industrial research in different fields of importance to Canada. Also provides scientific and technological services to the research and industrial communities. This latter mandate is discharged through the NRC Industrial Research Assistance Program, the NRC Canada Institute for Scientific and Technical Information, and the Canadian Technology Network
Natural Sciences and Engineering Research Council of Canada (NSERC)	www.nserc.gc.ca	The national instrument for making strategic investments in Canada's capability in science and technology. NSERC supports both basic university research through discovery grants and project research through partnerships among universities, governments and the private sector, as well as the advanced training of highly qualified people
Social Sciences and Humanities Research Council (SSHRC)	www.sshrc.ca	Federal research funding agency that promotes and supports postsecondary-based research and training in the humanities and social sciences
Provincial		
BC Knowledge Development Fund (BCKDF)	http://www.aved.gov.bc.ca/researchandinnovation/Funding/BCKDF/	Creates and enhances research infrastructure within BC, building or enhancing an institution's long-term capacity for leading-edge research, provincial economic development, and job creation
BC Ministry of the Environment	http://www.gov.bc.ca/env/	Committed to sustainable environmental management, safeguarding BC's ecosystems, communities and economic well-being. Implementing applied science and research programs to support continued improvement in the

Name	Website	Description
		conservation of native species and ecosystem
BC Ministry of Forests, Lands and Natural Resource Operations	http://www.for.gov.bc.ca/hfd/flc/	Building a strong and diverse forest sector through revitalization, while maintaining high environmental standards. Funds (at least in part) the BC Forest Investment Account (BCFIA). The BCFIA assists government to develop a globally recognized, sustainably managed forest industry. Two of the BCFIAs 5 programs (Forest Science Program [FSP] and Tree Improvement Program) are relevant here. The BC Ministry of Forests and Range also funds the Forestry Innovation Investment (FII)
BCFIA Forest Science Program (FSP)	http://www.for.gov.bc.ca/hcp/fia/; http://www.fia-fsp.ca/	The FSP funds scientific projects that address gaps in the knowledge needed for the science-based sustainable management of BC's forest resources. It focuses on applied research in the areas of sustainable forest management, timber growth and value, and the more effective use of forest science. Funded by the BC Ministry of Forests and Range
Forest Genetics Council	www.fgcouncil.bc.ca	Is appointed by B.C.'s chief forester to guide the full range of forest genetic resource management activities, including tree improvement (tree breeding and seed orchards), genetic conservation, genecology, climate-based seed transfer, and seed-use policy in the province. Facilitates the cooperative management of tree gene resources in British Columbia consistent with scientific and conservation principles, providing funding for highly ranked projects. Has gene conservation, tree breeding, operational tree improvement, orchard seed, and communication/information management/administrative programs. Funded by the BCFIA Tree Improvement Program (http://www.for.gov.bc.ca/hti/fia/index.htm), the BC Ministry of Forests and Range, and private industry
Forestry Innovation Investment (FII)	www.bcfii.ca	Government agency that supports the forest sector documenting BC's environmentally progressive forest management, promoting product development and fostering international markets. Partners with universities and researchers to develop new and innovative products and services focused on responding to changing market needs, providing a competitive advantage over products like concrete and steel, and differentiating BC from foreign competitors. Plays a major role in the Mountain Pine Beetle Emergency Response.

Appendix 2: Genome BC Investments in Forest Genomics

Project Title	Start/End Date	PIs	Area Targeted *	Purpose of the Research	Potential Application of the Research
1. Treenomix: Mechanisms of Wood Formation and Pest Resistance in Forest Trees Using Spruce, Poplar and Arabidopsis	1-Jan-02/ 31-Dec-05	Joerg Bohlmann, Brian Ellis, Carl Douglas, Kermit Ritland	Timber growth and value: health; Biodiversity & sustainability	Use a combination of structural and functional genomics tools for cross-species comparisons to address key questions in forest tree biology. Unravel mechanisms controlling wood formation and wood quality, and defense against insects and disease.	Develop marker-aided breeding programs, where adult traits can be predicted in seedlings. Provide improved knowledge of the benefits vs. compromises of desired breeding characteristics, such as increased growth rate and wood quality.
2. Conifer Forest Health Genomics	1-Jan-06/ 31-Mar-11	Joerg Bohlmann, Kermit Ritland	Timber growth and value: health; Biodiversity & sustainability	Identify the genetic traits of spruce trees that may improve their resistance to pests like the spruce weevil as well as increase their ability to adapt to changing conditions. Compare the spruce genome with the genome of the loblolly pine, the most important conifer in the USA to gain information about both species.	Add a new dimension to breeding programs, identifying new traits of interest and accelerating breeding schedules. Use genomics to help monitor the health of current forests and predict their long-term sustainability.
3. Tria 1 (Genomics for ecological risk models)	01- Jan-08/ 30-Jun- 10	Bohlmann, Joerg Cooke, Janice*	Timber growth and value: health; Biodiversity & sustainability	Provide better understanding of interacting biological systems (i.e. the disease-causing fungus, beetle, and the mechanisms of tree resistance) and the population dynamics of the mountain pine beetle (MPB) epidemic, for use in ecological risk models and with the purpose of direct application to better forest management and future control of the MPB.	Develop a predictive model in support of improved forest management practices and strategies for controlling or coping with massive epidemics (e.g., future MPB infestation in lodgepole and jack pines, diseases in Douglas fir and spruce).
4. Microbial	01- Apr-	Mohn, William	Biodiversity &	Develop four new tools for characterizing	Improve forest

Project Title	Start/End Date	PIs	Area Targeted *	Purpose of the Research	Potential Application of the Research
community monitoring as a forest management tool	08/ 31- Mar- 11		sustainability	and monitoring soil microbial communities.	management practices, bioremediation and site restoration.
5. Populus feedstock/ enzyme systems for bioenergy	01- Jul- 08/ 30- Jun- 11	Douglas, Carl Mansfield, Shawn	Timber growth and value; Timber, pulp, paper and bio-refining industries	(1) Generate phenotype/ genotype data that can be used to improve the Poplar resource. (2) Examine fungi to identify new enzymes that can effectively break down wood.	(1) Increase the amount of feedstock by 5-10%; could also have a positive effect on carbon offsets. (2) Enzymes for industrial processes.
6. Lignocellulosic biomass (MPB - pine) for bioethanol production	01- Oct- 08/ 30- Sep- 11	Saddler, Jack	Timber, pulp, paper and bio-refining industries	Isolate and identify novel enzymes and existing enzyme combinations that enhance the efficiency of hydrolysis (which can reduce wood to its component sugars), and apply novel process setups within fermenting organisms to improve ethanol recovery from poplar and MPB-killed lodgepole pine feedstocks.	Develop an efficient biorefining approach to cellulosic ethanol production for use by ethanol and biotechnology companies.
7. Forestry ecosystems (Fungal Ecology)	01- Jan- 09/ 31- Mar- 10	Hamelin, Richard Simard, Suzanne	Biodiversity & sustainability	Use genomic tools to study mycorrhizal ecology as a crucial factor underlying the success or failure of forest regeneration.	If MPB epidemic is due to a deadly virulent form of the fungus, then can identify and treat future outbreaks early by using fungicides. Results can also be extrapolated to other tree species.
8. Conifer adaptation/ hybrid zones	01- Jul- 09/ 30- Jun- 10	Aitken, Sally; Ritland, Kermit	Biodiversity & sustainability; climate change	Use data from Treenomix projects to understand relationships between genotypes and phenotypes in three spruce species to assess whether artificial selection can provide natural and breeding populations adapted to new climates.	Markers for use in climate-based seed management and tree breeding.

Project Title	Start/End Date	PIs	Area Targeted *	Purpose of the Research	Potential Application of the Research
9. Tria 2 (Lignocellulosic Feedstock Supply for Bioenergy: MPB - pine)	01- Oct-09/ 30-Sep- 12	Bohlmann, Joerg Cooke, Janice*	Timber growth and value: Bioenergy	Integrate large-sale genomics research with ecological risk modeling and economic analysis to develop and improve genomics-enhanced tools for accurate prediction of bioenergy feedstock availability from conifer forests impacted by (or at risk of) pest disturbance.	Development of predictive model of a sustainable lignocellulose feedstock supply for the bioenergy industry.
10. Conifer genome exploration	01- Oct-09/ 30-Sep- 10	Ritland, Kermit	Provide data for all targeted areas	Investigate strategies for sequencing a conifer genome. Reference genome is required to fully exploit conifer genetic materials and epigenetics.	Produce baseline data for conifer genome sequencing, on which to build applied projects.
11. Mushroom barcoding as a tool for forest management	01- Oct-09/ 31-Dec- 10	Berbee, Mary	Biodiversity & sustainability	Sequence and identify most useful locus for fungal species recognition to develop a barcode database for ~1000 specimens.	Use Barcodes to correlate species presence and absence with ecological functions and aid in investigation of tree interactions with the microbial world
12. Poplar feedstock for biofuels industry	01- Oct-09/ 31-Dec- 10	Mattsson, Jim	Timber growth and value: Bioenergy	Validate high throughput Illumina DNA sequencing as a means of identifying mutants in a hybrid poplar mutant population - identify desired mutants based on genotype of targeted genes.	Use the technology for large-scale screening of poplars with a long-term goal to generate novel poplar varieties suitable as feedstock in the production of ethanol.
13. Poplar and cereal rust comparative genomics: identification of pathogen determinants to prevent and predict	01-Jul-10/ 30-Jun-12	Hamelin, Richard; Bakkeren, Guus	Timber growth and value: health	Identify genes that influence how rust infects plants, which plant genes help fight rust, and how the rust adapts to new rust-resistant varieties of wheat that breeders produce.	Strategies to more quickly detect and monitor rust, and to more effectively prevent infection.

Project Title	Start/End Date	PIs	Area Targeted *	Purpose of the Research	Potential Application of the Research
epidemics					
14. AdapTree: Adaptive portfolio of reforestation stocks for future climates	01-Jul-11/ 30-Jun-14	Aitken, Sally; Hamann, Andreas	Climate change	Apply genomics and climate-mapping technologies to the problem of matching existing and naturally occurring genetic populations of interior spruce and lodgepole pine with the appropriate climate areas under climate change.	Will help provincial forestry agencies in BC and Alberta structure policy for tree planting to ensure the proper matching of tree seed source with planning environment under climate change.
15. Harnessing microbial diversity for sustainable use of forest biomass resources	01-Jul-11/ 30-Jun-14	Eltis, Lindsay; Mohn, William	Biodiversity & sustainability; Timber, pulp, paper and bio-refining industries	Address sustainable management of forest resources by exploring soil microbial communities for the discovery and development of: (a) biocatalysts to improve the carbon efficiency and economics of production of lignocellulose-derived products; and (b) novel environmental genomic tools for assessing forest management practices.	Will help to sustainably and economically unlock and exploit the potential of Canadian forest biomass, significantly impacting at least three major industries (forest products, chemical products and energy).
16. Genomics-Based Forest Health Diagnostics and Monitoring	01-Jul-11/ 30-Jun-14	Hamelin, Richard	Timber growth and value: health	Design DNA-based diagnostic assays for identification and monitoring of forest pathogens.	Fully validated diagnostic tests to reduce losses due to forest disease.
17. SMarTForests: Spruce Marker Technologies for Sustainable Forestry	01-Jul-11/ 30-Jun-14	MacKay, John; Bohlmann, Jörg	Biodiversity & sustainability	Develop diagnostic markers based on DNA, metabolites and proteins to advance breeding in Canada's major spruce species.	Tools to enhance forest health and productivity and to increase the value recovered from forest plantations.
18. POPCAN: Genetic improvement of poplar trees as a Canadian bioenergy feedstock	01-Jul-11/ 30-Jun-13	Douglas, Carl; Mansfield, Shawn	Timber growth and value: bioenergy	Using genomics to identify fast growing poplars that can be used cost-effectively as feedstock for biofuel production.	Guide poplar breeding strategies to establish short-rotation, fast-growing, tree based bioenergy plantations that can effectively populate a variety of climate zones

Project Title	Start/End Date	PIs	Area Targeted *	Purpose of the Research	Potential Application of the Research
					across the Canadian landscape and can be effectively converted to liquid fuel.
19. Genomics Research Entrepreneurship to Accelerate Translation (GREAT)	01-Oct-11/ 30-Sept-14	Livingstone, Angus; Muzyka, Daniel	Other: technology transfer	Assemble a Knowledge Network of entrepreneurial expertise to devise and instruct an innovative curriculum that significantly extends traditional technology transfer training into the areas of engaged research, validation, business development, and innovation adoption in the natural resource sector.	Enable researchers to successfully improve replanting stocks for better forest adaptation to changing markets and climate, and enable better management of bioenergy feedstocks.

Appendix 3: Major forest product companies

Name and 2012 sales ($)[11,12]	Website	Locations in BC	Products
Weyerhaeuser Company Limited **2012 sales 6.2B**	http://www.weyerhaeuser.com/	925 Georgia St W, VancouverV6C 3L2 Princeton Timberlands. Old Hedley Road P.O. Box 550 Princeton, BC V0X 1W0.	Building products: dimensional softwood lumber, engineered lumber (Parallam, Timberstrand), OSB. Northern bleached softwood kraft pulp
Domtar Corp. **2012 sales $5.5B**	http://www.domtar.com/index.asp	2005 Mission Flats Rd, KamloopsV2C 1A9	Paper-grade bleached softwood kraft and specialty pulp grades
WestFraser **2012 sales $3.0B**	http://www.westfraser.com/	858 Beatty Street, Suite 501 Vancouver, BC Canada V6B 1C1 1250 Brownmiller Road Quesnel, British Columbia Canada V2J 6P	Lumber, plywood, wood pulp
Canfor **2012 sales** **$2.7 B**	http://www.canfor.com/	100–1700 West 75th Ave Vancouver, B.C. V6P 6G2 230 - 1700 West 75th Ave Vancouver, B.C. V6P 6G2 5162 Northwood Pulp Mill Road PO Box 9000 Prince George, B.C. V2L 4W2	Lumber, wood pulp, paper

[11] http://www.biv.com/article/20120703/BIV050102/120629944/-1/BIV/biggest-forestry-companies-in-bc-in-2012
[12] PwC Top 100 Global Forest, Paper & Packaging Industry Survey: 2013 edition – survey of 2012 results (http://www.pwc.com/en_GX/gx/forest-paper-packaging/assets/pwc-global-forest-paper-packaging-industry-survey-2013-edition-survey-of-2012-results.pdf)

