CANADA-U.S.

FOREST HEALTH AND INNOVATION INITIATIVE

SUMMIT III
June 29, 2015
Washington, D.C.

One Continent; One Forest; One Threat: *Summary of Discussions and Decisions*

Canada — U.S. Forest Health and Innovation Initiative

SUMMIT III - SUMMARY OF DISCUSSIONS AND DECISIONS

Executive Summary

At the third Canada — United States (U.S.) Forest Health Summit, the co-chairs emphasized that science, technology and innovation in the forest sector are integral to the economic and social prosperity of both countries. The co-chairs also stressed that collaboration can strengthen environmental sustainability and industry competitiveness. Science and technology collaboration facilitates innovation and supports the success of Canadian and American forest industries.

To strengthen cooperation between Canada and the U.S. in support of a binational forest health and innovation agenda, three overarching objectives for the Canada – U.S. Forest Health and Innovation Initiative (the Initiative) were identified:

- *Advancing Knowledge* – foster the development of existing and new scientific and technological partnerships between the USDA Forest Service, the Canadian Forest Service and partners that fill critical knowledge gaps of mutual priority;
- *Catalysing Innovation* – accelerate technology, commercialization, industry transformation, research and data production in the forest sector for the economic and social benefit of both countries; and
- *Supporting People* – strengthen the skills and capacity of each country's workforce by sharing best practices on how to develop, attract and retain top experts and leaders.

To accomplish these objectives, Canada and the U.S. agreed to carry out new mutually beneficial projects in eight priority action areas:

- *New areas identified in Summit III*
  - Climate Change
  - Land Reclamation/Restoration
  - Urban Forestry
- *Areas covered since the beginning of the Initiative*
  - Emerging Markets
  - Forest Inventory
  - International Outreach
  - Pests
  - Wildland Fire

1.0 Introduction

On June 29, 2015, Mr. Tom Tidwell, Chief, United States Forest Service (USFS) and Mr. Glenn Mason, Assistant Deputy Minister, Canadian Forest Service (CFS) of Natural Resources Canada co-chaired the third Canada — United States (U.S.) Forest Health Summit in Washington, D.C., at the Embassy of Canada. The event was convened, hosted and facilitated by the U.S. Endowment for Forestry and Communities (the Endowment). The 2015 Summit was held at the Embassy of Canada, Washington, DC.

The 2015 Summit was attended by high level officials and scientists from the USFS and the CFS, as well as by representatives from the Endowment, the American Forest Foundation, the U.S. Forest Products Laboratory, FPInnovations, the Canadian Interagency Forest Fire Centre and the Softwood Lumber Board. Appendix 1 is a list of Summit participants. This meeting report summarizes the discussions held at the Summit and the decisions reached by participants.

In 2011, the first Canada-U.S. Forest Health Summit was held in recognition that both countries shared increasingly complex forest health challenges that would benefit from a binational forest science agenda and enhanced collaboration. This Summit led to the establishment of the Canada-U.S. Forest Health and Innovation Initiative (the Initiative) which works to address common challenges including ensuring a sustainable fiber supply, responding effectively to disturbances such as wildland fires and pests plus strengthening continental capacity to prevent, predict and respond to forest health threats. Since 2011, Summits have been held in in Washington, D.C. in 2012, and in Ottawa, Canada, in 2013.

2.0 Establishing Context and Priorities

2.1 Opening and Welcome

Mr. Carlton Owen of the Endowment provided the opening challenge for the Initiative, which set the context and importance of the meeting. He was followed by a welcome from Mr. Denis Stevens, Deputy Head of Mission for the Canadian Embassy. Mr. Michael Rains, Director of the USFS Forest Products Laboratory (FPL), provided Mr. Stevens with a copy of a book chronicling the 100-year history of the FPL. Appendix 2 provides the complete agenda of the Summit.

2.2 Respective Organizational Priorities

The role of the CFS and the USFS in supporting North America's forest sector is to provide thought-leadership and science-based information required by landowners, land managers and industry. Both from the CFS, Dr. Javier Garcia-Garza, Director General of the Science Program Branch, and Ms. Julie Sunday, Senior Director, Science and Technology Governance Division, provided a review of the priorities of the Canadian forest sector from their organization's

perspective including an overview of Canada's innovation system. Mr. Carlos Rodriguez-Franco, Acting Deputy Chief, Research and Development, USFS, provided the American perspective.

