COASTAL SILVICULTURE COMMITTEE

"Is Silviculture a true Team Sport?"

2018 Summer Workshop
Campbell River
June 5 and 6, 2018

Photos courtesy of the CSC 2018 Winter presenters

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Acknowledgements

The Coastal Silviculture Committee (CSC) wishes to thank the following people for contributing their time and efforts in organizing the 2018 Summer Workshop:

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	Dave Weaver	Booklet	Jocelin Teron	Reg/Webmaster
	Craig Wickland		Margaret Symon	First Aid Contact c-250-709-2626
	Shaun Mason		Neil Hughes	
	Chelsey Toth			

On behalf of the CSC, the organizing committee would like to thank all the presenters for taking the time out of their very demanding schedules and lives to share their experience and knowledge with the rest of us – once again!

Is Silviculture a true Team Sport?

Exploring Collaboration and New Information

"The summer field review"

The 2018 Summer Workshop will continue to explore the 2018 Winter Workshop silviculture question - *Can we expect better silvicultural outcomes through collaboration?*

The CSC workshop chairs and directors have designed this tour to take you to field stops, narrated by local practitioners, that highlight projects and initiatives that demonstrate a team approach to finding solutions to real silviculture and forest management challenges.
This field tour stage will be in the Campbell River area – the first day will be north of town in the Big Tree Creek area – home to the largest logging camp in BC many years ago. The second day will be above the Douglas-fir plantations of the east side of the Island, in the beautiful but silviculturally challenging Mountain Hemlock zone around Mount Washington.
We will tour from 106 meters to 1086 meters in elevation over 2 days.

Day One: Will examine in detail the complexity of managing for trees and elk together. Be it conifers or hardwoods, the outcomes required a unique collaborative learning approach over the years, generating a host of issues, possible solutions, and species options. The production of the Red Alder species option and its stock type history will be visited with the nursey growers at a stop at PRT Campbell River Nursey. In addition, a detailed presentation on transitioning to Climate Based Seed Transfer will be given as another option to consider.
The evening dinner keynote speaker will be Colleen Evans, the CEO of the Campbell River Chamber of Commerce. She will be presenting the rich and diverse forest history of the Campbell River community and its future. In addition, a short comic relief session on "Forestry Acronyms" from a VIU student will be presented.

Day Two: Will start at the top of the road at Mount Washington by the Raven Lodge. Here a firm grounding for all in the basics of BEC at high elevations will initiate the day. Then moving into the species options considering climate change, successes in innovation from the past and challenges moving forward with diseases and species products being marketed. Lunch will be catered by the Raven Lodge and we will have a brief presentation by the Marmot Recovery Foundation – an example of collaboration by all parties for our most endangered species on the island. After lunch we will travel a little down slope to investigate the complexities of the reproduction of Yellow Cedar and the methods used to produce cones of this less frequent breeder, but important species.
The day will end at the bottom of the slope with the legendary Woodlot Licensee of the Comox Valley – Harold Macey. His innovative and engaging woodlot management approach will be demonstrated.

Enjoy!!

2018 CSC Summer Workshop Program – June 5 & 6 – Campbell River

"Is Silviculture a true Team Sport?"

