student research symposium 2014

future forestry leaders

UNIVERSITY of WASHINGTON

School of Environmental and Forest Sciences

forestry
university of british columbia

future forestry leaders

Future Forestry Leader Symposium

February 18, 2014

Forest Sciences Centre
2424 Main Mall
Vancouver, BC
Canada
V6T 1Z4

Supported by:
University of British Columbia
Faculty of Forestry

Organizing Committee

Letitia Da Ros (University of British Columbia)

Emily Murphy (University of British Columbia)

David Cohen (University of British Columbia)

Ivan Eastin (University of Washington)

Chris Gaston (FPInnovations, University of British Columbia)

program

Future Forestry Leaders Symposium – Research Seminar

Forest Sciences Centre, Fletcher Challenge Theatre #1005

8:00 am Registration

9:00 am Session 1 – Forests and the Environment

Evaluation of environmental impacts of woody biomass based bioenergy: A life cycle assessment approach
Francesca Pierobon, UW

Identifying effective measures for environmental monitoring by Aboriginal communities
Ariana McKay, UNBC

Attributing changes in land cover by disturbance type integrating multiple datasets: A case study of the Yucatan Peninsula
Vanessa Silva Mascorro, UBC

The Nyambene forest in Meru, eastern Kenya. Exploring the link between traditional custodianship and community livelihoods
Gloria Borona, UBC

Synthesis of climate index and uncertainty: Estimating wildfires in British Columbia using count models
Zhen Xu, UVIC

10:40 am Break

11:00 am Session 2 – Forest Products and Technology

The potential for bioenergy and biofuels production in the Williams Lake timber supply area
Claudia Cambero, UBC

Eco-labeled wood products in the U.S. residential construction industry: Which characteristics of architects relate to the usage of certified wood and green building programs?
Tait Bowers, UW

Harvesting the dead and decaying forests: Potential carbon storage and avoided emissions
Wyatt Klopp, UNBC

Forest resource utilization and business opportunities for the Nuxalk First Nation
Sean Pledger, UBC

Investigation on the potential of production parameters optimization of a bamboo-based natural fibre composites
Felix Böck, UBC

12:40 pm Lunch Break

1:40 pm Session 3 – Markets and Policy

Economics of bioenergy product exports from forests: Unintended trade repercussions
Craig Johnston, UVIC

The competitiveness of Canadian softwood lumber: A disaggregated trade flow analysis
Wei-Yew Chang, UBC

The effects of the 2008 Lacey Act amendments on international trade in forest products
Patrick Bridegam, UW

The Lacey Act and the EUTR: Impacts on US wood importers and business practices by sector
Ben Roe, UW

Modelling the half-lives of wood-framed houses in order to quantify harvested wood product pools
Sheng Xie, UBC

The impact of the Lacey Act on Chinese furniture and flooring exporters
Ziyi Lu, UW

Social acceptance of marker-assisted selection: An upward battle
Chelsea Nilausen, UBC

4:00 pm Poster Viewing

5:30 – 6:30 pm
Fire and ice: responses by stream-riparian ecosystems to shifting disturbance regimes and some consequences for forest management

The Leslie L. Schaffer Lecture in Forest Sciences
Forest Sciences Centre, Fletcher Challenge Theatre Rm. 1005

Fire and Ice: Responses by stream-riparian ecosystems to shifting disturbance regimes and some consequences for forest management

Dr Colden V. Baxter – *Associate Professor, Stream Ecology Center, Department of Biological Sciences and Director, Center for Ecological Research & Education, Idaho State University Pocatello, Idaho.*

6:30 – 7:30pm Reception
Closing remarks and prize announcements

ORAL PRESENTATIONS

Evaluation of environmental impacts of woody biomass based bioenergy: A life cycle assessment approach

Francesca Pierobon[1]