Name and 2012 sales ($)[11,12]	Website	Locations in BC	Products
Mercer **2012 sales $1.07B**	http://www.mercerint.com/s/Home.asp	Suite 1120, 700 West Pender Street Vancouver, BC V6C 1G8	Wood pulp
Catalyst Paper Corporation **2012 sales $1.06B**	http://www.catalystpaper.com/	2nd Floor, 3600 Lysander Lane Richmond, BC	Paper
Western Forest Products **2012 sales $0.93B**	http://www.westernforest.com/	510 – 700 West Georgia Street P.O. Box 10032, Vancouver, BC V7Y 1A1 495 Dunsmuir Street, Unit 201 Nanaimo, BC V9R 6B9,	Logs, lumber, from five quality tree species in BC
Interfor **2012 sales $0.85B**	http://www.interfor.com/	9355 Alaska Way Delta, BC V4C 4R7 9200 Holding Road Chase, BC V0E 1M2 2705 Arrow Lakes Drive Castlegar, BC V1N 3W4 442 Highway 6 West Nakusp, BC V0G 1R0 1250A Ironwood Street Campbell River, BC V9W 6H5 P.O. Box 39, 570 68th Ave. Grand Forks, BC V0H 1H0 20580 Maple Crescent Maple Ridge, BC V2X 1B1	Lumber
Taiga Building Products Inc. **2012 sales $1.1B**	http://www.taigabuilding.com/	268448 Gloucester Way, Langley BC V4W 3V6	Lumber, engineered wood, preserved wood, sidings, roofing,

Name and 2012 sales ($)[11,12]	Website	Locations in BC	Products
		2545 Acland Road, Kelowna BC V1X 7J4 4101 Mostar Road, Nanamio BC V9T 6A6	composite decking, flooring, moldings
Kruger Products LP (formerly Scott Paper Ltd) 2012 sales $0.92B	http://www.krugerproducts.ca	1625 5th Ave, New Westminster BC V3M 1Z7	Paper products
Tolko Industries Ltd 2012 sales $0.85B	http://www.tolko.com	3000 28th St, Vernon V1T 6M1 844 Otter Lake Cross Rd RR 6, Armstrong, BC V0E 1B6 6200 Jeffers Dr, Coldstream, BC V1B 3G4 4280 Hwy 6 RR 7, Lumby, BC V0E 2G7 400 Beaver Lake Rd, Kelowna, BC V4V 1S5	Lumber, oriented strand board, plywood and veneer, kraft paper, harvest bins, biomass energy
Ainsworth Lumber Co Ltd 2012 sales $0.41B	http://ww.ainsworthengineered.com	1055 Dunsmuir St Suite 3194, Vancouver BC V7X 1L3 100 Mile House, BC V0K 2E0	Oriented strand board, pointSix engineered flooring, stairtreads, thermastrand radiant barrier roofing, webstock for I-joists
Daishowa-Marubeni International Ltd 2012 sales $0.4B	http://www.dmi.ca/	Suite 700-510 Burrard St, Vancouver, BC V6C 3A8	Pulp
Fortress Paper Ltd. 2012 sales $0.31B	http://www.fortresspaper.com/	2nd Floor – 157 Chadwick Court, North Vancouver BC V7M 3K2	Pulp and paper
Hardwoods Distribution Inc.	http://www.hardwoods-inc.com	27321 – 58th Crescent,	Hardwood lumber, plywood,

Name and 2012 sales ($)[11,12]	Website	Locations in BC	Products
2012 sales 0.31B		Langley, BC V4W 3W7 Unit 100 – 397 Penne Road, Kelowna BC V1X 6X3 Unit 2-A, 4970 Polkey Road, Duncan BC V9L 4T8	
Paper Excellence Canada Holding Corp. **2012 sales $0.3B**	http://www.paperexcellence.com/	#95-10551 Shellbridge Way, Richmond BC V6X 2W8	Pulp and paper
Conifex Timber Inc. **2012 sales $0.22B**	http://www.conifex.com/	980-700 West Georgia St. PO Box 10070 Vancouver BC V7Y 1B6 100-2700 Queensway St. Prince George BC V2L 1N2 300 Takla Road, PO Box 254 Fort St. James BC V0J 1P0 FFI Road, PO Box 250, Mackenzie BC V0J 2C0	Lumber products and residuals
Teal Jones Group **2012 sales $0.2B**	http://tealjones.com/	17897 Trigg Rd, Surrey BC V4N 4M8	Western red cedar lumber, bevel, siding, timbers; Douglas Fir and Hemlock lumber; western red cedar roofing, sidewall shakes and shingles
Gorman Bros Lumber Ltd. **2012 sales $0.1B**	http://www.gormanbros.com	3900 Dunfield Rd, Westbank BC V4T 2G3	Lumber, spruce and lodgepole boards
Welco Lumber Corp. **2012 sales $0.1B**	http://www.welcolumber.com/	4445 Lougheed Hwy #1001, Burnaby BC V5C 0E4	Lumber: spruce, pine, fir. Hardwood flooring

Name and 2012 sales ($)[11,12]	Website	Locations in BC	Products
West Chilcotin Forest products Ltd. 2012 sales $10M	http://wcforestproducts.com	PO Box 3377 Hwy 20, Anahim Lake BC V0I 1C0	Rough and finished lumber
The Husby Group 2012 sales N/A	http://www.husbyforestproducts.com	6425 River Rd, Delta BC V4K 5B9	Full-service forest management company
Richmond Plywood Corp. 2012 sales N/A	http://www.richply.com/	13911 Vulcan Way, Richmond BC V6V 1K7	Softwood plywood
Nanaimo Forest Products Ltd. (Harmac Pacific Division) 2012 sales N/A	http://www.harmacpacific.com/	1000 Wave Pl, Nanaimo BC V9X 1J2	Pulp
Brink Forest Products Ltd. 2012 sales N/A	http://brink.bc.ca/	2023 River Rd, Prince George BC V2L 5S8	Lumber, fingerjointed lumber
TimberWest Forest Corp. 2012 sales N/A	http://www.timberwest.com/home.aspx	Third Floor, 856 Homer Street , Vancouver BC V6B 2W5 3-4890 Rutherford Road, Nanaimo BC V9T 4Z4 4475 NI Highway , Campbell River BC V9W 5C5	Timber: Douglas fir, hemlock, red & yellow cedar, alder
Sinclar Group Forest Products Ltd. 2012 sales N/A	http://www.sinclar.com/	1515 Nicholson St S, Prince George BC V2N 1V7	Lumber
Atco Wood Products Ltd. 2012 sales N/A	http://www.atcowoodproducts.com/	2073 Hepburn, Fruitvale BC V0G 1L0	Logs, softwood veneers and related by-products
Aspen Planers Ltd 2012 sales N/A	http://www.aspenplaners.ca/	2399 Quilchena Ave, Merritt BC V1K 1A4	Lumber, untreated round products: Posts, rails, grape stakes and

Name and 2012 sales ($)[11,12]	Website	Locations in BC	Products
			various other products
Gilbert Smith Forest Products Ltd. **2012 sales N/A**	http://gsfpcedar.com/	275 Station, Barrière BC	Lumber, shavings, sawdust, chips, whitewood, pulp logs.

Appendix 4: Suppliers to the forest sector

Name	Website	Location	Description
Akehurst & Galvani Reforestation Ltd.	www.agreforestation.ca	480 Keith Road West Vancouver, BC V7T 1L7	Planting, manual and motorized brushing and juvenille spacing.
Arbutus Grove Nursery Ltd.	http://www.arbutusgrove.com/	9721 West Saanich Road, RR #2, Sidney, BC V8L 5T5	Specialize in growing containerized seedlings for reforestation.
BA Blackwell & Associates Ltd.	www.bablackwell.com	3087 Hoskins Road North Vancouver, BC V7J 3B5	Environmental and professional forestry services
Brinkman & Assoc. Reforestation	www.brinkman.ca	520 Sharpe Street New Westminster, BC V3M 4R2	Coneseed, Consulting, Fire, GPSGIS, Implementation, Pest,Planting, Restoration, Vegetation, Snags, Spacing, Surveys
Cairnpark Nursery Services Inc.	http://members.shaw.ca/cairnpark/NoFrames/NF-Main.html	3467 Glenora Road , Duncan, BC V9L 6S2	Produce a variety of tree stock types and species for reforestation, as well as Christmas trees, hedging material, landscape trees and shrubs (both native and non-native). Seedlings grown: Grand fur, Noble fur, Nordmann fur, Fraser fur, White fur, Korean fur, Subalpine fur, Shasta fur, Western red cedar, Douglas fir; costal, Scotch pine, Western white pine.

Name	Website	Location	Description
Canadian Forest Products Ltd.	http://www.canfor.com/	J.D Little Forest Centre, PO Box 9000, Prince George, BC V2L 4W2	Canfor's Western Canadian operations source wood fibre primarily through long-term replaceable tenure agreements on publicly-owned land. They manage forests to maintain and enhance the long-term health of forest and ecosystems. Utilize science to improve knowledge of forests and sustainable forest management and monitors and incorporates advances in sustainable forest management science and technology where applicable. Manage forests for a multitude of values, including biodiversity, timber, water, soil, etc. heritage resources
Cowichan Lake Research Station	https://www.for.gov.bc.ca/hre/forgen/rstations.htm	7060 Forestry Road, Mesachie Lake, BC V0R 2N0	Supports forest stewardship on Vancouver Island. The station is the centre for coastal tree improvement and genetic conservation, with active research programs being conducted for Douglas-fir, yellow-cedar, western redcedar, western hemlock, and Sitka spruce. The nursery staff provide technical expertise and service in the growing of seedlings to be used for both research trials and rootstock for the grafting programs and in the propagation of yellow-cedar donor plants and cuttings. They also maintain gene archives and breeding arboretums for the coastal region.

Name	Website	Location	Description
Industrial Forestry Service L td	http://www.industrialforestry.ca/	Ness Lake Forest Nursery, 1595 Fifth Avenue, Prince George, BC V2L 3L9	Specializes in multi-phase resource development activities, forest seedling production and Silviculture research. The nursery grows forest seedlings for both the spring (fall lifted and cold stored) and summer (hot lifted) planting seasons. Species include: Spruce, Lodgepole Pine, Douglas-Fir, Balsam, Aspen, Cottonwood, Hybrid Poplar, Birch, Native plant material, seedlings for Christmas trees, plantations, and landscaping (Scots Pine, Norway Spruce, Muhgo Pine, Colorado Blue Spruce etc.).
Folklore Contracting Ltd.	www.folklorecontracting.ca	1077 Eastern Street Prince George, BC V2N 5R8	Tree planting and stand tending.
Juniper Beach Nursery (Silva gro)	http://www.silvagro.com	5320 Sage Road, General Delivery, Walhachin, BC V0K 2P0	Seedlings grown for reforestation in British Columbia.
Industrial Forestry Service L td	http://www.indforserv.bc.ca/	Ness Lake Forest Nursery 1595 Fifth Avenue Prince George, BC V2L 3L9	Seedlings for reforestation, site reclamation, habitat enhancement, Christmas tree plantations and landscaping.
K & C Silviculture Ltd.	http://www.silviculture.com	Box 459, Hwy 97, Oliver, BC V0H 1T0	Services include: seed sowing, seedling growing, packing, cold storage, delivery, tests, and researches. Species grown at K&C Okanagan Operations include: Interior & Coastal Lodgepole Pine, Jack Pine, Ponderosa Pine, Western White Pine, Black Spruce, Engelmann Spruce, Interior Spruce, Sitka Spruce, White Spruce, Interior & Coastal Douglas-fir, Siberian Larch, Western Larch, Western Red Cedar, Mountain Hemlock, Western Hemlock, Amabilis Fir, Grand Fir, Noble Fir, Subalpine Fir, White Fir, Alder species, Birch species, etc.
Landing Nursery Ltd.	N/A	6423 Okanagan Landing Ro ad. Vernon, BC V1H 1M5	Seedlings grown for reforestation in British Columbia.

Name	Website	Location	Description
Leader Silviculture Ltd.	www.leadersilviculture.com	PO Box 3529 Garibaldi Highlands, BC V0N 1T0	Specializing in tree planting, herbicide application/vegetation control, brushing, spacing & thinning.
Mountain View Growers Inc.	N/A	PO Box 99, 14608 Washington Avenue, Summerland, BC V0H 1Z0	Seedlings grown for reforestation in British Columbia.
MBC Summerland Nursery	http://summerlandchamber.com/mbc-summerland-nursery-ltd/	8333 McLachlan St, Summerland BC V0H 1Z6	Growers of forest seedling includes: Douglas fir, spruce, Lodgepole pine, Cedar, White pine, Larch. The seeds come from seed orchards or wild collections.
Panorama Crew Services Inc.	www.wildfireinterface.ca	Box 962 Nelson, BC V1L 6A5	Silviculture, specialized in brushing
PRT Growing Services Ltd., Corporate Office	http://www.prtgroup.com	#101-1006 Fort Street, Victoria, BC V8V 3K4	Silviculture services include: Seed processing and specialized seed treatments, Forest seedling and non-forestry plant propagation, Seedling propagation from somatic embryos, Quality testing, cold storage, shipping and tree planting, and Field-performance assessment and enhancement.
PRT Armstrong Nursery	http://www.prt.com/contact/nursery-locations/prt-armstrong	668 St. Anne Road, Armstrong, BC V0E 1B5	Produces all commercial species planted in Canada, including: 1+0 greenhouse grown container-grown seedlings, 1+0 and 2+0 open-compound crops for spring planting – well-conditioned, light-adapted seedlings, Brush Buster™ seedlings, Nutri-plug™ seedlings (contains controlled-release fertilizer). Interior Douglas-fir and other difficult to grow crops. Seed orchards for Douglas-fir and lodgepole pine.

Name		Website	Location	Description
PRT Campbell River nursery	**N**	http://www.prt.com/contact/nursery-locations/prt-campbell-river	3820 Snowden Road, Campbell River, BC V9H 1P5	Produces all commercial tree species planted in Canada, including: 1+0 and 2+0 containerized seedlings, Brush Buster™ seedlings, Nutri-plug™ seedlings (contains controlled-release fertilizer), plug transplants. Large seedlings ideally suited to coastal sites with brush and animal problems. True firs grown from seed upgrading and in specially developed programs. Woody biomass crops and crop cuttings, project management and advisory services for high-performance energy crops through their subsidiary, Bionera Resources.
PRT Coldstream Nursery		http://www.prt.com/contact/nursery-locations/prt-coldstream	10003 Highway 6, Vernon, BC V1B 3B6	A range of standard open compound seedling products and related nursery services, including: 1+0 and 2+0 open compound crops, Brush Buster™ seedlings, Nutri-plug™ seedlings (contains controlled-release fertilizer). Produces two types of container-grown seedlings: lodgepole pine and jack pine.
PRT Harrop Nursery		http://www.prt.com/contact/nursery-locations/prt-harrop	6320 Harrop Procter Road, Nelson, BC V1L 6P9	Grows all commercial tree species planted in Canada including: 1+0 and 2+0 container-grown seedlings, Brush Buster™ seedlings, Nutri-plug™ seedlings (contains controlled-release fertilizer), Christmas tree liners. Specializes in western red cedar and western white pine 1+0 and balsam 2+0 (Abies lasiocarpa).