DAY ONE –Campbell River North - June 5th 2018

Time	Location	Activity - Topic	Presenter(s)
8:20 – 8:40 am	Registration in parking lot in front of Coast Hotel -at Discovery Centre Shopping Centre at ***Logger Mike*** - Welcome and outline the day		
8:40 – 8:50 am	Boarding on the buses		
8:50 - 9:45 am	**Travel to Big Tree Creek Main**		
9:45 – 10:45 am	**Stop #1** ***Split Group***	Managing for Trees and Elk together!! -Shortfalls and successes.	**1)Taisa Brown RPF -** Western Forest Products, Field Forester **2)Billie Wilton -** FLNRORD Regional Wildlife Staff
10:45 – 11:00 am	**Coffee Break -**		
11:00 – 11:45 am	**Stop #2** ***Split Group***	One Elk Issue Solution – Alder Management, local experiences	**1)Brian Kyle RFT -** North West Hardwoods Canada Inc., Operations Manager
11:45 - 12:00 pm	**Travel**		
12:00 - 1:00 pm	**LUNCH – Memekay Horse Camp Rec Site**		
1:00 to 1:15 pm	**Travel**		
1:15 – 2:15 pm	**Stop #3** ***Split Group***	Another Elk Solution -Pw 1)Pw management – Forest Health perspective 2)Operational Pw Management	**1)Stefan Zeglen RPF –** FLNRORD Regional Pathologist **2)Jimmie Hodgson RPF** – Island Timberlands Ltd., Manager
2:15 – 2:20 pm	**Travel**		
2:20 – 3:20 pm	**Stop #4** ***Split Group***	Transitioning to Climate Based Seed Transfer -Matching seed to plantation climate	**1)Margot Spence RPF–** FLNRORD, Forest Improvement & Research Management, Tree Seed Policy Officer
3:20 – 3:30	**Coffee Break**		
3:30 – 4:05 pm	**Travel to PRT Nursery**		
4:05 – 5:00 pm	**Stop #5** ***Split Group***	Is Growing Alder Seedlings Difficult? -Stock types and grower/buyer communication	**1)Jamie Farrer –** Campbell River PRT Nursery, Manager
5:00 – 5:30 pm	**Return to Discovery Centre Shopping Centre**		
5:30 – 6:00 pm	**Social at the Marine Heritage Centre Building – catering Quay West**		
6:00 – 10:00 pm	**DINNER –** **1) CSC LOGO & 2 Day Winter Workshop –** Voting 2) **KEYNOTE SPEAKER** – Colleen Evans CEO CR Chamber of Commerce - community / forestry history – Rick Monchak introduction. 3) **"COMICAL FORESTRY ACRONYMS"** - from VIU forestry ~10 minutes. 4) **LOGISTICS DAY 2 (option to meet at Mount Washington road Woodlot 1677 parking lot 8:45 am)** – John and Don		