2.3 Introductory Remarks by the Heads of the Two Agencies

Mr. Glenn Mason, Assistant Deputy Minister, CFS, emphasized that the need for collaboration between the U.S. and Canada on forest health issues is greater than ever as both countries continue to face more complex challenges in and around their forests. He also mentioned that innovation is integral to addressing these challenges and recommended that it be adopted as a priority area for discussion under the Initiative. Finally, Mr. Mason stated that the Initiative has enabled both countries to leverage their respective knowledge and resources to achieve faster results and more effectively respond to forest health threats that do not respect national borders.

Mr. Tom Tidwell, Chief, USFS, discussed the need to include more social science as an understanding and acceptance about the importance of forests not just to traditional products but to recreation, water, air and quality of life are built. He added that the ecological functions of forests must be restored and that their social and economic viability must also be maintained. Mr. Tidwell concluded by encouraging participants to build on and expand the Summit as well as extend their reach and impact.

3.0 Review of Priority Project Areas

Cross-border teams representing the five priority areas identified in the second Summit — emerging markets, forest inventory, international outreach, plus pests and wildland fire — shared brief updates on progress made on current and/or completed collaborative projects and presented ideas of new projects to undertake in 2015-2016. New collaborators presented proposed projects for 2015-2016 in three new priority areas — climate change, land restoration/reclamation and urban forestry.

Appendix 3 provides a list of priority area leads and Appendix 4 outlines collaborative projects in the eight priority action areas for 2015-2016.

4.0 Forest Sector Innovation Panel

Going beyond traditional science-based approaches to forest health challenges, this Summit included the importance and need for markets as key for retaining and advancing forest health. Four speakers — Mr. Steve Lovett, CEO, Softwood Lumber Board; Mr. Pierre Lapointe, Chief Executive Officer, FPInnovations; Mr. Michael T. Rains, Director, Forest Products Laboratory, USFS; Ms. Mary Anne Hansan, Executive Director, Paper and Packaging Board — shared their views on challenges to creating and sustaining traditional as well as new product markets necessary to the economic and ecological health of forest-rich communities. Each presenter

noted the need for enhanced collaboration and the range of social and ecological values that forest-based products offer to the continent and the world.

5.0 Conclusion: Agreement on Objectives and Actions

5.1 Vision and Objectives for the Initiative

All participants agreed that constraints on public resources, human and financial, in the face of rapidly expanding forest health challenges not only point to the importance of enhanced and extra strategic cross-border collaboration, but success will be limited without collaboration. While co-operation between Canada and the U.S. and their forest sectors is historically rooted, the benefits of being more strategic and combining market innovation as a critical component offers the potential to deliver sustained value.

Three overarching objectives for the Initiative were identified and agreed to at the Summit. These objectives will strengthen cooperation between Canada and the U.S. in support of a binational forest health and innovation agenda:

- *Advancing Knowledge* – foster the development of existing and new S&T partnerships between the USFS, the CFS and partners that fill critical knowledge gaps of mutual priority;
- *Catalysing Innovation* – accelerate technology, commercialization, industry transformation, research and data production in the forest sector for the economic and social benefit of both countries; and
- *Supporting People* – strengthen the skills and capacity of each country's workforces by sharing best practices on how to develop, attract and retain top experts and leaders.

5.2 Looking Forward: Future Actions

To accomplish the identified and decided upon objectives of the Initiative, Canada and the U.S. have agreed to the following actions:

- Cross-border science teams will continue to develop and implement identified actions to respond to each of the priority work areas;
- Results will be shared broadly within the respective agencies and across the forest sector; and
- Enhanced collaboration in market innovation will become a foundational component of overall initiative plans going forward.

Future collaboration will also be expanded to ensure that urban populations can benefit from healthy forests, strengthen common responses to climate change and facilitate land restoration. Mutually beneficial activities will also be developed to expand the use of wood products into non-traditional markets and to undertake scientific and technological collaboration that leads to new products and processes.

6.0 Next Steps

The fourth Canada-U.S. Forest Health Summit will be held in Canada in 2017, to coincide with the 150th anniversary of the nation's founding. In the interim, science teams will continue to implement agreed-upon work plans with targeted updates being handled via subject-area-based webinars or video conferences and leads in the market innovation area – USFS FPL, FPInnovations, the CFS and the Endowment – will explore plans and means to implement a complementary cross-border work.