The 'carbon neutrality' assumption of biomass plays an important role in evaluation of the global warming potential (GWP) of bio-fuels, as compared to fossil fuels. In case of woody bio-fuels, this assumption implies that the carbon dioxide emitted during the combustion of bio-fuels is equal to the carbon dioxide sequestered from the atmosphere within that biomass. However, the collection and conversion of woody biomass requires energy inputs in various forms. To be able to estimate the overall environmental burdens associated with converting woody biomass to biofuels, and the net reduction in greenhouse gas (GHG) emissions to the atmosphere by avoiding the use of fossil fuel, Life Cycle Assessments (LCA) is the international method of choice. However, the carbon neutrality of woody biomass and environmental impacts associated with bio-fuels are hotly debated in national and international arenas. This study presents a comprehensive evaluation of the environmental impacts of woody biomass based bio-fuels. This paper proposes a GWP impact assessment methodology using radiative forcing for incorporating carbon sequestration in Life Cycle Assessment of bio-energy. Different forest managements have been taken into account. Forest types, species mix and silvicultural treatments have played an important role in the development of the proposed carbon sequestration methodology. Emissions from transportation have been considered throughout the life cycle from the transport of raw materials inside and outside the forest until the transport of the finite product. Greenhouse gas emissions generated at the end of life of the product is also included in the analysis.

[1] Doctoral Student, University of Padua, Italy and Visiting Scholar, CINTRAFOR School of Environmental and Forest Sciences, University of Washington

Identifying effective measures for environmental monitoring by Aboriginal communities

Ariana McKay[1]

Resource development projects typically result in monitoring programs that consider a large number of environmental parameters; however, these programs often fail to fully consider the values and participation of surrounding communities. Also, monitoring protocols for single environmental values can be insufficient for addressing the cumulative impacts of resource development. Community-based environmental monitoring (CBEM) is emerging as a way to include local citizens in project reviews and developments. My research is designed to improve CBEM processes with a focus on Aboriginal communities facing cross-sectoral cumulative industrial developments.

My two research objectives will allow me to identify effective CBEM from both a national and local perspective. At the national level, I am investigating what constitutes effective CBEM based on past and current experiences of Canadian monitoring programs. Criteria will address the establishment and maintenance of long-term monitoring programs, particularly focusing on cumulative impacts of industrial development. At the local level, I am interviewing natural resource practitioners and Aboriginal community members to understand barriers to the development and application of CBEM processes and associated information. From this work, I will develop recommendations that guide the implementation or improvement of CBEM programs that may be applicable to the Takla Lake First Nation (TLFN) in north-central BC. Although some aspects of the research are focused on north-central BC, the criteria and recommendations will be relevant to other Aboriginal communities wanting to effectively implement CBEM. These findings will be applicable nationwide to industrial projects to ensure local-level values or measures are well represented.

Keywords: environmental monitoring, Aboriginal communities, cumulative impacts

[1] University of Northern British Columbia, 3333 University Way, Prince George, BC, (amckay0@unbc.ca)

Attributing changes in land cover by disturbance type integrating multiple datasets: A case study of the Yucatan Peninsula

Vanessa Silva Mascorro[1], Nicholas C Coops[2], Werner Kurz[3], Marcela Olguín[4]

Detailed observations of natural and anthropogenic disturbance events that impact forest structure and distribution of carbon are essential to estimate changes in terrestrial carbon pools and fluxes. Recent advances in remote sensing have resulted in annual, and decadal estimates of land cover change derived from observations using broad scale Moderate Resolution Imaging Spectroradiometer (MODIS) 250m – 1km imagery. These land-use change estimates however are often not attributed directly to a source or activity and are not well validated especially in tropical areas. In this paper, we provide estimates on both the amount of forest land cover change as well as approaches to attribute the cause of this change to the underlying disturbance driver in Mexican forested ecosystems. To do so we collate a variety of geospatial and remote sensing data to develop a comprehensive audit of the major disturbances within over an "early action" region for REDD+, the Yucatan Peninsula from 2005 – 2010. We then combine the different data to develop rules to estimate the most likely cause of a disturbance event based on its location and size and compare our observed disturbance rates to those detected using classified land cover data derived from MODIS.