Name	Website	Location	Description
PRT Hybrid Nursery Ltd.	http://www.prt.com/contact/nursery-locations/prt-hybrid	12682 Woolridge Road, Pitt Meadows, BC V3Y 1Z1	Grows all commercial tree species planted in Canada and offers a full range of standard seedling products and related nursery services, including 1+0 and 2+0 container-grown seedlings. Specializes in the following container-grown seedlings: Large seedlings. Seedlings for summer and fall planting. Well-conditioned seedlings grown in custom programs. Cranberry starter plants licensed from Rutgers University.
PRT Red Rock Nursery	http://www.prt.com/contact/nursery-locations/prt-red-rock	18505 Forest Nursery Road , Prince George, BC V2N 5Y7	Grows predominantly interior spruce, lodgepole pine, interior Douglas-fir, aspen, subalpine fir, black spruce and tamarack. The nursery offers a full range of standard seedling products and related nursery services, including: 1+0 container seedlings, Nutri-plug™ seedlings (contains controlled-release fertilizer), Brush Buster™ seedlings. Developed expertise in growing quality crops of difficult-to-grow species such as subalpine fir (Abies lasiocarpa). Grows woody biomass crops, and through subsidiary Bionera Resources, provide crop cuttings, project management and advisory services for high-performance energy crops.
PRT Summit Nursery	http://www.prt.com/contact/nursery-locations/prt-summit	4121 Morris Road, Telkwa, BC V0J 2X0	The nursery grows coastal and interior species for spring, summer and fall planting, including amabilis and subalpine fir, interior and Sitka spruce, lodgepole pine, western hemlock, and western red cedar. Also: 1+0 and 2+0 container seedlings, Nutri-plug™ seedlings (contains controlled-release fertilizer), Brush Buster™ seedlings. And difficult-to-grow species such as true fir (Abies amabilis and A. lasiocarpa).

Name	Website	Location	Description
PRT Vernon Nursery	http://www.prt.com/contact/nursery-locations/prt-vernon	7501 Bench Road, Vernon, BC V1H 1H3	Grows all commercial tree species planted in Canada including: 1+0 greenhouse-grown container seedlings, 1+0 and 2+0 open-compound crops, Brush Buster™ seedlings, Nutri-plug™ seedlings (contains controlled-release fertilizer). This nursery specializes in the following products: 1+0 open-compound crops for spring planting. High quality, outdoor grown lodgepole pine, jack pine and black spruce seedlings. Seedlings for summer planting.
Quastuco Silviculture Ltd.	www.quastuco.com	#11 - 477 Martin Street Penticton, BC V2A 5L2	Silviculture, planting, GPS Surveying
Rivershore Nurseries Ltd.	N/A	3217 Shuswap Road, Kamloops, BC V2H 1T1	Seedlings grown for reforestation in British Columbia.
Roserim Forest Nursery	N/A	PO Box 100, Canim Lake, BC V0K 1J0	Roserim grows conifer seedlings (including spruce, pine, Douglas fir) for reforestation
Ruff's Greenhouse	http://ruffs.com/aboutus/index.html	4402 Giscome Rd, Prince George, BC V2N 6S6.	Forest seedlings including White Spruce and Spruce Crosses, Lodge Pole and White Pine, Western Cedar, Interior Douglas Fir and Western Hemlock.
SilvaGro Quesnel	http://www.silvagro.com	275 Lear Road, Quesnel BC V2J 5V5	Silvagro Nursery is a tree nursery and silviculture company.
Skimikin Nursery Ltd.	N/A	RR#1 S13 C11, 935 Platt Road, Tappen, BC V0E 2X3	Seedlings grown for reforestation in British Columbia.
Sorrento Nurseries Ltd.	N/A	PO Box 368, 1411 Kyte Road, Sorrento, BC V0E 2W0	Seedlings grown for reforestation in British Columbia.
Spectrum Resource Group Inc.	N/A	3810 - 18th Avenue Prince George, BC V2N 4V5	Silviculture services including planting, brushing, spacing, herbaciding, fire fighting, planting implementation.
Strategic Fire Control Ltd.	N/A	329 Van Horne Street South Cranbrook, BC V1C 1Z6	Silviculture, stand tending and fire fighting.

Name	Website	Location	Description
Sylvan Vale Nursery Ltd.	http://www.svnltd.com	2104A Kelland Road, Black Creek, BC V9J 1G4	Sylvan Vale Nursery Ltd. has a custom growing program and can produce both container and bareroot stock, either from seed or cuttings. Grows forest seedlings, Christmas tree seedlings, native plants, ornamentals, berry plants, grasses, plants for restoration, agroforestry, nursery liners, hedging and many others. On site seed stratification and cold storage.
Summit Reforestation & Forest Mgmt	N/A	PO Box 2786 Smithers, BC V0J 2N0	Fire, Implementation, Misc, Pest, Planting, Vegetation, Snags, Spacing,Training
Tolko Industries Ltd., Eagle Rock Division (Nursery)	http://www.tolko.com/index.php/divisions/sectors/nursery	844 Otter Lake X Roads, Armstrong, BC V0E 1B6	Eagle Rock Reforestation Centre. Tolko Industries Ltd. is a manufacturer and marketer of a broad range of forest products. Sustainability program; prompt regeneration of harvested areas
Whispering Pines/Wildland Protection Services	www.wpcib.com	615 Whispering Pines Drive Kamloops, BC V2B 8S4	Fire, restoration, siteprep, snags, spacing
Woodmere Nursery Ltd., BC Division	http://www.woodmere.ca/	PO Box 195, 13399 Highway 16, East Telkwa, BC V0J 2X0	Grows containerized reforestation seedlings, also for afforestation and landscaping. Specializes in the production of Lodgepole Pine, White Spruce, Black Spruce, Subalpine Fir, Western Hemlock, Western Red Cedar, Siberian Larch, Pacific Silver Fir, Douglas Fir, Mountain Hemlock, Alder, Aspen and Yellow Cedar.
Woodmore Nursery	N/A	Box 7, Wall Beach, RR #1, Nanoose Bay, BC V0R 2R0	Seedlings grown for reforestation in British Columbia.

Name	Website	Location	Description
Canadian Forests Website	http://www.canadian-forests.com/silviculture_nurseries.html	N/A	Provides access to all the Internet sites of the federal and provincial governments, the forest industries, service and supply companies, associations and NGOs, consultants, education and research, forestry news, and employment opportunities.
Council of Forests Industries	http://www.cofi.org/	101-2666 Queensway Prince George, BC V2L 1N2 360 – 1855 Kirschner Road Kelowna, BC V1Y 4N7	Varied membership producing a range of products including lumber, pulp and paper, panels and engineered wood. Search directory of members products and services.
Forest Nursery Association of BC	http://www.fnabc.com/Members.html	PO Box 8854 Victoria Main, 709 Yates St, Victoria BC V8W 3Z1	Provides a directory of its member organizations, either public or private, or those who are actively engaged in forest nursery operations, research/extension or administration.
naturally:wood®	http://www.naturallywood.com/	Suite 1200, 1130 West Pender Street Vancouver, BC, Canada, V6E 4A4	A resource about wood performance, green building and life cycle assessment, as well as a wide variety of forest products, manufacturers, sustainable forest practices, certification of forests, wood products and a product supplier directory and certification search engine for sourcing wood, pulp and paper products.
Society of Consulting Foresters of B.C. (CFBC)	http://cfbc.bc.ca/services-directory/	4679 Dunbar St Vancouver, BC V6S 2G8	Forestry services directory of its members.
Western Silviculture Contractors Association	http://www.wsca.ca/	#720 - 999 West Broadway Vancouver, B.C. V5Z 1K5 Canada	The association represents the silvicultural contracting industry to both federal and provincial governments on forest policy, industry regulation, and health and safety. Directory of members include treeplanting, stand tending, wildfire fighting, site preparation and ecosystem restoration contractors.

Appendix 5: BC Researchers and areas of expertise

Name of Researcher	Organization	Website	Location	Expertise / Interests
Lank, David	SFU	http://www.sfu.ca/biology/wildberg/lank.html	Department of Biological Sciences, Burnaby	Population consequences of individual decision making in animals, including relationships between animal behaviour, ecology, population and conservation biology, and evolution. Specific expertise is with the ecology of mating and parental care systems and migration in precocial birds.
Lowenberger, Carl	SFU	http://www.biology.sfu.ca/people/profiles/clowenbe	Department of Biological Sciences, Burnaby	Transmission of disease-causing organisms by insect vectors, and the insect immune response to these parasites. The insect immune response is a germ-line encoded response that results in the production of an arsenal of immune peptides. This innate immune response is not based on antibody: antigen responses, but is more similar to the acute phase immune response in vertebrates. He works with two insect vectors, mosquitoes and kissing bugs.
Mattsson, Jim	SFU	http://www.biology.sfu.ca/people/profiles/jmattsso	Department of Biological Sciences, Burnaby	Genetic regulation of vascular tissue development in plants. Specifically (1) what is the molecular mechanism behind vascular strand formation? (2) which genes regulate fiber differentiation? (3) which genes regulate the rate of wood formation and the cellular composition of wood? Research focused on the model plant species, Arabidopsis.. Also the study of the genetic basis of wood formation and growth in trees. .
Plant, Aine	SFU	http://www.sfu.ca/biology/faculty/plant/	Department of Biological Sciences, Burnaby	The molecular physiology elicited in plants by environmental stress. Including the response of roots to environmental stress. Drought responses in poplar. Defense against herbivore in conifers.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Stead, Doug	SFU	http://www.sfu.ca/~tafgrc/DougStead/	Department of Earth Sciences, Burnaby	The development of digital terrain mapping techniques and their incorporation into slope stability assessment.
Hayter, Roger	SFU	http://www.sfu.ca/geography/people/faculty/roger-hayter	Department of Geography, Burnaby	Relationships between institutions, industrial organization, location and regional development. Focusing on the on the evolutionary geographies of firms, and on the development of resource peripheries, to understand the location dynamics of BC's forest economy.
Howlett, Michael	SFU	http://www.sfu.ca/politics/faculty/full-time/michael_howlett.html	Department of Political Science, Burnaby	Specializes in public policy analysis, Canadian political economy, and Canadian resource and environmental policy.
Lertzman, Kenneth	SFU	http://www.rem.sfu.ca/people/faculty/lertzman/	School of Resource and Environmental Management, Burnaby	Ecosystem dynamics, conservation, and management, including natural disturbance regimes and management interaction producing pattern and dynamics in forest stands and landscapes. Research about ecosystem-based management and sustainability on the British Columbia Coast. Climate change impacts, adaptation, and mitigation, alternative silvicultural systems, analysis of forest light environments, ecological restoration, forest fire risk analysis, analysis of forest tenures and stewardship, and First Nations' forestry and Traditional Ecological Knowledge.
Schmidt, Margaret	SFU	http://www.sfu.ca/geography/people/faculty/margaret-schmidt	Department of Geography, Burnaby	Forest soil science, nutrient cycling, spatial analysis of soil properties, digital soil mapping, predictive soil mapping, soil rehabilitation.
Jones, Melanie	UBC	http://biol.ok.ubc.ca/faculty/jones.html	Irving K. Barber School of Arts & Sciences, Okanagan	Influence of ectomycorrhizae on nutrient uptake and carbon allocation by woody plants and the effect of various forestry practices on the diversity of ectomycorrhizal fungi in BC forests. The physiological diversity of ectomycorrhizal fungi found in clear cuts and older forests.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Hodges, Karen	UBC	http://biol.ok.ubc.ca/faculty/hodges.html	Irving K. Barber School of Arts & Sciences, Okanagan	Conservation biology; spatial ecology; population dynamics; peripheral populations; exploration of how habitat types and configurations affect species interactions and endangerment of at-risk species; understanding population dynamics at the periphery of species' ranges, as these populations may be more vulnerable to the threats. Examine terrestrial vertebrates in western montane forests (e.g. Rockies, Cascades, and other mountain chains) and the sage-steppe habitats within the Okanagan region of B.C.
Murch , Susan	UBC	http://chem.ok.ubc.ca/faculty/murch.html	Irving K. Barber School of Arts & Sciences, Okanagan	Develop new technologies for growing plants in sterile, controlled environments to produce clonal propagates, new plant varieties and a steady source of consistent, high quality plant material for studies to understand plant chemical diversity and plant responses to environmental cues. Plant chemistry and biotechnology; the identification, quantification and metabolism of plant secondary metabolites, the impact of these phytochemicals on human health, and the development of technologies for mass-production of specific plant chemicals as medicines, natural health products, food additives and functional foods
Scott, David	UBC	http://eesc.ok.ubc.ca/faculty/scott.html	Irving K. Barber School of Arts & Sciences, Okanagan	The effects of wildfire on soils, hydrology and erosion in B.C., and the study of residence time of snowmelt water in headwater catchments, using conservative tracers.
Wei, Adam	UBC	http://eesc.ok.ubc.ca/faculty/adamwei.html	Irving K. Barber School of Arts & Sciences, Okanagan	Eco-hydrological processes; in-stream wood ecology and its relations with channel morphology, aquatic habitat and carbon budget; forest disturbance and watershed processes; application of GIS and remote sensing on watershed hydrology and management; surface water and groundwater integration; long-term soil productivity; and forest ecosystem modeling (FORECAST).