Appendix 1 – Participants of Canada-U.S. Forest Health Summit III

United States Participants		
Name	**Position**	**e-mail address**
Tom Tidwell	**Chief, USFS**	**ttidwell@fs.fed.us**
Jim Reaves	Deputy Chief, Research and Development	jreaves@fs.fed.us
Patricia Hirami	Associate Deputy Chief, State and Private Forestry	phirami@fs.fed.us
Cynthia D. West	Associate Deputy Chief, Research and Development	cdwest@fs.fed.us
Carlos Rodriguez Franco	Associate Deputy Chief – FS R&D	crodriguezfranco@fs.fed.us
Michael T. Rains	Director, Northern Research Station and Forest Products Laboratory	mrains@fs.fed.us
Josiah Kim	Acting Director, Inventory, Monitoring and Analysis Research	jkim@fs.fed.us
Monica Lear	Director, Forest Health Protection, State and Private Forestry	monicalear@fs.fed.us
Steven W. Koehn	Director, Cooperative Forestry	stevenwkoehn@fs.fed.us
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Dr. Ralph Crawford	Assistant Director, Forest Health Protection for the Northern Area	rcrawford@fs.fed.us
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Matt Rollins	National Program Leader, Wildland Fire Research -FS R&D	matthewgrollins@fs.fed.us
Marilyn Buford	National Program Leader for Silvicultural Research, R&D	mbuford@fs.fed.us

Brad Smith	Associate National Program Manager, Forest Inventory and Analysis – FS R&D	bsmith12@fs.fed.us
Colin Hardy	Program Manager, RMRS Wildland Fire	chardy01@fs.fed.us
Brian R. Sturtevant	Research Ecologist, Institute for Applied Ecosystem Studies	bsturtevant@fs.fed.us
Jennifer Conje	Senior Policy Analyst, International Programs	jconje@fs.fed.us
Surabhi Shah	Acting Deputy Director for Strategic Initiatives Northern Research Station & Forest Products Laboratory	sshah@fs.fed.us
Felipe Sanchez	Research and Development Acting Associate Deputy Chief	fsanchez@fs.fed.us
Janette Davis	Assistant Director, Cooperative Forestry State and Private Forestry	jkdavis@fs.fed.us
Carlton Owen	CEO, US Endowment for Forestry & Communities	carlton@usendowment.org
Michael Goergen	Vice President, Innovation Director, P3 Nano, US Endowment for Forestry & Communities	michael@usendowment.org
Florence Colby	Manager, Organizational Support, US Endowment for Forestry & Communities	florence@usendowment.org
Tom Martin	CEO, American Forest Foundation	tmartin@forestfoundation.org
Steve Lovett	CEO, Softwood Lumber Board	
Mary Anne Hansan	Executive Director, Paper and Packaging Board	

Canadian Participants		
Name	**Position**	**e-mail address**
Glenn Mason	**Assistant Deputy Minister, CFS**	**glenn.mason@canada.ca**
Javier Gracia-Garza	Director General, Science Program Branch	Javier.Gracia-Garza@canada.ca
Julie Sunday	Senior Director, Science and Technology Governance Division, Science Program Branch	Julie.Sunday@canada.gc.ca
John Kozij	Director General, Policy, Economics and Industry Branch	john.kozij@canada.ca
Doug Maynard	Director, Forest Innovation and Dynamics, Pacific Forestry Centre	Doug.Maynard@canada.ca
Bob Jones	Director, Industry and Trade Division	Robert.Jones@canda.ca
Ken Farr	Manager, Science Integration, Innovation	Ken.Farr@canada.ca

	and Integration Division	
Kathy Beaton	Forest Program Planning & Project Leader, Forest Health and Biodiversity	Kathy.Beaton@canada.ca
Catherine Ste-Marie	Climate Change Science Coordinator, Forest Science Division	Catherine.Ste-Marie@canada.ca
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Appendix 2 – Agenda Canada-U.S. Forest Health Summit III

Third Canada-U.S. Forest Health Summit
Washington, D.C., Embassy of Canada
501 Pennsylvania Ave NW
June 29, 2015
07:30 – 18:30

Summit organised by the US Forest Service (USFS), the Canadian Forest Service (CFS), and the U.S. Endowment for Forestry and Communities.