Keywords: forest disturbances, REDD, Yucatan peninsula

[1] Faculty of Forestry, Department of Forest Resources Management, University of British Columbia, 2424 Main Mall, Vancouver, B.C., Canada (Vanessa.Mascorro@alumni.ubc.ca)

[2] Faculty of Forestry, Department of Forest Resources Management, University of British Columbia, 2424 Main Mall, Vancouver, B.C., Canada (Nicholas.Coops@ubc.ca)

[3] Canadian Forest Service (Pacific Forestry Centre), Natural Resources Canada, 506 West Burnside Road, Victoria, B.C., Canada, (Werner.Kurz@NRCan-RNCan.gc.ca)

[4] Proyecto Mexico-Noruega, Comision Nacional Forestal Coyoacán, D.F. Col. del Carmen Coyoacán CP 04100, México (olguin.conafor@gmail.com).

The Nyambene Forest in Meru, eastern Kenya: Exploring the link between traditional custodianship and community livelihoods

Gloria K. Borona[1]

Kenya is home to many sacred natural sites, including forests, mountains and rivers. Indigenous communities have upheld their role and responsibilities, passed down over centuries by their ancestors as custodians of these places. The 5391.2 ha Nyambene forest in Eastern Kenya is a sacred site to the Ameru people a Bantu community living on the eastern slopes of Mt. Kenya. The forest is a resource from which customs, spiritual practices and governance systems are derived to protect the territory as a whole and maintain its order, integrity and wellbeing. The Njuri Ncheke (Council of Elders) play a vital role in upholding the ecological knowledge and customs, practiced over generations including performing rain making rituals. This paper will examine the link between traditional custodianship and community livelihoods against a background of diverse national legislations on forest/ land use management, climate change and religious influences. The author will demonstrate how this forest weaves around the lives of the Ameru people and make a case for the need to encourage community participation and customary governance systems in protecting ecosystems and natural and cultural heritage, including sacred natural sites.

Keywords: Community Ecological Governance, livelihoods, forest resources, sacred sites, indigenous knowledge and climate change

[1] University of British Columbia Faculty of Forestry, 2424 Main Mall Vancouver B.C., (kendigloria@yahoo.com)

Synthesis of climate index and uncertainty: Estimating wildfires in British Columbia using count models

Zhen Xu[1], G.Cornelis van Kooten[2]

Two count models based on the Zero-Inflated Negative Binomial (ZINB) and the Generalized Pareto (GP) distribution are used to describe the uncertain occurrence of wildfires in British Columbia's interior. The ZINB and GP distributions are used, respectively, to link monthly total number of wildfires and associated total area burned since 1950 to the El Niño Southern Oscillation (ENSO). Results indicate that the El Niño 1&2 index has a strong positive influence on monthly wildfire occurrence with a four-month lag, with the ZINB model provides a good approximation of historical wildfire occurrence. Upon fitting the GP distribution with a logit model, probabilities of large burn area are also affected by the El Niño 1&2 index with significantly higher risks in the northwest of British Columbia. However, the ENSO index has no ability to predict burns exceeding 1,700 hectares. Sensitivity analysis using Monte Carlo simulation indicates that increases in the mean value of the monthly ENSO index will result in a mild increase in the annual number of fires and the monthly probability of the occurrence of large burns by fire zones, although, given the large variance, actual changes are uncertain and could be dramatic.

Keywords: wildfire occurrence, burned area, zero-inflated negative binomial distribution, generalized Pareto distribution, El Niño Southern oscillation

[1] Ph.D Candidate, Department of Geography, University of Victoria. PO Box 1700, Stn. CSC, Victoria, BC, Canada. (xuzhen@uvic.ca)

[2] Professor, Department of Economics, University of Victoria. PO Box 1700, Stn. CSC, Victoria, BC, Canada. (kooten@uvic.ca)

Forests and the Environment

POSTERS

Olfaction and detoxification in the mountain pine beetle *(Dendroctonus ponderosae)*
Christine Chiu, UBC

Perception of climate change impacts on forest and livelihood in the Padampokhari Village on the Parsa Wildlife Reserve buffer zone
Pratibha Duwal, UW

The effects of soil parent material and fertilization treatment on the wood quality of Douglas-fir in the Pacific Northwest
Luyi Li , UW

Rescaled water governance to recover public participation in BC
Angela Lockrey Mawdsley, UBC

Revealing the effects of sex and calve on habitat selection pattern of moose*(Alces alces)* by integrating GPS-tracking data with Airborne Laser Scanning data.
Markus Melin, UEF