DAY TWO – Mount Washington area - June 6th 2018

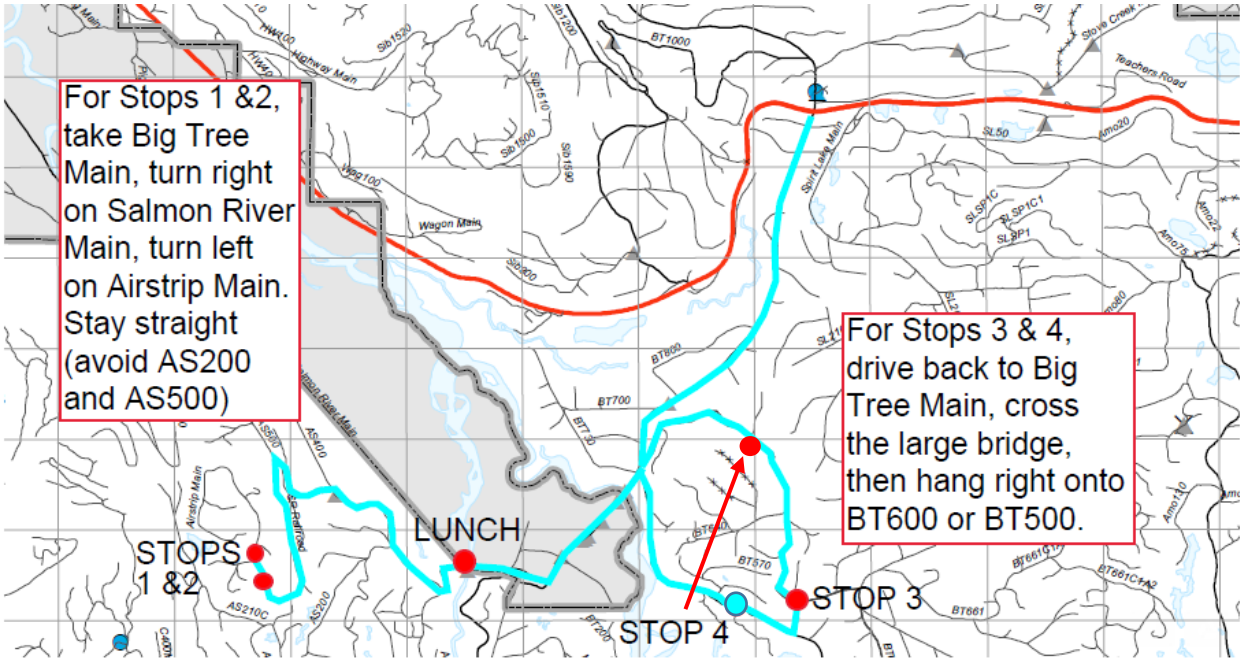
Time	Location	Activity - Topic	Presenter(s)
8:00 – 8:10 am	Boarding on the buses at Discovery Centre Shopping Centre at ***Logger Mike***		
8:10 - 8:45 am	**Travel to Strathcona Parkway & Mt. Washington WL 1677 base parking lot**		
8:45 - 9:10 am	**Travel to Raven Lodge parking lot at Mt. Washington**		
9:10 – 10:30 am	**Stop #1a** ***Split Group***	Higher Forest Management - *Above Vancouver Island's Douglas fir Plantations* BEC **–** the foundation for successful species selection **-** considering the Mountain Hemlock (Hm) zone	**1)Sari Saunders and Heather Klassen** – FLNRORD Regional Research Vegetation Ecologists
	Stop #1b ***Split Group***	1)High elevation species choices considering Climate Change 2)1980's Engelman Spruce (Se) plantations walk about - *replacing poor performance high elevation true firs.*	**1)Bryce Bancroft –** Symetree Consulting **2)Dave McBride-** W*ho planted the Se*
10:30 – 10:50 am	**Coffee Break @ Raven Lodge**		
10:50 – 11:00 am	**Travel to Stop 2**		
11:00 – 11:55 am	**Stop #2a** ***Split Group***	High Elevation Pw – Performance and value	**Ken Epps RPF** - Island Timberlands Ltd., Strategic Forester
	Stop #2b ***Split Group***	High Elevation Pw Forest Health	**Stefan Zeglen RPF** - FLNRORD Regional Pathologist
12:00 - 1:00 pm	**Lunch – Raven Lodge – Mt. Washington** **Lunch Talk**: Marmot Recovery Foundation *Climate Change, Marmots and High Elevation Forestry*		
1:00 to 1:10 pm	**Travel to Stop 3**		
1:10 – 2:10 pm	**Stop #3** ***Split Group***	*"Sex in the Cypress"* -The complex reproductive life of "Cypress" - Yellow Cedar	**1)Don Pigott** – Yellow Point Propagation
2:10 – 2:20 pm	**Snack Break / Travel to Stop 4**		
2:20 – 3:00 pm	**Stop #4**	Local Woodlot Management -Collaborative Silviculture at a smaller scale	**1)Harold Macy (and/or Ben Racher) –** Woodlot Licensee #1677
3:00 – 3:15 pm	**Closing**	Quick Summary CSC Next Summer - where?	**Dave Weaver**
3:15 – 3:50 pm	**Bus returns to Campbell River**		