7:30	**Registration and Breakfast**
8:15	**Introductory Remarks by Summit Facilitator** • *Carlton Owen, President and CEO, US Endowment for Forestry and Communities*
8:25	**Participants Introduction**
8:45	**Introductory Remarks by Deputy Head of Mission of the Embassy of Canada** • *Denis Stevens, Deputy Head of Mission, Embassy of Canada*
8:55	**Introductory Remarks by Co-Chairs** • *Tom Tidwell, Chief, USFS* • *Glenn Mason, Assistant Deputy Minister, CFS*
9:20	**Canadian and U.S. Forest Sector Priorities** • *Javier Gracia-Garza, Director General, Science Program Branch, CFS* • *Julie Sunday, Senior Director, Science and Technology Governance, CFS* • *Carlos Rodriguez-Franco, Associate Deputy Chief, USFS*
9:50-13:50	**Review of Priority Project Areas**
9:50	**Pests** • *Kathy Beaton, Forest Program Planning & Project Leader, Forest Health and Biodiversity, CFS* • *Brian R. Sturtevant, Research Ecologist, Institute for Applied Ecosystem Studies: Theory and Application of Scaling Science in Forestry, USFS*

10:10	**Wildland Fire** • *Doug Maynard, Director, Forest Innovation and Dynamics, Pacific Forestry Centre, CFS* • *Kim G. Connors, Executive Director, Canadian Interagency Forest Fire Centre* • *Matt Rollins, National Program Leader for Wildland Fire Research, R&D, USFS* • *Colin Hardy, RMRS Wildland Fire Program Manager, USFS*
10:30	**Health Break**
10:45	**Markets** • *Bob Jones, Director, Industry and Trade Division, CFS* • *World Nieh, National Program Lead, Forest Products, R&D, USFS*
11:05	**Expanding International Reach** • *Julie Sunday, Senior Director, Science and Technology Governance, CFS* • *Jennifer Conje, Senior Policy Analyst, International Programs, USFS*
11:25	**Forest Inventory** • *Jeff Dechka, Director, Forest Information, Pacific Forestry Centre, CFS* • *Brad Smith, Associate National Program Leader for Forest Inventory and Analysis – R&D, USFS*
11:45	**Urban Forest Research** • *Ken Farr, Manager Science Integration, Innovation and Integration Division, CFS* • *Beth Larry, National Program Leader for Urban Forestry Research, R&D, USFS*
12:10	**Lunch**
13:00	**Land Restoration** • *Javier Gracia-Garza, Director General, Science Program Branch, CFS* • *Marilyn Buford, National Program Leader for Silvicultural Research, R&D, USFS*
13:25	**Climate Change** • *Catherine Ste-Marie, Climate Change Science Coordinator, Forest Science Division, CFS* • *Toral Patel – Weynand, Forest Management Sciences Staff Director, R&D, USFS*

13:50	**Forest Sector Innovation Panel** • Moderator: *Carlton Owen, President and CEO, US Endowment for Forestry and Communities* • *Steve Lovett, CEO, Softwood Lumber Board* • *Pierre Lapointe, CEO, FPInnovations* • *Michael T. Rains, Director, Forest Products Laboratory, USFS* • *Mary Anne Hansan, Executive Director, Paper and Packaging Board*
14:45	**Health Break**
15:00	**A Vision for the Canada-U.S. Forest Health Initiative** • *Discussion with all participants*
16:00	**Looking Forward: Future Actions** • *Carlton Owen, President and CEO, US Endowment for Forestry and Communities*
16:20	**Closing remarks** • *Glenn Mason, Assistant Deputy Minister, CFS* • *Tom Tidwell, Chief, USFS*
16:50	**Depart for Cocktail Reception**
17:00	**Cocktail Reception** (*Nelson Mullins Law Firm, 101 Constitution Ave)*

Appendix 3 – Project Area Leads

Climate Change
CFS: Catherine Ste-Marie – Climate Change Science Coordinator, Forest Science Division Email: catherine.ste-marie@canada.ca Phone: (613) 868-7962
USFS: Toral Patel – Weynand – Forest Management Sciences Staff Director, USFS R&D Email: tpatelweynand@fs.fed.us Phone: (703) 605-4188
Expanding Markets
CFS: Robert Jones – Director, Industry and Trade Division Email: robert.jones@canada.ca Phone: (343) 292-8510
USFS: World Nieh – National Program Lead, Forest Products, USFS R&D Email: wnieh@fs.fed.us Phone: (703) 605-4197
Forest Inventory
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USFS: Greg Reams – National Program Leader for Forest Inventory and Analysis – FS R&D Email: greams@fs.fed.us Phone: +7036054189
International Outreach
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USFS: Jennifer Conje – Senior Policy Analyst, International Programs Email: jconje@fs.fed.us Phone: (202) 644-4624
Land Reclamation / Restoration
CFS: Renée Lapointe – Director, Ecosystem Health Science Program, Northern Forestry Centre Email: renee.lapointe@canada.ca Phone: (780) 430-3848
USFS: Marilyn Buford – National Program Leader for Silvicultural Research, USFS R&D Email: mbuford@fs.fed.us Phone: (703) 605-5176
Pests
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Urban Forestry
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USFS: Beth Larry – National Program Leader for Urban Forestry Research, USFS R&D Email: eblarry@fs.fed.us Phone: +7036055263
Wildland Fire
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USFS: Dale Dague – Branch Chief, Disaster Operations and International Fire at US Forest Service Email: ddague@fs.fed.us Phone: 202-205-1500 Matt Rollins – National Program Leader for Wildland Fire Research -FS R&D Email: matthewgrollins@fs.fed.us Phone: +7032362480