Restoring dead wood in forests diversifies wood-decaying fungal assemblages but does not quickly benefit red-listed species
Hannes Pasanen, UEF

Lynx CSI: Forensic identification of predators at snowshoe hare kill sites
Laurel Peelle, UW

Comparison of hair and DNA-based approaches in dietary analysis of free-ranging wolves *(Canis lupus)*
Carolyn Shores, UW

ORAL PRESENTATIONS

The potential for bioenergy and biofuels production in the Williams Lake TSA

Cambero Claudia[1], Sowlati Taraneh[2], Marinescu Marian[3], Friesen Charles[4], Roser Dominik[5]

The Williams Lake timber supply area (TSA) is located in interior BC. It covers around 4.9 million hectares and is one of the largest TSAs in BC. The region has been largely affected by the Mountain Pine Beetle infestation, and almost all harvesting has been focused on salvage of beetle-killed trees. There is a large generation of forest biomass residues by current forest harvesting and forest products mills' operation. A large portion of those residues is not committed to any use. Their conversion into biofuels and bioenergy has the potential to generate valuable products from materials that are being landfilled or incinerated. In order for this conversion to be economically feasible, the right selection of biomass sources and types, conversion facilities type, size and location, products types and markets has to be done. These decisions have to consider all the capital and operational costs of technologies, residues availability and cost, biomass and products transportation costs and products demand and price. We developed and applied a mathematical model for the design of the forest biomass supply chain that considers all these decisions and factors and maximizes the economic yield for the whole region. Results of the model recommend that medium size (2 and 5MW) biomass boilers coupled to steam turbines for power production, and pyrolysis plants with a capacity around 200 to 400 odt.day-1 are the most suitable technologies to be installed. Results of the model include the optimal location of plants and optimal biomass and products flows within the region.

Keywords: biomass, bioenergy and biofuels, supply chain design, optimization, interior British Columbia, Williams Lake TSA

[1] Department of Wood Science, University of British Columbia, 2943-2424 Main Mall, Vancouver, B.C., Canada. (cambero.claudia@gmail.com)

[2] Department of Wood Science, University of British Columbia, 2931-2424 Main Mall, Vancouver, B.C., Canada. (taraneh.sowlati@ubc.ca)

[3] Forest Feedstocks group, FPInnovations. 2665 East Mall, Vancouver, B.C. Canada. (Marian. Marinescu@fpinnovations.cafriese)

[4] Forest Feedstocks group, FPInnovations. 2665 East Mall, Vancouver, B.C, Canada. (Charles. Friesen@fpinnovations.ca)

[5] Forest Feedstocks group, FPInnovations. 2665 East Mall, Vancouver, B.C. , Canada. (Dominik.Roser@fpinnovations.ca)

Eco-labeled wood products in the U.S. residential construction industry: Which characteristics of architects relate to the usage of certified wood and green building programs?

Tait Bowers[1]

Innovations of building materials and construction designs continue to evolve as fuel costs rise and the demand for energy efficient structures increases. The development of green building programs (GBPs) in the late 1990's marked the beginning of the effort to adopt energy efficient design guidelines and eco-friendly renewable materials in residential and commercial structures. These programs were targeted at reducing environmental impacts by integrating eco-friendly materials into the design and construction of buildings, including promoting the use of environmentally certified wood products (ECWPs) derived from sustainably managed forests. This research was developed to assess which demographic characteristics and material attributes might influence architect's decisions to use environmentally certified wood products in residential construction projects and how this may influence their participation in green building programs. For this study, 509 architects who are involved in residential construction responded to an online survey. Energy efficiency, low maintenance, and long life were the most important attributes from which architects made their material selection decisions. Survey participants from large firms (based on annual revenues) were more aware of ECWPs and were more likely to have participated in GBPs than those from small firms.