Name of Researcher	Organization	Website	Location	Expertise / Interests
Ellis, Brian	UBC	http://www.msl.ubc.ca/faculty/ellis	Michael Smith Laboratories, Vancouver	Works with the major plant model, Arabidopsis thaliana, to explore the organization and regulation of protein kinase-based signaling pathways. These help regulate development within specialized tissues and organs (e.g. fibre cells, stomata, pollen); they also monitor and respond to environmental cues (e.g. pathogen attack, cold, high salt). MAP kinase (MAPK) cascades, in particular, form dynamic kinase signaling modules that integrate inputs from many sources: receptor kinases, hormones, reactive oxygen species (ROS) and calcium fluxes, and translate these into effective physiological responses.
Douglas, Carl	UBC	http://www.botany.ubc.ca/people/carl-douglas	Biological Sciences Building, Vancouver	Plant gene expression and molecular approaches (forestry genomics) to understand the regulation of plant secondary metabolism using Arabidopsis inflorescence stem as a model to investigate transcription factors and transcription factor complexes that are part of a network regulating secondary cell wall deposition.
Wasteneys, Geoffrey	UBC	http://www.botany.ubc.ca/people/geoffrey-wasteneys	Biological Sciences Building, Vancouver	The control of microtubule dynamics by microtubule-associated proteins. Microtubule polymer activities and the spatial organization of cortical microtubule arrays. The function of cortical microtubule arrays in the mechanical properties of cellulosic cell walls.
Adams , Keith	UBC	http://www.botany.ubc.ca/people/keith-adams	Biodiversity Research Centre, Vancouver	Research is in the areas of molecular and genomic evolution, including gene expression in the Arabidopsis and Brassica family (Brassicaceae), and hybridization and its effects on gene expression in cottonwoods.
Kerekes, Richard	UBC	http://www.chbe.ubc.ca/faculty-staff/kerekes.php	Pulp & Paper Centre, Vancouver	Papermaking technology, specifically fibre processing, pulp refining and paper forming.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Martinez, Mark	UBC	http://www.chbe.ubc.ca/faculty-staff/martinez.php	Pulp & Paper Centre, Vancouver	Behaviour of papermaking fibre suspensions using both novel visualization techniques, such as positron emission tomography (PET) and pulsed ultrasound Doppler anemometry, and computational fluid dynamics to help elucidate the mechanism by which these suspensions flow.
James, Brian	UBC	https://www.chem.ubc.ca/brian-james	Chemistry Building, Vancouver	Research: (a) the evaluation of Pt metal complexes as radio-sensitizers and hypoxia imaging agents, (b) modification of lignin, (c) conversion of lignin to organic compounds.
Mehrkhodavandi , Parisa	UBC	https://www.chem.ubc.ca/parisa-mehrkhodavandi	Chemistry Building, Vancouver	Developing homogenous catalysts for novel polymers, including using lactide synthesized from plant-derived dextrose
Hall, Eric	UBC	https://www.civil.ubc.ca/faculty/eric-hall	Civil and Mechanical Engineering Building, Vancouver	Environmental Engineering, Pollution Control and Wastewater Management. Research interests are Membrane bioreactors for wastewater treatment (UBC Filtration Technology Group), membrane fouling, modeling and simulation of wastewater treatment systems, fate of emerging contaminants during secondary treatment, microbial ecology of biological treatment systems.
Dauvergne, Peter	UBC	http://www.ligi.ubc.ca/?p2=/modules/liu/profiles/profile.jsp&id=25	Liu Institute for Global Issues, Vancouver	The politics of global environmental change, sustainable consumption, corporate social responsibility, and social movements.
Hungr, Oldrich	UBC	http://www.eos.ubc.ca/about/faculty/O.Hungr.html	Department of Earth, Ocean and Atmospheric Sciences, Vancouver	Developing new techniques for slope stability analysis, modeling of landslide behaviour with emphasis on rapid motion, landslide hazards mapping, quantitative hazard and risk assessment and design of remedial and protective measures.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Davies, Michael	UBC	https://www.ece.ubc.ca/~miked/	Department of Electrical and Computer Engineering, Vancouver	Research interests are in the general area of system modeling and control design, with emphasis on applications to pulp and paper processes, especially paper machines, and to electromechanical systems. Current projects are the control loop performance monitoring, the wavelet analysis of paper machine cross machine and machine directions process variations from scanned data, and the modeling of paper machine wet end process variations.
Dumont, Guy	UBC	http://www.ece.ubc.ca/faculty/guy-dumont	Department of Electrical and Computer Engineering, Vancouver	Research interests are adaptive control, predictive control, control of distributed parameters systems, advanced process control, applications of wavelet analysis, biomedical applications of control, pulp and paper process control.
El-Kassaby, Yousry	UBC	http://profiles.forestry.ubc.ca/person/yousry-el-kassaby/	Forest Sciences Centre, Vancouver	Research areas: Tree domestication, tree improvement delivery system, seed orchards' genetics, tree breeding, association genetics and genomic selection. Projects include: Development of advanced generation seed orchard designs, In situ wood quality assessment, seed orchard's genetic efficiency, seed dormancy, association genetics of biofuel attributes, genomic selection.
Marshall, Peter	UBC	http://profiles.forestry.ubc.ca/person/peter-marshall/	Forest Sciences Centre, Vancouver	Quantifying and forecasting stand and forest dynamics, particularly with respect to uneven-aged and/or mixed species (complex) stands. Designing sampling approaches for various natural resources applications focusing on efficient methods of quantifying downed dead woody material (coarse woody debris). Projects are validation of CrosBas/PipeQual (ForValueNet) and dynamics of interior Douglas-fir stands following pre-commercial thinning.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Prescott, Cindy	UBC	http://profiles.forestry.ubc.ca/person/cindy-prescott/	Forest Sciences Centre, Vancouver	Rates of litter decomposition: controlling factors and influences of forestry practices. Influence of site and species on N availability. Effects of clear cutting and other silvicultural systems on N availability. Causes and amelioration of nutrient deficiencies in cedar-hemlock cutovers. Long-term effects of forest fertilization. Linking soil microbial and faunal communities and nutrient cycling processes. Soil reclamation.
Saddler, Jack (John)	UBC	http://profiles.forestry.ubc.ca/person/jack-john-saddler/	Forest Sciences Centre, Vancouver	Application of enzymes in enhancing pulp and fibre properties, fibre modification and bleach boosting pulps, bioconversion of lignocellulosic residues to ethanol, microbiology of waste water treatment, application of fungi to upgrading and modification of forest products, pulp and paper and waste streams.
Alila, Younes	UBC	http://profiles.forestry.ubc.ca/person/younes-alila/	Forest Sciences Centre, Vancouver	Watershed management using an approach that combines experimental, theoretical, stochastic, and deterministic hydrology across a wide range of temporal and spatial scales. Focusing on the understanding and modeling of the physical basis underlying the “nonlinear nature” of hydrologic processes as affected by the geometric, temporal and spatial scaling of stream networks, precipitation dynamics, soil characteristics, land use and land cover.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Coops, Nicholas	UBC	http://profiles.forestry.ubc.ca/person/nicholas-coops/	Forest Sciences Centre, Vancouver	Advanced forest inventory techniques using high spatial resolution optical remote sensing imagery and LIDAR. Application of remote sensing imagery to computer visualization. Ecosystem and carbon accumulation modeling for biodiversity, production and greenhouse calculations. Wildfire, post fire severity and fuel hazard load mapping from real-time remote sensing. Detection of damaging agents in forests using spectral forest condition mapping.
Innes, John	UBC	http://profiles.forestry.ubc.ca/person/john-innes/	Forest Sciences Centre, Vancouver	Sustainable forest management, particularly the application of the principles of sustainable forest management. The design of suitable monitoring systems. Examination of how the impacts of climate change are affecting forest-dependent communities in the Yukon and how those communities are adapting to their changing environment. Cumulative impacts of development on aboriginal communities in northeast British Columbia and elsewhere in British Columbia what influences the capacity of First Nations to implement sustainable forestry and at some of the barriers influencing this.
Larson, Bruce	UBC	http://profiles.forestry.ubc.ca/person/bruce-larson/	Forest Sciences Centre, Vancouver	Stand dynamics (especially development patterns of mixed species stands and density effects in single species stands), silviculture (especially economic and biodiversity issues), and forest management (especially forest certification). Projects include using red alder as an adaptation strategy to reduce environmental, social and economic risks of climate change in coastal BC Crown competition, crown efficiency, tree growth and site type: quantification with terrestrial LiDAR.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Lemay, Valerie	UBC	http://profiles.forestry.ubc.ca/person/valerie-lemay/	Forest Sciences Centre, Vancouver	Use of ground information with model projections for forest inventory. Tree taper, volume, crown length, and leaf area — models and estimation methods. Developing measures of structural diversity. Methods for adjusting existing growth models. Estimating tree internal decay — methods and models. More robust estimating methods. Nearest neighbour methods for integrating forest inventory information from a variety of sources. Changes in tree taper over time. Estimation of regeneration following partial cutting. Structural diversity indices that combine spatial and size heterogeneity. Scaling models to larger scales and conversely down to local scales.
Meitner, Michael	UBC	http://profiles.forestry.ubc.ca/person/michael-meitner/	Forest Sciences Centre, Vancouver	Environmental psychology: 1) public involvement in sustainable ecosystem planning efforts, 2) the projection of future forest conditions according to economic, ecological and social indicators of sustainability, 3) the management of spatial and temporal data at a scale required for landscape planning, and 4) distributed artificial intelligence modeling of human/landscape interactions with specific attention to issues of conflict in outdoor recreation and tourism.
Nelson, John	UBC	http://profiles.forestry.ubc.ca/person/john-nelson/	Forest Sciences Centre, Vancouver	Analysis forest level planning, mathematical programming, road networks and forest operations.
Sheppard, Stephen	UBC	http://profiles.forestry.ubc.ca/person/stephen-sheppard/	Forest Sciences Centre, Vancouver	Climate change planning, outreach, and community engagement; visioning methods and visualization of climate change causes, impacts, and mitigation/adaptation; low-carbon future scenarios visualized in the CIRS' BC Hydro Decision Theatre; community energy planning, renewables, and energy literacy; public perceptions, aesthetics and sustainability; social aspects of forestry.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Moore, Dan	UBC	http://profiles.forestry.ubc.ca/person/r-dan-moore/	Geography Department, Vancouver	Hydroclimatology, hydrology, riparian processes and management, physical water quality.
Martin, Kathy	UBC	http://profiles.forestry.ubc.ca/person/kathy-martin/	Forest Sciences Centre, Vancouver	Ecology, life history variation, behaviour and conservation of birds in high elevation habitats. Metapopulation and connectivity processes for alpine bird populations. Avian use of mountain habitats during migration. Nest Webs – cavity nesting bird community dynamics in natural and managed forests in relation to forest cutting regimes and natural disturbance events. Effectiveness of avian monitoring programs to reflect population trends.
Mitchell, Stephen	UBC	http://profiles.forestry.ubc.ca/person/stephen-mitchell/	Forest Sciences Centre, Vancouver	Silviculture Systems. Windthrow Assessment and Management. Natural Disturbance Processes. Riparian Zone Management. Regeneration.
Simard , Suzanne	UBC	http://profiles.forestry.ubc.ca/person/suzanne-simard/	Forest Sciences Centre, Vancouver	Forest ecology. Plant – soil microbial interactions. Plant-plant interactions. Ectomycorrhizae. Mycorrhizal networks. Forest stand dynamics (regeneration, growth, mortality). Forest disturbances. Complex adaptive systems and ecological resilience. Global change.
Aitken, Sally	UBC	http://profiles.forestry.ubc.ca/person/sally-aitken/	Forest Sciences Centre, Vancouver	Conservation genetics, genecology, adaptation to climate change, population genomics. Director, Centre for Forest Gene Conservation funded by Forestry Investment Account through the Forest Genetics Council of BC. Leader of the AdapTree project.
Arcese, Peter	UBC	http://profiles.forestry.ubc.ca/person/peter-arcese/	Forest Sciences Centre, Vancouver	Population demography and genetics of vertebrates, biogeography of native plant and animal communities, adaptive management and monitoring of rare species and ecosystems and conservation area design.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Bohlmann, Jorg	UBC	http://profiles.forestry.ubc.ca/person/jorg-bohlmann/	Michael Smith Laboratories, Vancouver	Plant and forestry molecular genetics and genomics - Secondary metabolism; Plant defense against insects and insect-associated pathogens; Forestry and grapevine genomics. Molecular genetic, biochemical, and chemical characterization of terpenoid defenses in conifers and poplars against insect pests and pathogens; Terpenoid syntheses and cytochrome P450 enzymes. Functional genomics of terpenoid in Arabidopsis thaliana. Analysis of small molecules (e.g. plant secondary metabolites, signaling compounds).
Gergel, Sarah	UBC	http://profiles.forestry.ubc.ca/person/sarah-gergel/	Forest Sciences Centre, Vancouver	Mapping and Quantifying Ecosystem Services. Social-ecological Landscapes and Resilience. Historical Dynamics of Large River-floodplains. Mapping & Monitoring with First Nations. High Resolution Image Analysis (satellite imagery and historical aerial photographs).
Grayston, Sue	UBC	http://profiles.forestry.ubc.ca/person/sue-grayston/	Forest Sciences Centre, Vancouver	Microbial diversity and function in soils. Plant-microbe interactions. Rhizodeposition. Climate change and soil C sequestration. Soil microbial community structure and function related to GHG emissions.
Guy, Robert	UBC	http://profiles.forestry.ubc.ca/person/robert-guy/	Forest Sciences Centre, Vancouver	Ecophysiology and stress physiology of trees and other plants. Use of stable isotopes in plant physiology and ecology. Phenotypic plasticity and resource allocation. Photosynthesis. Respiration (particularly alternative path respiration). Water relations. Forest regeneration and stock quality.
Hamelin, Richard	UBC	http://profiles.forestry.ubc.ca/person/richard-hamelin/	Forest Sciences Centre, Vancouver	Genomics of Host-Pathogens interactions; Integrated Genomics in the Mountain Pine Beetle complex; DNA barcoding of Forest Pathogens. Interest in using genetic and genomic approaches to better understand forest disease epidemics and in the development of diagnostic and monitoring tools.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Ritland, Kermit	UBC	http://profiles.forestry.ubc.ca/person/kermit-ritland/	Forest Sciences Centre, Vancouver	Population and quantitative genetics and genomics
Chanway, Christopher	UBC	http://profiles.forestry.ubc.ca/person/christopher-chanway/	Forest Sciences Centre, Vancouver	Soil microbiology and plant growth. Bacterial endophytes of gymnosperms. Biological nitrogen fixation. Plant-microorganism interactions. Plant growth promoting rhizobacteria.
Avramidis, Stavros	UBC	http://profiles.forestry.ubc.ca/person/stavros-avramidis/	Forest Sciences Centre, Vancouver	Wood Science: Wood-water relations and sorption thermodynamics. Momentum, heat and mass transfer in wood. Modeling steady-state and dynamic non-isothermal diffusion in wood. Application of fractals and artificial neural networks to wood properties modeling. Modeling drying stresses in wood and their effect on quality. Industrial wood kiln drying optimization and development of new drying strategies. Radio frequency vacuum (RFV) heating and drying of wood and wood products.
Barrett, David	UBC	http://wood.ubc.ca/people/faculty/	Department of Wood Science, Vancouver	Wood science, including structural use of wood products, short term and long term (creep, creep-rupture) behaviour of wood products
Breuil, Colette	UBC	http://profiles.forestry.ubc.ca/person/colette-breuil/	Forest Sciences Centre, Vancouver	Wood-inhabiting fungi: Identification by traditional and molecular tools of sapstaining (Ophiostomatoid) and decay fungi affecting international trade and causing tree diseases. Genomics of Ophiotomatoid fungi: biochemical and genetic aspect of fungal growth and pigmentation; and future control methods of deep stain. Chemical analysis of wood affected by deep stain or decay fungi; Monitoring extractives and fungi in wood chips as markers for chip quality and fibre. Establishing the colonization pattern of bacteria and fungi in Western Red Cedar (WRC) wood in service to determine whether the failure of cedar products is due to 1) the biological modification of extractives, 2) the leaching of extractives or/and 3) a combination of factors.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Evans, Philip	UBC	http://profiles.forestry.ubc.ca/person/philip-evans/	Forest Sciences Centre, Vancouver	Wood anatomy, protection and bio-based composites.
Kozak, Robert	UBC	http://profiles.forestry.ubc.ca/person/robert-kozak/	Forest Sciences Centre, Vancouver	Research on forest-dependent communities in transition, international development & poverty alleviation, forest certification & corporate social responsibility, forest sector sustainability & competitiveness, marketing, management & consumer behaviour. Interests in sustainable business management practices and issues, problem solving related to sustainable development, forestry, wood products and the emerging conservation economy.
Lam, Frank	UBC	http://profiles.forestry.ubc.ca/person/frank-lam/	Forest Sciences Centre, Vancouver	Performance of solid sawn timber, wood-based composites, and engineered wood systems: Modeling the interacting influence of wood fiber geometry and orientations on the physical and strength properties of wood based composites through the applications of stochastic theory, engineering mechanics, finite element methods, and robot-based forming systems.
Mansfield, Shawn	UBC	http://profiles.forestry.ubc.ca/person/shawn-mansfield/	Forest Sciences Centre, Vancouver	Tree biotechnology. Relationship between genes expression and phenotypic fibre characteristics. Plant Metabolism (Metabolomics). Cell Wall Development. Cellulose Biosynthesis. Lignin Biosynthesis. Lignocellulosic chemistry and ultrastructure as it relates to wood quality. Fibre morphology and chemistry as related to the formation and properties of paper. Enzyme applications in the pulp and paper industry. Enzyme-substrate interactions.
McFarlane, Paul	UBC	http://profiles.forestry.ubc.ca/person/paul-mcfarlane/	Forest Sciences Centre, Vancouver	Environmental aspects of wood products and processes. Impacts of technological innovations in the forest products value chain on SFM.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Ruddick, John	UBC	http://profiles.forestry.ubc.ca/person/john-ruddick/	Forest Sciences Centre, Vancouver	Chemistry of fixation of ammoniacal/amine copper preservatives. Factors influencing the effectiveness of alkylammonium wood preservatives. Novel approaches to fixation of inorganic preservatives, wood protection and recycling/disposal of contaminate wood waste.
Sowlati, Taraneh	UBC	http://profiles.forestry.ubc.ca/person/taraneh-sowlati/	Forest Sciences Centre, Vancouver	Industrial engineering in wood industry: Supply chain management. Mathematical modeling and optimization. Multi-criteria decision making. Simulation. Life cycle assessment.
Barnes, Trevor J.	UBC	http://www.geog.ubc.ca/~tbarnes/	Department of Geography, Vancouver	Economic geography including the history of geography's quantitative revolution, the nature and implications of epistemological pluralism for economic geography, a comparative institutional analysis of forestry in Canada, Australia and New Zealand and the creative industries in Vancouver.
Daniels, Lori	UBC	http://profiles.forestry.ubc.ca/person/lori-daniels/	Forest Sciences Centre, Vancouver	The impacts of natural and anthropogenic disturbance and climate variation on temperate forest dynamics using a combination of permanent research plots and historical reconstructions based on tree rings. This includes: successional processes, natural disturbance and ecosystem management of coastal temperate rainforests of British Columbia. Historic fire regimes, fire-vegetation-climate interactions in montane forests of the Canadian Cordillera. Temporal dynamics and function of coarse woody debris in terrestrial and riparian forests, and mechanisms of change and influence of climate variation on altitudinal treelines.
McClung, David	UBC	http://www.geog.ubc.ca/avalanche/People.html	Geography Building, Vancouver	Avalanche prediction and forecasting, interaction between avalanches and forest cover, snow and avalanche mechanics and avalanche dynamics and engineering.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Cronk, Quentin	UBC	http://botany.ubc.ca/people/quentin-cronk	The Biodiversity Research Centre, Vancouver	Evolutionary Developmental Biology, floral biology, adaptation genomics. Island plants - evolution and conservation Evolution and systematics of Gesneriaceae Invasive species biology the ochlospecies concept Herbarium taxonomy UBC willow group Ultrabarcoding
Green, Sheldon	UBC	http://mech.ubc.ca/sheldon-green/	Pulp & Paper Centre, Vancouver	Fluid Mechanics, papermaking: Developing a model of the fibre deposition and dewatering process.
Olson, James	UBC	http://mech.ubc.ca/james-olson/	Pulp & Paper Centre, Vancouver	Application of physics and fluid mechanics to problems associated with the pulp and paper industry, including mechanical energy reduction in mechanical pulping, modeling turbulent fibre suspensions, and high performance screen rotor design
Schajer, Gary	UBC	http://mech.ubc.ca/gary-schajer/	Department of Mechanical Engineering, Vancouver	Industrial Residual Stress Measurements; focuses on the hole-drilling method using both optical and strain-gage measurement techniques. Full-Field Optical Metrology; the use of Electronic Speckle Pattern Interferometry (ESPI) and Digital Image Correlation (DIC) to identify material displacements, rotations, strains, surface shape and vibration modes. X-Ray CT Log Scanning; to maximize the value of the products created in sawmills and to minimize the consumption of an important environmental resource.
Vertinsky, Ilan	UBC	http://strategy.sauder.ubc.ca/vertinsky/	Sauder School of Business, Vancouver	Resource and forest management, e.g., optimization models for intensive forest management strategies with timber and non-timber values
Myers, Judith	UBC	http://www.zoology.ubc.ca/person/myers	Department of Zoology, Vancouver	The theory and practice of biological control of insects and plants, population ecology of insects, ecology of invasive plants and the ecological and evolutionary factors influencing Bt resistance and NPV dynamics.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Burton, Phil	UNBC	http://www.unbc.ca/burton-phil	Terrace Campus	Plant community organization and vegetation dynamics. Seed germination and dispersal ecology, forest regeneration and restoration, forest stand development, old-growth attributes, stand edge effects, and the ecology of understory shrubs. Disturbance ecology, primary succession, climate change and their implications to sustainable resource management in northwestern Canada.
Alstrom-Rapaport, Cecilia	UNBC	http://www.unbc.ca/biology/faculty.html	Prince George	Population genetics, plant molecular ecology, plant reproductive ecology, sex determination in plants, including willows.
Fredeen, Art	UNBC	http://web.unbc.ca/~fredeena/alf.html	Prince George	Forest, plant and soil CO2 exchange; spiral phyllotaxis in pines; sub-boreal plant and lichen diversity & function. Impacts of forest management and stand attributes on forest diversity and ecosystem function. Effect of Forest Management and Climate on the C-balance of sub-Boreal forests.
Green, Scott	UNBC	http://www.unbc.ca/green-scott	Prince George	Forest ecology, tree adaptation to elevation and latitude; tree/ecosystem response to climatic variation.
Hartley, Ian	UNBC	http://www.unbc.ca/hartley-ian	Prince George	Wood quality (ultra-structure and anatomy) and wood physics (wood-water interactions, diffusion, sorption, lumber drying and NMR). Also examines wood properties based on wood characteristics and how that pertains to processing issues including imaging.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Lewis, Katherine	UNBC	http://www.unbc.ca/lewis	Prince George	Forest pathology and disturbance ecology. Research into how disease-causing organisms interact with their physical and biological environments in forest ecosystems, and how forest management practices and climate change can affect those interactions. The two main areas are: 1) stand dynamics (stand age and size structure, species composition, recruitment and mortality rates) resulting from biotic disturbance agents; 2) epidemiology and population genetics of forest pathogens and resultant impacts of forest management practices.
Lindgren, Staffan	UNBC	http://web.unbc.ca/~lindgren/	Prince George	Chemical Ecology of Insects, particularly bark beetles, wood borers, and weevils. Factors affecting conifer susceptibility to insect attack. Forest Insect Ecology, particularly effects by insects on forest succession, and effects by forest management on insect fauna, in particular ground beetles (Coleoptera: Carabidae) and ants (Hymenoptera: Formicidae). Forest Insect Management.
Massicotte, Hugues	UNBC	http://web.unbc.ca/forestry/Hugues/	Prince George	Mycology - conservation and preservation; structure and biodiversity of mycorrhizae, tree (e.g., black spruce) and rhizosphere biology, and forest mycology
Gillingham, Michael	UNBC	http://web.unbc.ca/~michael/	Prince George	Population and wildlife ecology, modeling, plant-herbivore interactions, and behavioural ecology.
Otter, Kenneth	UNBC	http://web.unbc.ca/~otterk/	Prince George	Research addresses how habitat disturbance affects both reproductive and communication behaviour in forest birds. Using a combination of ecological, genetic and behavioural techniques, to show the impact of habitat on signal reliability, mating strategies and ultimately reproductive output of forest generalist birds occupying post disturbance landscapes.
Poirier, Lisa	UNBC	http://web.unbc.ca/~poirierl/	Prince George	Insect behaviour and ecology; chemical ecology and management of forest insects; aquatic entomology.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Dawson, Russell	UNBC	http://web.unbc.ca/~dawsonr/russ.htm	Prince George	Research includes determining the important proximate and ultimate factors influencing reproductive effort and success in birds. Specific areas of interest include mate choice, sexual selection, parasitology, and the mediating role that variation in environmental conditions has for the evolution of life-history traits
Opio, Chris	UNBC	http://web.unbc.ca/forestry/opio	Prince George	Forest management and policy, silviculture, environmental aspects of harvesting systems, land reclamation, woodlot management, tropical forestry and agroforestry.
Arocena, Joselito	UNBC	http://web.unbc.ca/%7Earocenaj/	Prince George	Geochemistry of natural processes in terrestrials environments such as cation balances in forest ecosystems, acid mine drainage and other industrial wastes, paleopedology and soil minerology and chemistry
Déry, Stephen	UNBC	http://www.unbc.ca/dery-stephen	Prince George	Hydrometeorological processes and their impacts on the surface energy and water budgets in high latitudes/altitudes within the context of climate change.
Tang, Youmin	UNBC	http://www.unbc.ca/tang-youmin-0	Prince George	Understanding and predicting seasonal-to-interannual climate variations using advanced numerical models and innovative mathematical techniques.