Appendix 4 – Potential Project List 2015/2016

Climate Change				
Project	**Project Description**	**Expected Outcomes**	**Timeline**	**Contact person**
A Joint Approach for using Citizen Science to Monitor Changes in the Forest	Create a Canada-US Working Group to share information and approaches on Citizen Science.	The working group will share methodologies and successful examples where Citizen Science is used to collect data on Climate Change. The group will share information on tools and technologies to collect and report Citizen Science data in both countries. Identification of a subset of indicators that can be monitored by the publics with definition and communication of shared protocols.	2015-2017	CFS: Dan McKenney, John Pedlar, Sylvie Gauthier, Catherine Ste-Marie USFS: Duncan McKinley
Collaborative research under the NASA ABoVE project	Build on ongoing collaboration under the NASA ABoVE project. Share information on carbon and biomass estimation using ground-truthed data and remotely sensed images in northern ecosystems.	Improved efficiency in the delivery of Climate Change Science in northern forest ecosystems by building on collaboration under the NASA ABoVE project in area of interest for both parties.	2015-2017	CFS: Catherine Ste-Marie USFS: Hans Andersen, USFS/PNW, and NASA researchers
A Broader Suite of Information and Tools to support Climate Change Adaptation North American modeling of climate envelopes	Sharing information on data and tools being delivered and made available to support adaptation by the CFS and the USDA FS	Increased visibility and easier access to adaptation tools and information from both organizations in both websites.	2015-2017	CFS: Forest Change team USFS: Randy Johnson? Melissa Kenney?
North American modeling of climate envelopes for plants, pests & diseases	Access and exchange of available data to improve the modeling capacity of the Canadian Plant Hardiness website, including data for a module currently	Range shift projections for more species and with greater relevance across North America.	2015-2017	CFS:Dan McKenney, Denys Yemshanov, John

	being developed for pest and diseases.	Better characterization of the impact of uncertainty on model projections.		Pedlar USFS: Frank Koch
Development of risk assessment and surveillance planning tools for invasive alien forest insects & diseases in North America	Collaboration and information exchange regarding the development of mapping, assessment and surveillance planning tools for emerging forest insect and disease threats, in conjunction with the development of cross-border socio-economic datasets that help better understand the human-mediated movement of invasive organisms.	Improved modeling and forecasting capacity for emerging forest insect and disease threats in the face of uncertainty from a changing climate, plus a better understanding of the future impacts of these threats on forest health.	TBD	CFS: Denys Yemshanov USFS: Frank Koch, Kurt Riitters
Participation in U.S. National Stakeholder Invasive Species and Climate Change Workshop	Collaborate on presenting and participating at the U.S. national invasive species workshop on climate change and plants, insects and pathogens. Generate and share leading edge science from both countries at a national level.	Generate and share leading edge science from both countries at a national level to make information and data available to decision-makers.	2015-17	CFS: [TBD] USFS: Deb Finch, Chelcy Miniat, Steve Seybold, Deb Hayes
Conservation and Restoration of Forest Soils in North America: Assessing Vulnerability and Enhancing Resiliency in a Changing Environment	Collaborate on presenting and participating at the workshop proposed in late 2015, as part of a process of writing several documents that report on 1)state of the science of forest soils; 2) needs for research, data, and monitoring infrastructure; and 3) the availability and usability of existing soil management tools.	Generate and share leading edge science from both countries at a national level to make information and data available to decision-makers.	2015-17	CFS: David Paré USFS: Pouyat, R., Dumroese, Debbie -FS; Adams, Mary B -FS; Swanston, Christopher W -FS; Scott, Andy -FS; D'Amore, David V –FS
Expanding Markets				