[1] Doctoral Candidate, CINTRAFOR, School of Environmental and Forest Sciences,University of Washington

Harvesting the dead and decaying forests: Potential carbon storage and avoided emissions

Wyatt S. Klopp[1] and Art L. Fredeen[2]

The mountain pine beetle (MPB: Dendroctonus ponderosae H.) epidemic is among the most recent and largest natural disturbances to occur in British Columbia, Canada. The death and decay of these stands threatens sustainable forest management and their associated carbon (C) balances at both regional and provincial scales. Our study investigates potential C storage and avoided C emissions in harvesting these forested stands for wood products. Among the various potential wood products, softwood pellets were of special interest due to future predictions of decreasing wood quality in MPB stands. For our analysis a C accounting framework was created to track harvested wood products throughout their life stages using a reference flow of 1 m3 harvested raw timber. This framework allowed us to differentiate points of emission, quality of the timber and enabled comparison between differing wood products. Presented findings will demonstrate the various net C balances of the wood products and highlight the role of assumptions in deciding the net outcome of C storage and avoided emissions.

Keywords: mountain pine beetle, carbon, harvested wood products

[1] M.Sc. Student, Natural Resources and Environmental Studies Graduate Program, University of British Columbia, 3333 University Way, Prince George, B.C., Canada, (kloppw@unbc.ca)

[2] Professor, Natural Resources and Environmental Studies Institute & Ecosystem Science and Management, University of British Columbia, 3333 University Way, Prince George, B.C, Canada, (Arthur.Fredeen@unbc.ca)

Forest resource utilization and business opportunities for the Nuxalk First Nation

Gary Bull[1], Sean Pledger[1], Matthias Splittgerber[2], Jamie Stephen[3], Amadeus Pribowo[4], Kahlil Baker[1], Devyani Singh[1], Dallas Pootlass[5], Nick Macleod[6], Mariko Molander[7]

During 2013 nine research projects were conducted for the Nuxalk First Nation in Bella Coola. The topics that were covered range from branding and social housing to business plans for new products and feasibility studies. Several projects focused on waste utilization of both forest and sawmill residues for the Nuxalk's small scale harvest and milling operations. The specific topics and the researchers include:

- Forest Management Planning for the Nuxalk Community Forest (by Matthias Splittgerber)
- Bella Coola District Energy System Feasibility Study (by Jamie Stephen)
- Combined Heat and Power Plant Feasibility Study (by Amadeus Pribowo)
- Wood and Charcoal Briquettes, Biochar Production and Market Assessment (by Kahlil Baker)
- Conifer Essential Oils Business Plan (by Devyani Singh)
- Social Housing (Cluster Care) for Elders (by Dallas Pootlass)
- Architectural Design of a Solid Wood House Incorporating Traditional Nuxalk Designs (By Nick Macleod)
- CNC Router Products, Market Assessment, and Business Structure (by Jamie Stephen)
- Re-branding the Nuxalk Development Corporation (by Mariko Molander)

Keywords: bioenergy, branding, business development, charcoal, conifer oil, district energy, First Nations, forest management planning, CNC router, social housing, solid wood house, wood residue.

[1] Department of Forest Resources Management, Faculty of Forestry, University of British Columbia 2045 - 2424 Main Mall, Vancouver, BC, Canada

[2] Chair of Forest Growth, Albert Ludwigs-University Freiburg im Breisgau, Tennenbacher Str. 4, 79106 Freiburg, Germany

[3] Queen's Institute for Energy and Environmental Policy, Queen University,138 Union Street, Kingston, ON, Canada

[4] Forest Product Biotechnology/ Bioenergy, Faculty of Forestry, University of British Columbia 2900 - 2424 Main Mall, Vancouver, BC, Canada

[5] University of Canada West, 1111 Melville St, Vancouver, BC, Canada

[6] School of Architecture and Landscape Architecture, University of British Columbia 402 - 6333 Memorial Road, Vancouver, BC, Canada

[7] Department of Wood Science, Faculty of Forestry, University of British Columbia 2900 - 2424 Main Mall, Vancouver, BC, Canada

Investigation on the potential of production parameters optimization of a bamboo-based natural fibre composites

Felix Böck[1]

This research develops engineered natural fiber composite materials of different bamboo species. China, India, Brazil and lately parts of Africa have rapidly expanding economies with increasing demand for building materials. The production of conventional construction and composite materials such as steel, concrete, or glass fibers in the automotive industry is energy intensive and unsustainable: concrete alone accounts for 5% of global CO2 emissions. Bamboo is a fast growing, renewable building material widely cultivated in these countries but not utilized to its full potential in modern construction and interior application. Its mechanical properties are similar to wood but it produces up to six times as much mass per hectare as conventional timber plantations. Compressed bamboo products (CBP), similar to plywood, oriented strand board, or glue-laminated wood products, therefore have enormous potential to partially replace the use of more energy intensive materials in rapidly developing countries. Widespread use of CBP is hampered by limited knowledge of their manufacture, structural and thermal behavior, and lack of appropriate building codes. The goal of this research is to develop innovative compressed high resistant composite materials from renewable, fast growing bamboo species, in order to place growth in rapidly developing countries onto a more sustainable path.