Garcia, Oscar	UNBC	http://web.unbc.ca/~garcia/	Prince George	Forest Growth and Yield. “Quantitative forestry”, including growth modeling, biometrics, mensuration, harvest scheduling, decision support systems.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Huber, Dezene	UNBC	http://www.unbc.ca/huber-dezene-0	Prince George	Insect/Plant interactions, plant defense against insect herbivory, insect resistance to plant defenses, chemical ecology, forest insect pest management. The evolution of lodgepole and jack pine chemical defenses against insects and pathogens, olfaction and foraging behaviour in bark beetles, cold tolerance of bark beetle larvae, detoxification of host resin compounds by bark beetles, development of feeding deterrents for stored product pests, and other forest entomological and chemical ecological research.
Halseth, Gregory	UNBC	http://www.unbc.ca/greg-halseth	Prince George	Research focused on single industry resource-dependent towns in northern British Columbia, where restructuring is changing the social geography
McGill, Bill	UNBC	http://www.unbc.ca/mcgill-william-bill	Ecosystem Science and Management, Prince George	Soil biogeochemistry and the fate and transport of organic compounds in soils. Research examines value added biomass ash utilization, seeks to develop algorithms for simulating trace gas fluxes from terrestrial ecosystems, evaluates soil-specific cropping systems, designs soil-specific reclamation and remediation strategies and seeks to understand how ecosystems function and evolve under changing environments and human intervention.
Misra, Santosh	Uvic	http://web.uvic.ca/forbiol/misra	Centre for Forest Biology, Victoria	Molecular genetics of conifers, especially isolating and identifying embryo-specific and germination-specific cDNA and genomic DNA clones. The systems of choice are white spruce and Douglas-fir somatic and zygotic embryos. Developing protocols for transformation of woody species, with an ultimate goal to develop stocks with improved desirable traits such as insect, drought, and disease resistance.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Winchester, Neville	Uvic	http://web.uvic.ca/~canopy/winchest.html	Biology Department, Victoria	Canopy arthropods. Distribution, abundance & organization of arthropod communities. Including: Conservation of ancient rainforests, the effects of forest practices on biodiversity maintenance and development of arthropod monitoring protocols, and community composition of canopy microarthropod fauna in perched organic litter.
Constabel, Peter	Uvic	http://web.uvic.ca/~cpc/	Centre for Forest Biology, Victoria	Biochemistry and molecular biology of plant defense against herbivory. Transcriptional regulation and enzymology of flavonoid biosynthesis in poplar. Genomics and proteomics tools for poplar. Roles of tannins and flavonoids in forest and human health.
Hawkins, Barbara	Uvic	http://web.uvic.ca/forbiol/hawkins	Centre for Forest Biology, Victoria	Tree seedling physiology, particularly the interaction of genetic and environmental components of seedling response to nutrient stress and cold stress. S
Hintz, Will	Uvic	http://web.uvic.ca/forbiol/hintz	Centre for Forest Biology, Victoria	Fungal genetics and molecular biology. Development of biological controls to replace the use of chemical herbicides for vegetation management in Canadian reforestation sites; fungal genetics.
Livingston, Nigel	Uvic	http://www.canassist.ca/EN/main/about-us/our-team/departments/executive/dr.-nigel-livingston.html	CanAssist, Victoria	How trees respond to their environment, by studying photosynthesis, how trees capture and utilize resources such as CO2, water, nutrients and light
Roy, Real	Uvic	http://web.uvic.ca/forbiol/roy	Centre for Forest Biology, Victoria	Molecular Biology and Microbial Ecology of Soil. Understanding the role of microbial populations in the biogeochemistry of nitrogen and carbon (methane) in terrestrial and aquatic ecosystems at various spatial scales. Also the multiple ecological interactions that may happen between: 1) the methane-oxidizing bacteria and the ammonium-oxidizing bacteria, and 2) the denitrifying bacteria and the methane producing archae.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Von Anderkas, Patrick	Uvic	http://www.uvic.ca/science/biology/people/home/faculty/facpages/vonaderkas.php	Centre for Forest Biology, Victoria	Embryogenesis, water relations of embryos, and in vitro fertilization. Interest in the evolution in reproductive adaptations of seed plants, and the reproductive biology of plants, in particular, gymnosperms, such as Ephedra, and conifers, cycads, gnetophytes and ginkgos.
Van Kooten, G. Cornelius	Uvic	http://www.iesvic.uvic.ca/our_people/faculty/vankooten.php	Department of Economics, Victoria	Economic analysis to issues in agriculture, forestry, energy and natural resources more broadly.
Wild, Peter	Uvic	http://www.iesvic.uvic.ca/our_people/faculty/wild.php	Department of Mechanical Engineering, Victoria	Integration of renewable energy into the grid Energy systems for remote communities Wave/tidal energy systems Optical sensors for in-situ monitoring of fuel cells
Ehlting, Juergen	Uvic	http://web.uvic.ca/forbiol/ehlting	Centre for Forest Biology, Victoria	Functional genomics of plant natural product metabolism
Lacourse, Terri	Uvic	http://www.uvic.ca/science/biology/people/home/faculty/facpages/lacourse.php	Biology Department, Victoria	Development and dynamics of temperate forest in coastal British Columbia over the past 15,000 years i.e., since the last glaciation. Looking at temporal and spatial patterns in the distribution of plant populations and communities and the processes responsible for those patterns.
Bendickson, Dennis	UBC	http://profiles.forestry.ubc.ca/person/dennis-bendickson/	Department of Forest Resources, Vancouver	Focuses on British Columbia forest development planning and harvesting activities with an emphasis on equipment, methods, productivities, and costs. Assessment of British Columbia forest operations for operability considering the variability of timber, topography, labor, and economics.
Bull, Gary	UBC	http://profiles.forestry.ubc.ca/person/gary-bull/	Forest Sciences Centre, Vancouver	Economics of ecosystem services. International trade in forest products. Modeling the impacts of biotechnology. Sustainability in fibre supply chains. Research Interests: aboriginal forestry, business management, climate change, economics, genomics, international trade, modeling.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Carroll, Allan	UBC	http://profiles.forestry.ubc.ca/person/allan-carroll/	Forest Sciences Centre, Vancouver	Role of climate change in the population dynamics and impacts of eruptive forest insects. Coevolution of insect-plant interactions. Integrated management of forest insect populations. Advanced techniques for detection and monitoring of forest insect populations
Cohen, David	UBC	http://profiles.forestry.ubc.ca/person/david-cohen/	Forest Sciences Centre, Vancouver	Sustainability, business and globalization; Sustainability: Driver of innovation in the twenty first century. Forest industry business transformation; quantifying determinants for successful transformation of firms in the forest industry and forest sector business transformation impacts along the value chain. Evolving Global Markets.
Ellis, Simon	UBC	http://profiles.forestry.ubc.ca/person/simon-ellis/	Forest Sciences Centre, Vancouver	The approaches and techniques used to determine wood quality, and determining the effects of silvicultural treatments on the resulting wood quality. Also the application of image analysis techniques to wood anatomy and wood composites. Wood identification, wood science and technology.
Gaston, Christopher	UBC	http://profiles.forestry.ubc.ca/person/christopher-gaston/	Forest Sciences Centre, Vancouver	Research Interests: aboriginal forestry, business management, communities and livelihoods, economics, forest policy, international trade, modeling, sustainability, wood products, wood science, wood technology. Markets and economics, particularly in their application to new product/market development for Canadian wood products, both in North America and internationally. This includes primary and secondary wood products, and end-uses spanning residential and non residential construction, repair and renovation, and industrial applications. Product and market focus also includes First Nations and emerging engineered wood products / systems and bio-products.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Hoberg, George	UBC	http://profiles.forestry.ubc.ca/person/george-hoberg/	Forest Sciences Centre, Vancouver	Energy policy, forest policy, and the design of policies and institutions to promote sustainability. Evolving governance of forest resources in British Columbia.
Krzic, Maja	UBC	http://profiles.forestry.ubc.ca/person/maja-krzic/	Faculty of Land and Food Systems, Vancouver	Application of information technology in soil science education. Soil compaction susceptibility. Land-use impacts on temperate grasslands: linking soil quality and ecosystems function. Rehabilitation of degraded forest soils. Forest grazing and its impacts on soil quality. Researching into indicators of soil physical condition: natural variation in the relative bulk density and associated tree growth as measures of forest productivity, and Impacts of biosolids application on soil quality of rangelands in southern BC.
Lyons, Kevin	UBC	http://profiles.forestry.ubc.ca/person/kevin-lyons/	Forest Sciences Centre, Vancouver	The mechanics of anisotropic materials applied to the management of forests. The movement of a tree subject to wind loads or the flow of water through a natural soil. In addition, the mechanics of machinery within the increased mechanization of harvesting operations. With the equations of motion it is possible to better understand the interactions of the machine with the environment.
Nelson, Harry	UBC	http://profiles.forestry.ubc.ca/person/harry-nelson/	Forest Sciences Centre, Vancouver	Analysis of natural and environmental resource policy with an emphasis on forestry and developing new policy options to help the sustainability of Canadian forests and communities and businesses that rely upon them. Assessing the impacts of climate change on how we manage our forests and exploring adaptation options. Researching into what role Ecosystem Services could provide as an alternative business model for indigenous groups managing forest lands in BC.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Tindall, David	UBC	http://profiles.forestry.ubc.ca/person/david-tindall/	Forest Sciences Centre, Vancouver	Areas of research include: Intergroup conflict over forests, public opinion over forests, media coverage of forestry and environmental issues, social bases of participation in the environmental movement, First Nations and forestry issues/Gender and forestry issues.
Watts, Susan	UBC	http://profiles.forestry.ubc.ca/person/susan-watts/	Forest Sciences Centre, Vancouver	Research Interests: biometrics, communications, entomology
Wood, Paul	UBC	http://profiles.forestry.ubc.ca/person/paul-wood/	Forest Sciences Centre, Vancouver	Conservation and forest management. Examines the extent to which the conservation process should be mitigated and the corresponding types of policies that are required at global, national, and regional scales.
Egger, Keith	UNBC	http://web.unbc.ca/~egger/	Prince George	Research: 1) Impacts of global warming on mycorrhizal fungal communities and N-cycling bacterial communities in the Canadian High Arctic; 2) Impacts of fire on re-establishment and regeneration of N-cycling bacterial communities of Douglas-fir in the southern Interior of British Columbia; and 3) Re-establishment and regeneration of mycorrhizal and N-cycling bacterial communities of lodgepole Pine following Mountain Pine Beetle attack in the central Interior of British Columbia.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Coxson, Darwyn	UNBC	http://web.unbc.ca/~wetbelt/biography-coxson	Prince George	Contribution of non-vascular plants, such as lichens and mosses, to ecosystem function along elevation gradients in Western Canada. Lichenology, plant environmental physiology, forest ecology, and conservation biology. Examines how alternative forest harvesting practices, such as partial-cutting silvicultural systems, can be used to maintain conservation values associated with canopy lichens, including biodiversity (in Lobarion assemblage lichens), wildlife habitat (as a food source for endangered caribou populations), and ecosystem function (especially nitrogen-fixation by cyanolichens).
Jull, Mike	UNBC	http://web.unbc.ca/~wetbelt/biography-jull.htm	Aleza Lake Research Forest	Silvicultural systems; include trials in wetbelt Englemann spruce-subalpine fir (ESSF), Interior Cedar-Hemlock (ICH), and wet sub-boreal spruce (SBS) forests in the Columbia and Rocky Mountains and Central Interior plateau of eastern British Columbia. Research interests include the silviculture and management of complex and uneven aged forests, regeneration and stand dynamics, wind throw, and management of forests and stands for multiple resource values.
Sanborn, Paul	UNBC	http://web.unbc.ca/~sanborn/	Prince George	Soil genesis and the role of soils as a recorder of long-term environmental change in north-western Canada. Forest Soils and Forest Site Productivity: Nitrogen fixation in Sitka alder shrub understories. Sulphur nutrition and fertilization of lodgepole pine. Rehabilitation of forest landings and roads, and petroleum well sites. Long-term impacts of forest practices on site productivity.
Welsh, Cedar	UNBC	http://www.unbc.ca/cedar-welsh	Terrace Campus	Forest ecologist whose main research area focuses on the impacts of natural disturbances and climate variability on forest dynamics.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Guichon, Shannon	TWU	http://www.twu.ca/directory/faculty/shannon-guichon.html	Neufeld Science Center, Langley	Forest Sciences & Conservation -- below-ground ecology: metagenomics/molecular ecology of mycorrhizal fungi to understand forest productivity and associated fungal inoculum potential influencing forest regeneration in nutrient limited sites.
Jordan, Geraldine	TWU	http://twu.ca/academics/fhss/geography/biographies.html	Langley	Landscape ecology: natural disturbance processes, GIS and spatial analysis. GIS, boundary statistics for low-severity fires and boundary stability of Garry Oak meadow ecosystems. Resource management and restoration ecology in forest environments and northern regions.
Brown, Paul	TWU	http://twu.ca/academics/science/chemistry/faculty/paul-brown.html	7600 Glover Road, Langley, BC V2Y 1Y1	Research interests in chemical ecology (the role natural chemistry plays in ecological interactions), natural plant products & biochemistry, rhizosphere (root-zone) chemistry, soils & soil chemistry, environmental chemistry.
Belcher, Brian	RRU	http://www.royalroads.ca/people/brian-belcher	Centre for Livelihoods and Ecology, Victoria	The role and potential of natural resources to sustainably contribute to rural development and on research effectiveness.
Broad, Peggy Jo	TRU	http://kamino.tru.ca/experts/home/main/bio.html?id=pbroad	Kamloops	Interests: Silviculture. Forest and Grassland Ecology, Range Riparian Study, Vegetation Management Study, and Plant Taxonomy
Alfaro, Rene	NRC	http://cfs.nrcan.gc.ca/employees/read/ralfaro	Pacific Forestry Centre Victoria	Conducts research aimed at quantifying the damage caused by pests to the forests of British Columbia, and researches genetic resistance to pests.
Allen, Eric	NRC	http://cfs.nrcan.gc.ca/employees/read/eallen	Pacific Forestry Centre Victoria	Non-indigenous species that impact forest ecosystems; their biologies, their movement with international trade, and the assessment of mitigation measures. Exotic insect interceptions from Wooden Dunnage and packing material. Exotic wood-boring beetles in BC: Mature lodgepole pine management study.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Benton, Ross	NRC	http://cfs.nrcan.gc.ca/employees/read/rbenton	Pacific Forestry Centre Victoria	Impacts of climate change on forest microclimates, and the development of a landscape level mountainous terrain spatial temporal climate model in conjunction with the Mountain Pine Beetle/Interior Silvicultural systems in south-eastern BC, and the Montane Alternative Silvicultural Systems projects on Vancouver Island. Mature lodgepole pine management.
Bleiker, Katherine	NRC	http://cfs.nrcan.gc.ca/employees/read/kbleiker	Pacific Forestry Centre Victoria	The biology and ecology of bark beetles, including the mountain pine beetle. Research includes population dynamics, invasion biology and community ecology, including interactions with host trees, fungi and other organisms.
Boudewyn, Paul	NRC	http://cfs.nrcan.gc.ca/employees/read/pboudewy	Pacific Forestry Centre Victoria	Plans and conducts research into forest inventory, and maintains technology transfer activities with Pacific Forestry Centre staff, government and industry.
Callan, Brenda	NRC	http://cfs.nrcan.gc.ca/employees/read/bcallan	Pacific Forestry Centre Victoria	Disease diagnosis and fungal identification and conducts taxonomic studies and provides scientific advice on invasive forest fungi impacting international trade.
Chen, Hao	NRC	http://cfs.nrcan.gc.ca/employees/read/hchen	Pacific Forestry Centre Victoria	Grid networking infrastructure to provide options for terabyte remote sensing data management, storage, and dissemination over the broadband Internet with distributed forest research and production sites. Remote sensing data fusion, segmentation, feature selection, and classification, and methods for estimating aboveground carbon with remote sensing data.
Conder, Nicholas	NRC	http://cfs.nrcan.gc.ca/employees/read/nconder	Pacific Forestry Centre Victoria	Developing methods for controlling defoliators using insect pathogens and parasitoids, and monitors insect populations for hazard rating systems and outbreak modeling.
Dalrymple, George	NRC	http://cfs.nrcan.gc.ca/employees/read/gdalrymp	Pacific Forestry Centre Victoria	Fire effects, behaviour, and the relationships with landscape management and forest ecosystems.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Hawkes, Brad	NRC	http://cfs.nrcan.gc.ca/employees/read/bhawkes	Pacific Forestry Centre Victoria	Research: fire behavior and danger rating, fire ecology, protected area fire management, and fire risk assessment. Investigates the relationships between mountain pine beetle and fire in British Columbia and Alberta (Waterton Lakes National Parks). The role and use of fire in mountain pine beetle management. Effects of mountain pine beetle outbreaks on lodgepole pine stand and woody debris dynamics in south-central British Columbia.
Hobart, Geordie	NRC	http://cfs.nrcan.gc.ca/employees/read/ghobart	Pacific Forestry Centre Victoria	Research includes implementing, testing and refining of various processing techniques of remote sensing imagery and GIS related systems to extract meaningful forest information such as species, biomass, moisture, nitrogen, chlorophyll and health within a GIS context. Current research is focused on hybrid analysis using Eigen decompositions, Faraday rotation corrections, and phase compensation for terrain effects.
Humble, Leland	NRC	http://cfs.nrcan.gc.ca/employees/read/lhumble	Pacific Forestry Centre Victoria	Development of detection tools for native and non-indigenous insects in urban and natural forest ecosystems. Research interests include Adelgidae, Aphidoidea, Coccoidea, forest and urban Lepidoptera, bark and wood-boring Coleoptera; and evaluation of the effects of nonindigenous introductions on species diversity in forest ecosystems; and evaluation of the efficacy of phytosanitary treatments for green wood in preventing reinfestation of wood packaging. Exotic Wood-boring Beetles in BC: Interceptions and Establishments.
Islam, Aminul	NRC	http://cfs.nrcan.gc.ca/employees/read/aislam	Pacific Forestry Centre Victoria	Field research on forest diseases.
Kurz, Werner	NRC	http://cfs.nrcan.gc.ca/employees/read/wkurz	Pacific Forestry Centre Victoria	Research focuses on the impacts of natural disturbances, forest management and land-use change on forest carbon budgets.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Leal, Isabel	NRC	http://cfs.nrcan.gc.ca/employees/read/ileal	Pacific Forestry Centre Victoria	Research: developing molecular tools to identify, characterize and detect forest pests with a view to protecting both Canadian forests and market access for Canadian forest products.
Leckie, Don	NRC	http://cfs.nrcan.gc.ca/employees/read/dleckie	Pacific Forestry Centre Victoria	Research: Analysis of aerial and satellite imagery. Individual tree crown (ITC) techniques. Forest regeneration assessment techniques.
Liu, Jun-Jun	NRC	http://cfs.nrcan.gc.ca/employees/read/juliu	Pacific Forestry Centre Victoria	Research: Mass clonal (vegetative) propagation and genetic modification of forest trees through somatic embryogenesis. Development of molecular tools for marker-assisted selection in western white pine breeding programs. Identification of novel genetic resistance mechanisms in western white pine for the management of white pine-blister rust (Cronartium ribicola). Functional genomics study on the disease resistance gene family of conifer NBS-LRR proteins to understand molecular mechanisms of host defense against pathogen invasion. Functional genomics study on the transcription factor family of conifer WRKY proteins to understand pathogen-triggered signal transduction pathway.
Magnussen, Steen	NRC	http://cfs.nrcan.gc.ca/employees/read/smagnuss	Pacific Forestry Centre Victoria	Researches improvements in scope, extent, and accuracy of multiple forest resource inventories.
Maynard, Doug	NRC	http://cfs.nrcan.gc.ca/employees/read/dmaynard	Pacific Forestry Centre Victoria	Conducts research on the effects of soil disturbances on site productivity as a result of forestry practices.
McBeath, Alec	NRC	http://cfs.nrcan.gc.ca/employees/read/amcbeath	Pacific Forestry Centre Victoria	Researches the economics of the Mountain Pine Beetle, invasive species, and non-timber forest products.
McIntire, Eliot	NRC	http://cfs.nrcan.gc.ca/employees/read/emcintir	Pacific Forestry Centre Victoria	Ecological forecasting & modeling, forest & field ecology, forest disturbances, developing quantitative methods, spatial analysis.
Nealis, Vince	NRC	http://cfs.nrcan.gc.ca/employees/read/vnealis	Pacific Forestry Centre Victoria	Researches population ecology of forest insects.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Niquidet, Kurt	NRC	http://cfs.nrcan.gc.ca/employees/read/kniquide	Pacific Forestry Centre Victoria	Researches trade and competitiveness issues facing the Canadian forest sector.
Peter, Brian	NRC	http://cfs.nrcan.gc.ca/employees/read/bpeter	Pacific Forestry Centre Victoria	Researches forest policy trends and international forest products trade, and studies economic issues in forests subject to wildfire and mountain pine beetle.
Shamoun, Simon	NRC	http://cfs.nrcan.gc.ca/employees/read/sshamoun	Pacific Forestry Centre Victoria	Research: Biology, epidemiology & development of mitigation tools for phytosanitary risk analysis and management of Sudden Oak Death (SOD) disease caused by Phytophthora ramorum, and genomics- development of PCR-DNA based diagnostic markers for Phytophthora ramorum & other Phytophthora spp.and molecular elucidation of Phytophthora ramorum pathogenicity via whole-genome sequencing "next generation sequencing" using Illumina technology. Research interests in development & production of biological control agents for management of major invasive alien & indigenous forest pathogens.
Stennes, Brad	NRC	http://cfs.nrcan.gc.ca/employees/read/bstennes	Pacific Forestry Centre Victoria	Researches trade and competitiveness issues for the forest sector in B.C., and studies the economics of carbon uptake by B.C. forests.
Sturrock, Rona	NRC	http://cfs.nrcan.gc.ca/employees/read/rsturroc	Pacific Forestry Centre Victoria	Laminated root rot (LRR) of conifers, focuses on Douglas-fir resistance to Phellinus sulphurascens (syn. P. weirii), host-pathogen interactions, and diversity and pathogenicity of world isolates of P. sulphurascens. Studies the effects of stand and disease management strategies on the incidence of LRR; the occurrence and incidence of P. sulphurascens in the southern interior of BC; and climate change effects on forest diseases.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Sumampong, Grace	NRC	http://cfs.nrcan.gc.ca/employees/read/gsumampo	Pacific Forestry Centre Victoria	Research on biological control of forest diseases and weeds, and on the forest invasive alien species Phytophthora ramorum. Use of fungal pathogens Phoma argillacea and Phoma exigua as biological control agents for management of competing forest vegetation (forest weeds) in conifer regeneration sites: Phoma argillacea to control Rubus spectabilis (salmonberry) and for Phoma exigua to control Gaultheria shallon (salal).
Sun, Lili	NRC	http://cfs.nrcan.gc.ca/employees/read/lisun	Pacific Forestry Centre Victoria	Researches competitiveness and trade issues for the Canadian forest sector.
Taylor, Steve	NRC	http://cfs.nrcan.gc.ca/employees/read/staylor	Pacific Forestry Centre Victoria	Researches the effects of fire on forest ecosystems.
Titus, Brian	NRC	http://cfs.nrcan.gc.ca/employees/read/btitus	Pacific Forestry Centre Victoria	Development and validation of indicators of site sensitivity to biomass harvesting. Interests include the effects of forest management treatments on nutrient cycling processes, and compatible management opportunities for enhancing both timber and non-timber values, especially for salal Gaultheria shallon which is used as floral greenery.
Trofymow, Tony	NRC	http://cfs.nrcan.gc.ca/employees/read/ttrofymo	Pacific Forestry Centre Victoria	Research includes British Columbia ectomycorrhizal research network and the coastal forest chronosequences project; a study examining changes in ecosystem structure, processes and diversity in old-growth and managed forests of coastal BC. Studies the role of soil biota in detrital carbon fluxes and decomposition processes, and historic C budgets, C stock distribution, litter fall, and root production at the coastal BC station, C stocks and budgets at the interior BC station and a cross-station decomposition experiment.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Van Akker, Lara	NRC	http://cfs.nrcan.gc.ca/employees/read/laravana	Pacific Forestry Centre Victoria	Resistance of conifers to insect attack, and explores characteristics of lodgepole pine that influence attack by mountain pine beetle in effort to refine mountain pine beetle risk assessment methods.
White, Joanne	NRC	http://cfs.nrcan.gc.ca/employees/read/jowhite	Pacific Forestry Centre Victoria	Research: forest inventory and disturbance, forest structure, forest dynamics and change monitoring, large area land cover and pattern.
Winder, Richard	NRC	http://cfs.nrcan.gc.ca/employees/read/rwinder	Pacific Forestry Centre Victoria	Studies the ecology and biology of microorganisms and their role in sustaining forests and the impact of harvesting systems on key microbial communities of forest soils. Ecology of fungal non-timber forest products, and investigates microbial species that stress mountain pine beetle populations. Research: Coastal forest chronosequences project.
DeLong, Craig	Ecora Resource Group Ltd.	http://www.unbc.ca/ecosystem-science-management/faculty	#2-1960 Daniel Street Trail, B.C. V1R 4G9	Forest ecology research, ecosystem classification and interpretation, ecosystem mapping, and quality assurance of site unit mapping. Interests are natural disturbance dynamics at multiple scales, natural strand dynamics and succession, natural disturbance as a template for forest management, the ecology and management of mixed wood forests and site level impacts of climate change.
Haeussler, Sybille	Bulk Valley Research Centre	http://bvcentre.ca/people/bio/sybille_haeussler/	2041 Monckton Road Smithers	Research scientist on the dynamics and diversity of plant communities and ecosystems — with special interests in complex systems dynamics and the challenges of adapting to climate change. Focuses on floodplain forests of the Skeena River to white bark ecosystems of the interior mountains and boreal mixed woods of north-eastern BC.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Jaquish, Barry	Kalamalka Forestry Centre	http://dir.gov.bc.ca/gtds.cgi?esearch=&view=detailed&sortBy=name&for=people&attribute=name&matchMethod=is&searchString=Barry+Jaquish&objectId=1292	3401 Reservoir Road, Vernon	Spruce, larch, Douglas-fir genetics.
O'Neill, Greg	Kalamalka Forestry Centre	http://dir.gov.bc.ca/gtds.cgi?esearch=&updateRequest=&view=detailed&sortBy=name&for=people&attribute=display+name&matchMethod=is&searchString=Greg+O%27Neill&objectId=129287	3401 Reservoir Road, Vernon	Adaptation to Climate Change.
Strong, Ward	Kalamalka Forestry Centre	http://dir.gov.bc.ca/gtds.cgi?esearch=&view=detailed&sortBy=name&for=people&attribute=name&matchMethod=is&searchString=Ward+B+Strong&objectId=129289	3401 Reservoir Road, Vernon	Pest Research - Cone and Seed Pest Research
Carlson, Michael	Kalamalka Forestry Centre	http://dir.gov.bc.ca/gtds.cgi?esearch=&view=detailed&sortBy=name&for=people&attribute=name&matchMethod=is&searchString=Michael+Carlson&objectId=129281	3401 Reservoir Road, Vernon	Tree Breeding / Interior - Pines and Hardwoods