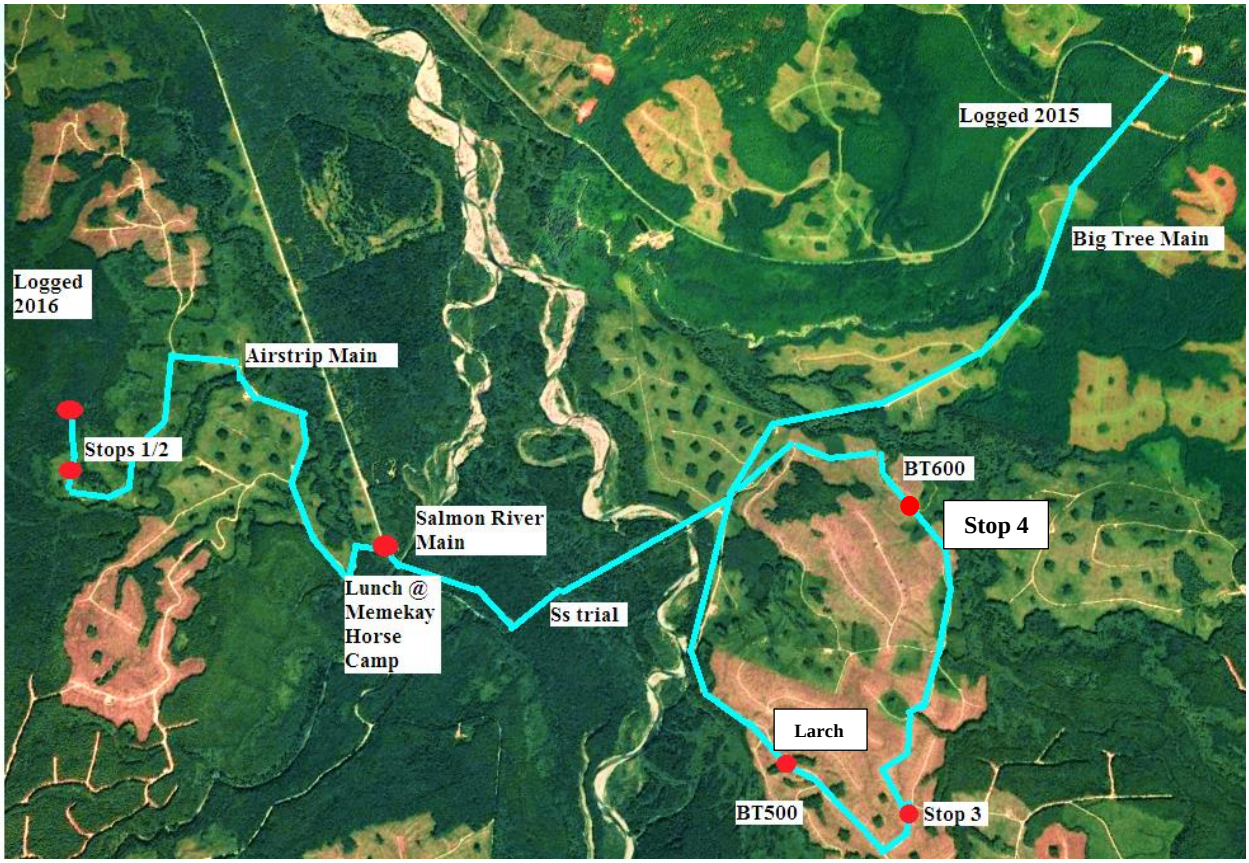
Field Program – Day 1

North of Campbell River

Stop #1	Page 8 - 9	Managing for Trees and Elk together!! -Shortfalls and successes.	**1)Taisa Brown RPF -** Western Forest Products, Field Forester **2)Billie Wilton -** FLNRORD Regional Wildlife Staff
Stop #2	Page 10 - 11	One Elk Issue Solution – Alder Management, local experiences	**1)Brian Kyle RFT -** North West Hardwoods Canada Inc., Operations Manager
Stop #3	Page	Another Elk Solution -Pw	
	12 - 13	1) Pw management – Forest Health perspective	**1)Stefan Zeglen RPF –** FLNRORD Regional Pathologist
	14 - 15	2) Operational Pw Management	**2)Jimmie Hodgson RPF** – Island Timberlands Ltd., Manager
Stop #4	Page 16 -19	Transitioning to Climate Based Seed Transfer -Matching seed to plantation climate	**1)Margot Spence RPF–** FLNRORD, Forest Improvement & Research Management, Tree Seed Policy Officer
Stop #5	Page 20 - 21	Is Growing Alder Seedlings Difficult? -Stock types and grower/buyer communication	**1)Jamie Farrer –** Campbell River PRT Nursery, Manager
Dinner Keynote Speaker		**Colleen Evans** CEO CR Chamber of Commerce -community / forestry history – Rick Monchak introduction.	

Maps - Day 1 - North of Campbell River





Stop #1

(elevation 179 m)

Managing for Trees and Elk together!!

Shortfalls/successes

Name: Taisa Brown RPF
Affiliation: Western Forest Products
Position: Field Forester
Responsibilities: Growing trees in the midst of elk
Academic training: BSF (UNB)

Name: Billie Wilton
Affiliation: FLNRORD Regional Wildlife Staff

Block History and the Challenges:
WFP planted the block in 2008 with Fdc89Cw11. So far, we've done 3 replants, 8 maintenance activities, and 7 brushing activities, totaling $4700/ha.
Despite that significant investment in conifer management, we are now managing 45% of the block for hardwoods. The remaining conifer portion is being managed to elk stocking standards.

Points of discussion:
-To improve silviculture results, we need to better understand elk behavior and populations
-How to create and use an elk risk map
-Silviculture strategies for varying levels of elk pressure
-What works and pays off in the short and long term?