Project	Project Description	Expected Outcomes	Timeline	Contact person
NRCan's Tall Wood Buildings demonstration/USDA Tall Wood Buildings competition	The CFS and USDA are funding large-scale demos of Tall Wood Buildings and demonstrating the non-traditional uses for wood in domestic markets in Canada and the U.S.	Showcase the architectural and commercial viability of advanced wood products in tall buildings. Expand the use of wood into non-traditional markets.	TBD	CFS: Bob Jones USFS: World Nieh
Development of Timber Bridges Market: U.S. and Canadian Handbooks for Timber Bridges	Both U.S and Canada researchers will jointly contribute to the development of source/handbooks for both U.S. and Canada markets	Strengthen collaboration, exchange of design information and harmonize requirements.	TBD	CFS: Mohammed Mohammed USFS: James Wacker
Cellulose Nanomaterials International Standards – Terminology Standards	U.S., Canadian and other international experts are collaboratively developing standards, ISO and TAPPI standards for cellulose nanomaterial.	International standards will support a harmonized product certification and remove international trade barriers for Canadian and U.S. wood products. They will provide input to international organizations that will inform new harmonized policies and regulations.	TBD	CFS:Matt Schacker USFS: World Nieh Other partners: FPI, CSA, PNNL, industry partners
Cellulose Nanomaterials International Standards – Characterization Standards	U.S., Canadian and other international experts are collaboratively developing standards, CSA and ISO standards for cellulose nanomaterial.	International standards will support a harmonized product certification and remove international trade barriers for Canadian and U.S. wood products. They will provide input to international organizations that will inform new harmonized policies and regulations.	TBD	CFS: Matt Schacker NRC: Linda Johnston USFS: World Nieh Other partners: FPI, CSA, PNNL, industry partners
Enhancing Fire Performance of Cross Laminated Timber (CLT) Assemblies	Evaluating the fire resistance of hybrid CLT manufactured from lumber and engineered wood products (EWP such	Ensure the enhanced mechanical and fire resistance properties of hybrid CLT panels and assemblies manufactured with combined lumber. Will promote the	Expected completion by 2016	Canada: Jean-Frédéric Grandmont, FPI

	as LVL and LSL).	safety and value of these products.		USFS : Samuel L. Zelinka
Timber/Concrete Composite System for Bridges	A joint research project with University of Toronto, FPInnovations, CWC, a glulam manufacturer, an engineering firm & US FPL.	An efficient and economical design concept for short span hybrid timber-concrete bridges for Canada and the U.S.	Expected completion by 2017	CFS: Mohammed Mohammed USFS: James Wacker
Seismic performance of Cross Laminated Timber (CLT) in mid- and high-rise building applications	Evaluate the performance of CLT connections and shearwalls and develop models to better understand the seismic performance of CLT assemblies. Develop seismic design guidelines for CLT buildings.	Facilitate the implementation/alignment of CLT in mid-high rise wood buildings in both Canadian and U.S. building codes.	Expected completion by 2016	Canada: Marjan Popovski, FPI USFS: Douglas Rammer, John van de Lindt
Forest Inventory				
Project	**Project Description**	**Expected Outcomes**	**Timeline**	**Contact person**
North American Forest Commission Database – phase 1	Integration of Canadian, US and Mexican forest inventory reporting data for borderless assessment of North American forest ecosystems.	A North American forest inventory reporting database that seamlessly integrates NFI data from US, Canada & Mexico; a harmonized ecological stratification map for North American forest ecosystems; a report describing the map and database and phase 1 data analysis products.	planned phase 1 release at WFC in September 2015	CFS: Graham Stinson, Alex Song, Joe Kapron (ON) USFS: Brad Smith, Sonja Oswalt, Pat Miles
North American Forest Commission Database – phase 2	Phase 2 expansion of the NAFC database.	Explore expanding the NAFC database to include new forest assessment attributes for forest health and risk assessment.	TBD	CFS: Graham Stinson, Alex Song USFS: Brad Smith, Sonja Oswalt
Boreal Disturbances and	Explore Boreal forest disturbances and	Maps and for products science, policy,	2015-17	CFS: Dr. Mike Wulder, Joanne