Name of Researcher	Organization	Website	Location	Expertise / Interests
Cartwright, Charlie	Cowichan Lake Research Centre	http://dir.gov.bc.ca/gtds.cgi?esearch=&updateRequest=&view=detailed&sortBy=name&for=people&attribute=display+name&matchMethod=is&searchString=Charlie+Cartwright&objectId=129299	Forestry Road, Mesachie Lake	Constitutive Chemistry in Conifers, Western hemlock and true fir genetics
Russell, John	Cowichan Lake Research Centre	http://dir.gov.bc.ca/gtds.cgi?esearch=&updateRequest=&view=detailed&sortBy=name&for=people&attribute=display+name&matchMethod=is&searchString=John+H+Russell&objectId=129307	7060 Forestry Road, Mesachie Lake	Resistance to Mammals, Yellow Cypress and red cedar genetics. Genetics of Cupressaceae species, especially effects of inbreeding on plant function, quantitative responses to selection, and herbivore and disease resistance.
Bakkeren, Guus	UBC	http://www.botany.ubc.ca/people/guus-bakkeren	The Summerland Pacific Agri-Food Research Centre, South Okanagan Valley	Molecular genetic and cell biological understanding of plant-microbial interactions including attributes that make microbes pathogenic such as pathogenicity and virulence factors including fungal mating systems. Plant responses to infection such as recognition and accommodation of biotrophic fungi. Action of effectors that may jam host defense signaling networks, but also elicit defense and resistance.
Barnette, Matthew	B.C. Hydro	N/A	N/A	Assessment and remediation of contaminated land and groundwater in Europe and Canada. Project management of multi-discipline environmental impact assessment teams. Mr. Barnette currently works for the BC Hydro Power Authority as an Environmental Technical Specialist.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Berbee, Mary	UBC	http://www.botany.ubc.ca/people/mary-berbee	Department of Botany, Vancouver	Focuses on the diversity and molecular phylogenetics of fungi. Research includes: Ascomycete evolution, breeding systems and systematics. Deep divergences and ancient lineages of fungi and fungus-like organisms. Mycorrhizal fungal diversity.
Berch, Shannon	UBC	http://botany.ubc.ca/people/shannon-berch	Department of Botany, Vancouver	Interests in soil fungi and particularly mycorrhizal fungi from a variety of perspectives: the health of containerized nursery seedlings; the long-term impacts of soil compaction and organic matter removal; the ecology and management of commercially harvested wild mushrooms; the use of molecular tools to identify and detect the presence of fungal species on mycorrhizal roots.
Bernier, Louis	UBC	https://www.directory.ubc.ca/index.cfm?page=personDetail&row=1000028573	Brain Research Centre, Koerner Pavilion, Vancouver	N/A
Birol, Inanc	UBC/BCCA	http://www.bcgsc.ca/faculty/inanc-birol	Michael Smith Genome Sciences Centre, Vancouver	Interests include the analysis of short read sequencing data to study genomes, transcriptomes and epigenomes of model species and humans. He directs the Bioinformatics Technology Lab that develops bioinformatics tools for de novo sequence assembly, sequence mapping, downstream data analysis, and visualization.
Bryan, Jennifer	UBC	http://www.stat.ubc.ca/~jenny/index.html	Earth Sciences Building, Vancouver	Interests in the theory of statistics and biostatistics, computer implementation of analytic methods and opportunities to use this knowledge in areas of biological/medical research.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Burgess, Michael	UBC	http://www.ethics.ubc.ca/index.php?p=personweb5	Centre for Applied Ethics and Medical Genetics, Vancouver	Research includes bioethics, biotechnology and ethics, democracy and ethics, ethics of health policy, genetics and ethics, genomics and ethics. Interested in salmon genomics and aquaculture and biobanking. Also practical and theoretical integration of science and technology studies, non-electoral deliberative democracy, and ethics.
Chapman, Bill	FLNRO	http://dir.gov.bc.ca/gtds.cgi?esearch=&view=detailed&sortBy=name&for=people&attribute=name&matchMethod=is&searchString=Bill+Chapman&objectId=119256	ECOCAR, Williams Lake	Research Soil Scientist, Cariboo Region.
Danielson, Peter	UBC	http://www.ethics.ubc.ca/index.php?p=personweb1	Centre (W. Maurice Young) for Applied Ethics , Vancouver	Interests include using agent-based computational methods from cognitive science, evolutionary game theory from economics and biology – better to understand how moral and ethical agents interact with social norms to solve (and create) problems. Constructing better decision environments for making difficult choices about ethics and technology – especially computer technology and genomics – and the environment.
Defo, Maurice	FPInnovations	http://www.arborea.ulaval.ca/project_team/principal_investigators/maurice_defo/	Pulp and Paper Division, Vancouver	Research is focused on wood quality assessment, especially on applications of SilviScanTM. Other areas of interest are the applications of the near infrared spectroscopy and other technologies for a rapid assessment of wood quality.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Dube, Stephane	BC Forest Services	http://www.for.gov.bc.ca/rni/Research/Soilstaff.htm#SD	Prince George	Specialized in soil water relations and soil physical processes. Research is on soil rehabilitation techniques and the impacts of forest practices on long-term soil productivity and forest nutrition. Interests are in monitoring the impacts of management practices on soil productivity and designing management solutions to achieve sustainable integrated resource management.
Eltis, Lindsay	UBC	http://www.microbiology.ubc.ca/research/labs/eltis/pi	Life Sciences Centre, Vancouver	Microbial enzymes and pathways involved in the degradation of natural and man-made compounds. Research into the following systems: Biocatalytic applications: PCB- and biphenyl-degrading enzymes, nitrile degradation in Rhodococcus, and the degradation of explosives by actinomycetes.
Finlay, Brett	UBC	http://www.msl.ubc.ca/faculty/finlay	Michael Smith Laboratories, Vancouver	Research into infectious agents Salmonella and pathogenic E. coli. Most Salmonella and E. coli infections arise from oral ingestion of tainted food or water and are a significant cause of disease and death in animals and humans worldwide. However, the molecular mechanism of how these pathogens adhere, enter, survive, replicate, and exit host cells is not well defined.
Foster, Leonard	UBC	http://www.chibi.ubc.ca/faculty/leonard-foster/	Centre for High-Throughput Biology (CHiBi), Vancouver	Studies a variety of host-pathogen combinations including pathogen invasion, infection, protein localization, and mapping protein interaction: mammalian-bacterial, honeybee-bacterial, honeybee-mite.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Geraldes, Armando	UBC	http://cronklab.wikidot.com/armando-geraldes	Cronk Laboratory, The Biodiversity Research Centre, Vancouver	Finding the genes involved in adaptation of a species to its habitat e.g. Populus trichocarpa. Also genomic patterns of divergence between black cottonwood (Populus trichocarpa) and balsam poplar (P. balsamifera). Interests include understanding the evolution of reproductive barriers among closely related populations of mammals, i.e.Oryctolagus cuniculus (the European rabbit) and Mus musculus (house mice).
Hall, Jeremy	SFU	http://beedie.sfu.ca/profiles/JeremyHall	Beedie School of Business, Burnaby	Research interests include sustainable development innovation, stakeholder ambiguity, radical technology development, entrepreneurial learning for social inclusion and inter-firm innovation dynamics. International research in the aerospace, agricultural, chemicals, consultancy, energy, forestry, retailing and tourism sectors, and particula focus on Brazilian industrial policy.
Hallam, Steven	UBC	http://www.cmde.science.ubc.ca/hallam/peoplehallam.php	Life Sciences Institute, Vancouver	Research interests: Construction and interpretation of environmental genomic libraries. Generation of computational tools and workflows for taxonomic and functional binning, population genome assembly, and comparative community analysis. Development of functional screens to interrogate environmental genomic libraries for bioactive small molecules and biocatalysis.
Haynes, Charles	UBC	http://www.msl.ubc.ca/faculty/haynes	Michael Smith Laboratories, Vancouver	Develop new natural and recombinant-protein purification processes based on high-affinity interactions between target proteins or drugs and separation media. Also the thermodynamic (including electrostatic) aspects of protein adsorption with the aim of revealing general principles and resolving the dominant forces governing adsorption processes.
Hope, Graeme	BC Ministry of Forests & Range	N/A	N/A	Research soil Scientist.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Hopkins, Kathy	BC Ministry of Forests & Range	http://pics.uvic.ca/resources/climate-solutions-network?jumpto=https%3A//pics.uvic.ca/research/details.php%3Fid%3D21511	Product Innovation and Climate Change Branch, Victoria	Forest policy and practices, Climate Change.
Johnson, Pauline	UBC	http://www.microbiology.ubc.ca/research/labs/johnson/pi	Life Sciences Centre, Vancouver	Understanding the factors that regulate both the initiation and resolution of inflammation from tissue injury to discover new ways to resolve chronic inflammation. Also factors that control dendritic cell functions.
Jones, Steven	UBC/BCCA	http://medgen.med.ubc.ca/person/steven-jones/	Michael Smith Genome Sciences Centre, Vancouver	Bioinformatics, gene expression, gene regulation, genome sequence analysis and genome assembly.
Karlsen, Erik	SFU	http://www.sfu.ca/continuing-studies/instructors/i-l/erik-karlsen.html#	Burnaby	The integration of community interests in land, resources and the environment. Climate change adaptation and crops and food supply.
Keeling, Christopher	UBC	http://www.msl.ubc.ca/users/ckeeling	Michael Smith Laboratories, Vancouver	The study of the structure, function, origin, and significance of naturally occurring compounds that mediate inter- and intraspecific interactions between organisms, especially economically important beneficial and pest insects.
Kranabetter, Marty J.	FLNRO	http://www.for.gov.bc.ca/rco/research/soil/index.htm	Coast Forest Region Research Section, Victoria	Soil ecology (especially ectomycorrhiza), partial cutting, soil carbon storage, biodiversity conservation, and forest nutrition/productivity. Also the interaction of light availability and tree nutrition on juvenile tree growth, biotic indicators of soil productivity, and soil issues concerning the management of hypermaritime forests.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Marra, Marco	UBC/BCCA	http://medgen.med.ubc.ca/person/marco-marra/	Michael Smith Genome Sciences Centre, Vancouver	DNA sequencing, disease-associated mutation discovery, gene discovery, bioinformatics, cancer genomics. Research interests include the development and application of "next generation" sequencing approaches to characteristic genomes, with the aim of comprehensive identification of the genetic changes that drive cancer progression.
Marziali, Andre	UBC	http://www.phas.ubc.ca/~andre/ and https://www.phas.ubc.ca/users/andre-marziali	Vancouver	Engineer new technologies for genomics and life sciences research. Current genomics projects include developing instruments that conducts automated tissue microarray analysis, rapid genotyping, single molecule analysis methods using nanopores, and novel electrophoresis technologies.
McGourlick, Kerry	Western Forest Products	N/A	Campbell River	Silvicultural, harvesting. Ecosystem-based management.
Mohn, William	UBC	https://www.microbiology.ubc.ca/research/labs/mohn/pi	Life Sciences Centre, Vancouver	Degradation of pollutants by microorganisms. Research examines microbial degradation activities, addressing the biochemical mechanisms involved as well as the physiology, phylogeny and ecology of the organisms involved. Bacteria response and survival to various stresses common to the soil environment. The composition of complex microbial communities in soil and marine environments and the composition of communities relates to the important ecological services provided by those communities. Sustainable management of forests and understanding microbial mediation of global change.
Murray, Brent	UNBC	http://www.unbc.ca/ecosystem-science-management/murray-dr-brent	Natural Resources and Environmental Studies Institute, Prince George	Molecular ecology (conservation genetics), molecular evolution and comparative immunogenetics. The spatial distribution of genetic/genomic variation in mountain pine beetle across North America focusing on the origins of outbreaks, population structure and adaptation.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Muzyka, Daniel	UBC	http://www.sauder.ubc.ca/Faculty/People/Faculty_Members/Muzyka_Daniel	Sauder School of Business, Vancouver	Research Interests: Entrepreneurship, Project management, Strategic management.
Peterson, Dan	FLNRO			
Plettner, Erika	SFU	http://www.sfu.ca/chemistry/people/profiles/plettner.html	Department of Chemistry, Burnaby	Bio-Organic Chemistry molecular recognition, binding protein, pheromone, olfaction, enzyme, monooxygenase. Pheromone olfaction in the gypsy moth. Cytochrome P450 in synthesis.
Rieseberg, Loren	UBC	http://www3.botany.ubc.ca/rieseberglab/people/biog.html	Department of Botany, Vancouver	The genomics of hybridization and speciation in plants, especially sunflowers. The hybrid zones found in spruce offer similar opportunities and challenges for studying the nature of species and the genetics of complex traits.
Ukrainetz, Nicholas	FLNRO	N/A	Kalamalka Research Station, Vernon	Forest genetics, biology and ecology. Tree Breeding / Interior - Pines and Hardwoods.
Uzunovic, Adnan	FPInnovations	http://ca.linkedin.com/pub/adnan-uzunovic/38/2ab/901	Forintek Division, Vancouver	Interests include microorganisms attacking wood materials including blue stain, mould and decay fungi, heat tolerance of fungi, growth of pine wood nematodes in large size material, and standardize data capture and analysis promoting the use of new phytosanitary treatments.
van Vuuren, Hennie	UBC	http://www.landfood.ubc.ca/wine/vanvuuren/vanvuuren.html	Faculty of Land and Food Systems, Vancouver	The metabolic enhancement of wine yeasts.
Wang, Tongli	UBC	http://cfcg.forestry.ubc.ca/people/tongli-wang/	Department of Forest Science, Vancouver	Research interests include: 1) developing climate models; 2) projecting bioclimate envelopes of ecosystems and species ranges for future climates; 3) building climate response functions for tree populations; and 4) developing a climate-based seed transfer system for BC.