Keywords: bamboo, natural fiber composite, sustainability

[1] University of British Columbia, Vancouver B.C. in cooperation with University of Cambridge (UK) and Massachusetts Institute of Technology (USA), 2424 Main Mall, V6T 1Z4, (felix.boeck@alumni.ubc.ca)

Forest Products and Technology

POSTERS

Conversion of primary forest residue to biochar with a mobile pyrolysis kiln
BJ Birdinground, UW

Adhesion and impact properties of wood-polyester composite laminates
Shayesteh Haghdan, UBC

Resiliency of communities: Two case studies of villages in Wabane and Kaele, Cameroon
Cynthia Harbison, UW

The use of non-timber forest products by the Muckleshoot indian tribe
Clarence Smith, UW

Technical efficiency, technical progress and total factor productivity of China's paper industry
Shuai Tang, UW

Coefficient of static friction between resinated strand and non-resinated strand under different contact pressure.
Ingrid Tsai, UBC

ORAL PRESENTATIONS

Economics of bioenergy product exports from forests: Unintended trade repercussions

Craig Johnston[1], G. Cornelis van Kooten[1]

European countries have agreed on a binding target to achieve a 20% share of renewable energy in total energy consumption by 2020. In 2009, the share was 7%, but to achieve 20% could require that half to two-thirds of renewable energy come from biomass. A policy to increase wood biomass for power production has within it the seeds of its own demise: the price of wood products will increase offsetting the effectiveness of subsidies of biomass energy. The demand for the products from logs, including residuals and waste, are now traded not only in local markets, but internationally. Given the amount of fiber that could potentially be demanded for energy, it is necessary to study the economic feasibility of renewable energy standards (RES) in an international context. To do so, we develop a 20-region, global spatial price equilibrium trade model for logs, lumber, other wood products and biomass for energy (particularly wood pellets). The model consists of three U.S. regions, five Canadian regions, Finland, Sweden, Russia, Rest of Europe, New Zealand, Australia, Chile, Rest of Latin America, China, Japan, Rest of Asia, and the Rest of the World. The model is calibrated using positive mathematical programming. Initial results suggest that, if RES policies are not modified, these will lead to massive surplus gains to timber producing regions at the expense of electricity producers. However, even in timber-producing regions there will be disruptions as wood fiber resources are reallocated toward the production of energy biomass.

Keywords: bioenergy; spatial price equilibrium model; mathematical programming

[1] Department of Economics, University of Victoria, . PO Box 1700, Stn. CSC, Victoria, BC

The competitiveness of Canadian softwood lumber: A disaggregated trade flow analysis

Wei-Yew Chang[1] *and Chris Gaston*[2, 3]

Spatial equilibrium model has been frequently used by researchers to analyze policy changes on consumption, production, and trade trends of different forest products. Most studies, however, tend to use aggregated product groups where data is readily available and assume that each commodity (e.g. softwood lumber) under investigation is viewed by the consumer as a homogeneous good, which implies that there is no difference in prices of lumber grades, sizes, and species (e.g. Radiata pine lumber from New Zealand is assumed to be a perfect substitute for old growth yellow cedar from Canada).

The objective of this study is to utilize a recursive dynamic world spatial equilibrium model to examine future softwood lumber trade flow until the year 2021. To address the issue of softwood lumber homogeneity, this study disaggregates softwood lumber into two product groups: higher grade lumber that includes appearance, select structural, and Japanese-J grade, and lower grade lumber that includes U.S. dimension that is commonly used in construction and utility/economy grade. The results of the data disaggregation demonstrate its value for operational planning and policy analysis where results are needed in greater detail than for simply softwood lumber and also shed important light on the future competitiveness of softwood lumber by region and type.