Recovery	recovery over 30 years.	and communications.		White USFS: C. Woodall
Tree Range Maps	Explore Canada/USA integrated tree attribute maps and digital products and also integration of pest impact areas into the range maps.	Improved data for input to risk assessments of pathogens and pests, enabling more informative risk assessment at more actionable scales.	TBD	CFS: André Beaudoin USFS: H. Perry, J. Shaw
Future Tree Ranges	Explore the application of Plant Hardiness models in combination with NFI and tree extent products to produce multiple scenarios to changes in future tree range.	Improved ability to work across borders and share information which may help each nation prepare for future issues (pathogens/ pests)	TBD	CFS: D. McKenney USFS: TBD
Urban Forests	Urban inventories which could assist earlier detection/mitigation of pests such as Emerald ash borers and Asian longhorn beetles before they expand their range. Development/use of tree mapping technology specifically designed for urban forestry	Strengthened collaboration on urban forest inventory and mapping; development/use of tree mapping technology specifically designed for urban forestry	TBD	CFS: Don Leckie François Gougeon USFS: TBD
International Outreach				
Project	**Project Description**	**Expected Outcomes**	**Timeline**	**Contact person**
Promote cooperation under the Initiative at the FAO World Forestry Conference in September 2015	Delegates to the WFC from the USFS and the CFS will present the integrated NA map of forest biomass in the context of climate change done under the initiative at the U.S. booth at the Congress.	Raise the profile of both the initiative and Canadian and U.S. forest health scientists and research. The initiative becomes a model for international cooperation on forest health issues.	2015-2016	CFS: TBD USFS: Jennifer Conje
Promote regional collaborative work at FAO Committee on Forestry (COFO)- Spring/Summer 2016	Analyze and compile lessons learned in working regionally under the Initiative and share our experiences and products with other regional forestry	Raise the profile of both the initiative and Canadian and U.S. forest health scientists and research. The initiative becomes a model for regional	2015-2016	CFS: TBD USFS: Jennifer

	commission members. Delegates from the USFS and the CFS will present collaborative work/lessons learned during the session or as a side event on the following: integrated North American map of forest biomass in the context of climate change, regional collaboration on 2015 Forest Resource Assessment, adaptation of FAO phytosanitary e-learning courses to region, and the regional collaboration on the FAO State of the World Forest Genetics Resources Report.	cooperation on forest health issues.		Conje
Continue collaboration on FAO and UNECE reports, such as the 2015 Global Forest Resource Assessment, State of the World Forest Genetics Resources Report, etc.	Participants will discuss continuing collaboration on UNECE and FAO reports, in particular the issue of the definition of 'forest employment' for the 2020 Global Forest Resource Assessment.	Continued collaboration on reporting methods and indicators will allow for information sharing and bigger picture analysis.	2015-2016	CFS: TBD USFS: Jennifer Conje
Land Reclamation/Restoration				
Project	**Project Description**	**Expected Outcomes**	**Timeline**	**Contact person**
Land reclamation and restoration	US and Canadian researchers will explore developing collaborative research in the area of land reclamation and land restoration.	- A cross-border directory of CFS and USFS researchers in this area will be developed and distributed. - At least one webinar will be held to share information and begin developing collaborative relationships	June 2016	CFS:Renée Lapointe USFS:Marilyn Buford
Pests				
Project	**Project Description**	**Expected Outcomes**	**Timeline**	**Contact person**
Integrating spruce budworm dynamics in forest landscape	Researchers will combine and enhance parallel USFS and CFS developments in modeling technologies to simulate	1. Enhanced strategic decision support for mitigation of short and long-term	Ongoing, to be completed in	CFS: Barry Cooke USFS: Brian

modelling	budworm outbreak dynamics and consequences in response to dynamic landscape conditions, land management, and climate. The new model will be validated using data from a US-Canadian study in the Great Lakes region and applied to the emerging outbreak in the northeast.	losses to spruce budworm. 2. Facilitation of risk analysis to estimate likelihood of damage and assessment of system variability.	2016/17	Sturtevant
Spruce budworm atmospheric transport model (SBW-ATM)	This project uses meteorological model data to model and predict the flight of the spruce budworm in the eastern Canadian-US border region. This model is based on the hypothesis that wind currents allow for pest migration and in turn large scale outbreaks.	Insights from the model help inform the spread dynamics of the current outbreak, and address how multi-scaled wind patterns can interact with SBW dispersal behavior. This will allow us to better understand the spatiotemporal dynamics of SBW outbreaks.	Ongoing, to be completed in 2016-17	CFS :Jacques Régnière, Barry Cooke USFS : Brian Sturtevant, Joseph Charney
An operational tool for projecting wind dispersed pests *(extending the SBW-ATM)*	An integrated weather and insect dispersal system that could project insect deposition patterns near real time, building upon the SBW-ATM framework that may be extensible to multiple insect pests.	This can inform early intervention strategies and prepare agencies for outbreak scenarios.	2016-17	CFS: Barry Cooke USFS: Frank Sapio, Brian Sturtevant
Harmonization of pest population monitoring across jurisdictions	TBD	TBD	TBD	CFS: TBD USFS: TBD
Building a North American insect and disease risk map. *Especially critical for invasive species*	TBD	TBD	TBD	CFS: TBD USFS: TBD
Forest health research knowledge network mapping	Applying modern social network mapping tools to US-Canadian authorship of S & T knowledge products to better outline collaborative potential in cross-border forest health research, especially regarding (i) spruce	Dynamic co-authorship maps of four major areas of literature will illustrate where synergies could lie in international collaboration on specific forest health issues. A competitive call for proposals could be developed using	April 1, 2016-March 31, 2017, possibly sooner.	CFS: Jean-Luc St-Germain or Marie Anick Liboiron USFS: National