Name of Researcher	Organization	Website	Location	Expertise / Interests
Whitlock, Mike	UBC	http://www.zoology.ubc.ca/~whitlock/	Department of Zoology, Vancouver	Evolution in structured populations: using theoretical analyses to experimental lab model systems. Models have included the effects of extinctions, colonizations, population fission events, unequal population sizes, variable migration rates, and other realistic modifications of the theory.
Withers, Stephen	UBC	https://www.chem.ubc.ca/stephen-withers	Department of Chemistry, Vancouver	Focus primarily upon enzymes that catalyse glycoside formation and hydrolysis. Applications of research range from the development of new catalysts for industrial processes to the design, synthesis and testing of new therapeutics.
Woods, Jack	FGC/ SelectSeed Ltd	N/A	Duncan	Tree seed & forest genetics, management. Seed planning structure.
Yanchuk, Alvin	FLNRO	http://www.iufro.org/who-is-who/officeholder/Yanchuk/	Forest Genetics Section, Victoria	Pest and disease resistance, tolerances of selected plant material to climatic stresses. Genetic variation in host tree resistances, breeding approaches for pest and disease resistance, deployment strategies of genetically improved resistant material at stand and landscape levels.

Appendix 6: Educational institutions that provide training/skills required by the forest sector in BC