Keywords: Spatial equilibrium; global lumber market; disaggregated trade flow

[1] Department of Wood Science, Faculty of Forestry, University of British Columbia, B.C, Canada (changwy@mail.ubc.ca)

[2] Department of Wood Science, Faculty of Forestry, University of British Columbia, Canada

[3] Markets & Economics, FPInnovations, Vancouver, Canada (chris.gaston@fpinnovations.ca)

The effects of the 2008 Lacey Act amendments on international trade in forest products

Patrick Bridegam[1]

Despite international efforts, illegal logging and its associated social, ecological, and economic effects continue on a scale that is of global concern, with significant amounts of illegally-harvested wood and the resulting wood products entering into international trade flows. Recently, major importers of forest products have begun to implement legislation prohibiting the possession and/or importation of wood and wood products that are of illegal origin, such as the U.S. Lacey Act Amendments of 2008. Economic modeling studies have produced mixed results concerning the impact of these policies on the international forest products trade, generally showing trade flow shifts for suspicious forest products to markets that do not discriminate between products of legal and illegal origin. However, no studies have systematically investigated the effects of the 2008 Lacey Act Amendments on the international trade in forest products. Drawing on bilateral trade data and using a quantitative, regression-based comparative case study methodology, I evaluated the effects of the 2008 Lacey Act Amendments on the international trade in forest products. A data-driven method creates synthetic control groups by assigning weights to data from comparison countries based on their similarity to the forest products trade in the country of interest prior to the policy. If the policy has been effective in reducing the amount of forest products of illegal origin being imported into the U.S., we expect to see some unique differences since 2008 in the U.S. imports of wood and wood products from areas with high levels of suspicious wood in their supplies.

[1] MS student, CINTRAFOR, School of Environmental and Forest Sciences, University of Washington

The Lacey Act and the European Union timber regulation (EUTR): Impacts on US wood importers and business practices by sector

Ben Roe[1]

Until recently, little regulatory action was taken in developed countries to address the problem of illegal logging or to stem the trade in wood products manufactured from illegally sourced wood products. In 2003, the American Forest and Paper Association commissioned a report which indicated that "illegal material depresses world prices by 7% - 16% on average, and U.S. prices by 2% - 4%, depending on the product". The results of this study made it clear to US legislators just how damaging the trade in illegal logging was to the US forest products industry and the environment. In 2008, the US Congress passed a landmark legislation expanding the scope of the Lacey Act to include wood and non-wood materials. Since that time, both the EU and Australia have adopted legislation of their own designed to make it a crime to import illegally harvested wood into their respective region/country. This study looks at the effects of timber legality policies on US imports with a focus on the attitudes and perceptions of US wood importers. The impact of legality legislation on business practices, material sourcing decisions, and the use of Chain of Custody certified products will be addressed. Exploratory interviews and targeted web-based surveys of key managers will identify market trends, segmented by company demographics and compared across industry sectors. The survey will include categorical questions, yes/no questions, and Likert scales and will be analyzed using univariate and multivariate statistical techniques. Results will be compared with parallel questions from surveys of tropical hardwood exporters in China, Vietnam and Thailand which are being administered by the Center for International Trade in Forest Products (CINTRAFOR). These findings will be assessed to identify global trends and market opportunities.

[1] MS student, CINTRAFOR, School of Environmental and Forest Sciences,University of Washington

Modelling the half-lives of wood-framed houses in order to quantify harvested wood product pools

Sheng H. Xie[1], Paul N. McFarlane[2]

Forests, harvested wood products (HWP) in use and HWP in landfills are the three major carbon pools within the forest sector. Although forests usually represent the major carbon sink for most nations, HWP may also play an important role. Consequently, the Kyoto Protocol and some carbon accounting frameworks such as the Western Climate Initiative are investigating HWP accounting frameworks. Longer-lived HWP tend to result in larger carbon pools and, in North America, wood-framed houses represent the majority of long-lived HWP. The removal rate of houses from this stock, as described by the half-life, is a critical parameter needed to quantify this carbon pool. Previous research has usually focussed on determining the half-life of houses, supposing that they decay according to a first order model and using assumed half-life value. This research assesses the validity of the first order decay assumption, reviews first order decay half-lives of wood-framed houses globally and assesses alternative values and models that may better describe national HWP pools.