	budworms, (ii) bark beetles, (iii) invasive alien species, and (iv) climate change impacts and adaptation.	these maps, and these maps would help in analyzing the potential for various proposals to fill key knowledge gaps regarding spruce budworms, bark beetles, invasive alien species, or climate change impacts and adaptation.		Program Leader in Forest Entomology (TBD)
The use of weather radars to document mass flights of the spruce budworm in the EIS context	Weather radar will be used to document mass flights of the spruce budworm in the EIS context	Mass flights of spruce budworms can be readily observed on weather radars. This technology may enable the documentation of the regional moth migration by assessing when, where, in which direction and at which frequency these flights occur.	Ongoing, to be completed in 2016/17	CFS: Yan Boulanger, Deepa Pareswaran University McGill: Frédéric Fabry USFS: TBD
TreeTaggr	TreeTaggr is a mobile and cloud-based tool for Emerald Ash Borer (EAB) surveillance that will involve Canadian citizens in forest pest surveillance. This project will be run in collaboration with US institutions such as the Institute of Forest Biosciences (IFB).	Adaptation of a low-cost, user-friendly Twitter-based tool is a simple detection method that will provide CFS and our stakeholders with valuable information about urban forest pests, for which there is currently very limited data and means of evaluation.	2015-2016	CFS: Daniel Doucet and Armand Séguin U.S. Institute of Forest Biosciences
Urban Forestry Research				
Project	**Project Description**	**Expected Outcomes**	**Timeline**	**Contact person**
Joint urban forest science directory.	Develop a comprehensive list of USFS – CFS scientists and urban forestry expertise/research focus on which to build collaboration.	Identification of highest potential areas for USFS – CFS science collaboration	Autumn, 2015	CFS: Ken Farr USFS: Beth Larry
USFS – CFS research crosswalk	Synthesize and cross-walk current urban forest research activities, beginning with the three initial focus areas and expanding to others.	Identification of opportunities for joint products.	Autumn, 2015	CFS: Ken Farr USFS: Beth Larry

Strategic partner map	Conduct a joint USFS/CFS urban stakeholder/partner mapping exercise.	Identification of partners that could help support, facilitate, and/or leverage USFS and CFS urban research, application, and education	Winter, 2015-2016	CFS: Ken Farr USFS: Beth Larry
Workshop/urban tour.	Plan a physical meeting for exchange and follow-up within 6-8 months, e.g. a dedicated urban research forum and/or a CFS site visit to a USFS urban field station.	Synthesis of efforts to date; comprehension of agency perspectives and approaches from science exchange and site visit; identification of specific action items or projects under each of the three focus areas.	Spring, 2016	CFS: Ken Farr USFS: Beth Larry
Wildland Fires				
Project	**Project Description**	**Expected Outcomes**	**Timeline**	**Contact person**
Canada-U.S. Wildland Fire Arrangement	Canadian and U.S. officials met to update the Canada-U.S. Agreement for collaboration on forest fires. The current agreement has been in place for 33 years and has been used in all but one year.	Improve emergency response to wild fires by sharing fire management knowledge, innovations and research, and pooling necessary resources during times of crisis.	2015	CFS: Doug Maynard CIFFC: Kim Connors USFS: Dale Dague
Integrated Fire Danger Rating System (e.g., fuel characterization)	Both countries will work to share meteorological data to create an updated and seamless common fire danger map and a data sharing system.	A continuous (borderless) fire danger map will encourage increased data sharing and will improve forecasts of potential extreme wildland fires.	2017	CFS: Doug Maynard CIFFC: Kim Connors USFS: Dale Dague
Community Fire Response Plans	Assess and create community fire response preparedness plans and awareness. Develop a joint best practices manual as currently the guidelines and practices have been developed independently.	Approaches to estimate the probability of interface fire events (present and future climates)	2017	CFS: Doug Maynard USFS: Matt Rollins

International Wildfire Training	Identify how to support wildland fire training activities for global partners.	Expansion and strengthening of the response capacity to extreme wildland fires.	2017	CFS: Bill DeGroot CIFFC: Kim Connors USFS: Dale Dague