Name of Institution	Website	Location	Description
BC Institute of Technology (BCIT)	http://www.bcit.ca/	*3700 Willingdon Avenue, Burnaby, BC V5G 3H2 *555 Seymour Street, Vancouver, BC V6B 3H6 *265 West Esplanade, North Vancouver, BC V7M 1A5 *555 Great Northern Way, Vancouver, BC V5T 1E2	Biotechnology, health sciences, applied and natural sconces: ecological restoration, sustainable resource management and chemical & environmental, Centre for Wood Science and Applied Technology, School of construction and the environment, Technology Centre
Royal Roads University, Victoria (RRU)	http://www.royalroads.ca/	2005 Sooke Rd, Victoria, BC V9B 5Y2	Environment and Sustainability, Centre for Non-Timber Resources, business & entrepreneurship,
Simon Fraser University (SFU)	http://www.sfu.ca/	*8888 University Drive, Burnaby, B.C. V5A 1S6 *250-13450 102nd Avenue, Surrey, B.C. V3T 0A3 *Harbour Centre, 515 West Hastings Street, Vancouver, B.C. V6B 5K3	Biological Sciences, Earth Sciences, Political Science, Resource and Environmental Management
Thompson Rivers University (TRU)	https://www.tru.ca/	900 McGill Rd, Kamloops, BC V2C 6N6	Biological science, geography, environmental sciences and natural resources
Trinity Western University (TWU)	https://twu.ca/	7600 Glover Rd, Langley, BC V2Y 1Y1	Biology, geography, natural and applied sciences, environmental studies, biotechnology, business
University of British Columbia (UBC Okanagan)	http://www.ubc.ca/	3333 University Way Kelowna, BC Canada V1V 1V7	Biology & Physical Geography, Chemistry, Earth and Environmental Sciences, economics, engineering, geography, sustainability

Name of Institution	Website	Location	Description
University of British Columbia (UBC)	http://www.ubc.ca/	*2329 W Mall, Vancouver, BC V6T 1Z4 *800 Robson Street, Vancouver, BC V6Z 3B7 *685 Great Northern Way, Vancouver, B.C. V5T 0C6	Agricultural Sciences/ Michael Smith Labs., biochemistry and molecular biology, botany, interactive Research on Sustainability, Plant Research, Chemical and Biological Engineering, chemistry, political science, civil engineering, earth & ocean science, electrical and computer engineering, faculty of forestry, forest resources management, forest sciences centre, wood science, geography, institute of resources, environment and sustainability, land & food systems, Liu Institute of Global Issues, mechanical engineering, Sauder Sch. business, zoology, W. Maurice Young Centre for Applied Ethics
University of Northern British Columbia (UNBC)	http://www.unbc.ca/	*3333 University Way Prince George BC Canada V2N 4Z9 *4837 Keith Avenue, Terrace, BC V8G 1K7 *S100 - 100 Campus Way, Quesnel, BC V2J 7K1 *9820 - 120th Avenue, Fort St John, BC V1J 6K1 *3001 Ts'oohl Ts'ap Avenue, Gitwinksihlkw, BC V0J 3T0	Ecosystem science and management program, environmental science and engineering, geography, forest research, IK Barber enhanced forestry lab, Northern Land Use Institute,
Vancouver Island University (UVI)	http://www.viu.ca/	900 Fifth Street, Nanaimo, BC V9R 5S5	Resource Management Officer Technology, Natural Resource Protection, biology, business, geography, economics, earth sciences, (Alexandro Malaspina Research Centre)
University of Victoria (Uvic)	http://www.uvic.ca/	3800 Finnerty Road Victoria BC V8P 5C2 Canada	Biochemistry and Microbiology, biology, Centre for Forest Biology, earth & ocean sciences, economics, environmental studies, law, mechanical engineering, business
Canadian Forest Service (CFS)	http://www.nrcan.gc.ca/forests	Pacific Forestry Centre (PFC) 506 West Burnside Road, Victoria, BC V8Z 1M5	Forest entomology and pathology, fire management, forest inventory and monitoring, climate change, economic and market research,

Name of Institution	Website	Location	Description
			Canadian Wood Fibre Centre

Appendix 7: Government

Government Department	Website	Description
Federal		
Natural Resources Canada - Canadian Forest Service	http://www.nrcan.gc.ca/forests	The Canadian Forest Service (CFS) is the national and international voice for the Canadian forest sector. It is part of Natural Resources Canada, a federal government department. The CFS provides science and policy expertise and advice on national forest sector issues, working in close collaboration with the provinces and territories.
Canadian Food Inspection Agency	http://www.inspection.gc.ca/eng/1297964599443/1297965645317	The CFIA develops forestry policies relating to the import and export of Canadian forestry products and preventing the introduction and spread of regulated pests into Canada.
Environment Canada	http://www.ec.gc.ca/default.asp?lang=En&n=FD9B0E51-1	Environment Canada's mandate is to preserve and enhance the quality of the natural environment, including water, air, soil, flora and fauna; conserve Canada's renewable resources; conserve and protect Canada's water resources; forecast daily weather conditions and warnings, and provide detailed meteorological information to all of Canada; enforce rules relating to boundary waters; and coordinate environmental policies and programs for the federal government.
Industry Canada	http://www.ic.gc.ca/eic/site/icgc.nsf/eng/home	The Forest Industries and Building Products Branch continuously monitors key strategic issues for Canada's vital forest industry. They provide national leadership and a vision for change in both industry and government, championing appropriate public policy decisions. The promotion of value added building products is an important dimension of the current strategy for jobs and growth in wood based products.
Canadian Council of Forest Ministers	http://www.ccfm.org/English/index.asp	The Canadian Council of Forest Ministers (CCFM) is composed of fourteen federal, provincial and territorial ministers (elected officials). Each year members of the Council assume the responsibility of the chair for the Council. Northwest Territories will assume the chair in 2005-2006, followed by Manitoba in 2007. The secretariat for the Council is provided by the Canadian Forest Service. The Council provides leadership on national and international issues and sets direction for the stewardship and sustainable management of Canada's forests.
Provincial		
B.C. Ministry of Forests, Lands and Natural Resource Operations	http://www.gov.bc.ca/for/	The BC B.C. Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) is to ensure that B.C. fully leverages the natural advantages provided by its forest resources. Priorities are: 1. A commitment to using wood first; 2. Growing trees, sequestering carbon, and ensuring that land is available from which to derive a range of forest

Government Department	Website	Description
		products; 3. Creating a globally competitive, market-based operating climate; 4. Embracing innovation and diversification; 5. Supporting prosperous rural forest economies; and 6. First Nations becoming full partners in forestry.
B.C. Timber Sales	http://www.for.gov.bc.ca/bcts/	BC Timber Sales is an independent organization within the B.C. Ministry of Forests created to develop Crown timber for auction to establish market price and capture the value of the asset for the public. The vision of BC Timber Sales is to be "An effective timber marketer generating wealth through sustainable resource management".
Forest Practices Board	http://www.fpb.gov.bc.ca/	The Forest Practices Board is BC's independent watchdog for sound forest practices. The Board provides British Columbians with objective and independent assessments of the state of forest planning and practices, compliance with the Forest Practices Code and the achievement of its intent.
Forest Genetics Council of B.C.	http://www.fgcouncil.bc.ca/	The Forest Genetics Council of British Columbia (FGC) is appointed by B.C.'s chief forester to guide the full range of forest genetic resource management activities, including tree improvement (tree breeding and seed orchards), genetic conservation, genecology, climate-based seed transfer, and seed-use policy in the province. The Council provides a forum for stakeholder representatives to set goals and objectives, and to oversee the development and delivery of business plans to fulfill them.
SelectSeed Co. Ltd.	http://www.fgcouncil.bc.ca/sel.html	SelectSeed is a registered company (April, 1999) under the Company Act that is wholly owned by the Forest Genetics Council of BC (FGC) through the BC Forest Genetics Society (a registered society under the Societies Act). SelectSeed supports Forest Genetics Council objectives for the development of seed orchard infrastructure to meet the provincial demand for high quality, genetically-adapted tree seed through investments, cooperative work with FGC members, and effective program management.
B.C. Ministry of Environment	http://www.gov.bc.ca/env/index.html	BC Parks and Protected Areas: British Columbia is home to many nationally and internationally significant natural and cultural values. Through the establishment of parks, ecological reserves and protected areas, an important first step has been undertaken to ensure that these values are afforded legal protection.

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400 – 575 West 8th Ave
Vancouver, BC V5Z 0C4
T: 604 738 8072
F: 604 738 8597
E: info@genomebc.ca
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