Keywords: carbon accounting, harvested wood products, housing half-life

[1] Graduate student, Department of Wood Science, Faculty of Forestry, The University of British Columbia, Vancouver, B.C., Canada (sheng.xie@alumni.ubc.ca).

[2] Professor, Department of Wood Science, Faculty of Forestry, The University of British Columbia, Vancouver, B.C., Canada (paul.mcfarlane@ubc.ca).

The impact of the Lacey Act on Chinese furniture and flooring exporters

Ziyi (Zoe) Lu[1]

The recent adoption of timber legality legislation in the US (Lacey Act 2008 Amendment) requiring timber imports be sourced from legally harvested wood provides an opportunity to expand exports of sustainably managed US value-added wood products to Asia for re-exports. This study focuses on the interactions between Chinese furniture/flooring manufacturers and exporters and the US Lacey Act. The overall goal of the study is to demonstrate: (1) How perceptions associated with the Lacey Act have affected the export/raw material sourcing behavior of Chinese furniture and flooring manufacturers/exporters; (2) How the change in Chinese wood products exports to the US over past five years can be explained by the respondents' demographic and psychographic characteristics; (3) How the Lacey Act has impacted Chinese companies' manufacturing and export costs. The results were obtained from a series of structured interviews administered during two recent furniture and flooring trade shows held in Shanghai (DOMOTEX Asia/CHINAFLOOR Show in March 2013 and the Furniture Manufacturing & Supply China Show in September 2013). Quantitative statistical techniques were employed to analyze the survey data. The results obtained provide us with a better understanding of the strategies that furniture and flooring companies in China are adopting in order to ensure that illegally harvested wood is excluded from their supply chain.

[1] MS student, CINTRAFOR, School of Environmental and Forest Sciences,University of Washington

Social acceptance of marker-assisted selection: An upward battle

Chelsea Nilausen[1], Véronique Maltais[2], Nancy Gélinas, and Gary Bull

Marker-assisted selection (MAS) is an innovative biotechnological tool that allows selected traits to be flagged on the genome. This method is distinct from genetic engineering that involves the manipulation of DNA. In the context of the SMarTForest Project, MAS has been designed to assist tree breeders in selecting individuals with desired genotypic characteristics, forgoing the decades traditionally required to see if those traits are expressed at maturity.

This study explores the perception of potential end-users in British Columbia, Quebec and New Brunswick by investigating the perceived costs, benefits, and hindrances to implementation across Canada, and whether this perception is dependent on the context of implementation (ie: conservation, wood quality, pests, diseases, etc.) Through qualitative, semi-structured, open-ended interviews and mixed-method questionnaires, four target groups were surveyed on their perceptions of MAS. Preliminary findings indicate common themes among groups associated to the potential benefits of MAS, however perceived issues vary among groups. The results from this study will support further socio-economic research projects and the possible use of MAS in Canadian forests.

Keywords: genomics, marker-assisted selection, perception

[1] Faculty of Forestry, Forest Science Centre 2301-2424 Main Mall, The University of British Columbia, Vancouver BC, Canada, (chelseanilausen@gmail.com)

[2] Faculté de Foresterie, de Géographie et de Géomatique, Pavillon Abitibi-Price 2405 rue de la Terrasse, Université Laval, Québec QC, Canada, (veronique.maltais.2@ulaval.ca)

Forest Markets and Policy

POSTERS

The role of trees in enriching dense suburban environments: Incorporating residents' values into suburban forest design and management.
Sara Barron, UBC

Potential factors impacting the usage of environmentally certified wood products (ECWP) in the U.S. residential construction industry
Cindy Chen, UW

Understanding the factors that drive firm-level transformations in the BC forest sector
Alvaro Madero Márquez, UBC

Living with wildfire: The impact of historic fires on property values in Kelowna, British Columbia
Zhen Xu, UVIC

future forestry leaders

student research symposium 2014

UNIVERSITY of WASHINGTON

School of Environmental and Forest Sciences

forestry
university of british columbia