Actual Costs….Conifer

Planting:	Fertilization:	Protection:	Brushing:	Surveys:
-$960/ha Initial Plant (1000sph 412A) * 49.1ha= **$47,136** -$530/ha Replants * 60.1ha= **$31,853** = $78,990 or **$1600/ha**	-$105/ha ATOP Fertilization * 101.3ha= **$10,640**	-$2800/ha Cage Install * 7ha= **$19,600** -$900/ha Cone Install * 16.8ha= **$15,120** -$500/ha Maintenance * 71.8ha= **$35,900** -$300 Removal * 6.4ha= **$1920** -$300 Planned Removal * 16.8ha= **$5040** = $77,600 or **$4600/ha protected**	-$450/ha Basal Spray * 81ha= **$36,450** -$650/ha Manual * 32ha= **$20,800** = $57,250 or **$1197/ha**	-$25/ha * 306ha= **$7655**
TOTAL= $230,845 or $4700/ha				

PROJECTED Costs….if managed for Hardwoods

Site Prep	Planting:	Surveys:
-$500/ha * 49.1ha= **$24,550**	-$1200/ha * 49.1ha= **$58,900**	-$25/ha * 98.2ha= **$2455**
TOTAL=$85,900 or $1750/ha, or without site prep, $1250/ha. ***That's $2950 - 3450/ha cheaper.***		

Notes

Stop #2
(elevation 179)
<u>One Elk Issue Solution</u>
Alder Management - local experiences

Name: Brian Kyle RFT
Affiliation: North West Hardwoods Canada Inc.
Position: Operations Manager
Responsibilities: Overseeing all Canadian operations
Academic training: BCIT Forestry and Business
Previous employment: Northwest Hardwoods, Weyerhaeuser, Coast Mountain Hardwoods
25 years in Alder, Canfor, BCFP, Various Contractors

An Overview of our hardwood business in BC.

- Growing seedlings;
- Planting and managing Alder sites for hardwood and conifer;
- Elk & deer, mixed wood;
- Frost;
- Trials undertaken, adaptations and innovations.

Our business today (25 years in Canada), is a resultant of collaboration between business, government and a well-rounded group of professionals. Maintaining a business like ours still requires working together with these same groups to be successful in the future. We need to keep learning and adapting on all topics. We will always support others in their efforts to harvest and manage hardwoods.

Block History
Having learned from Stop 1, WFP site prepped and planted 1500sph Dr in the 05/07 areas. In the 01/05 areas, we planted 1200sph Fdc85Pw15. In response to Stop 1's elk pressure, we increased the initial density and included a component of browse resistant species.

Notes

Stop #3

(elevation 135 m)

Another Elk Solution -Western White Pine

1) Western White Pine Management from a Forest Health perspective.

Name: Stefan Zeglen, RPF
Affiliation: BC MFLNRO
Position: Forest Pathologist
Responsibilities: Dead trees
Academic training: B.Sc.(For.), M. S.
Previous employment:
1994 to present – regional forest pathologist, Nanaimo
1989 to 1994 – regional forest pathologist, Smithers

Western white pine as an alternative species

While elk and deer find many conifer seedlings palatable, western white pine tends to be avoided, perhaps because of high concentrations of volatile compounds in the foliage or because long needles are ticklish to elk nostrils. This may make it an attractive alternate for planting in areas with browse issues if you can get it to survive to maturity. White pine blister rust still kills copious amounts of natural white pine but plantings of genetically resistant white pine are proving to be less prone to untimely mortality. A brief outline of the results of field trials is presented.
If time and interest permits, we may also discuss Swiss needle cast on Douglas-fir.

NOTES

Stop #3 *continued*

2) Operational Western White Pine Management

Name: Jimmie Hodgson RPF
Affiliation: Island Timberlands
Position: Manager, Forestry Operations
Responsibilities: Silviculture Programs
Academic training: BSc (UNB-2003) RPF (2009)
Previous employment:

- 6yrs of consulting out of Port Alberni
- 2yrs of consulting in Redding California
- 2yrs of consulting in New Brunswick

Topic and/or Title: White Pine Pruning - Blister Rust Management

Island Timberlands Strategy

The long-term goal is to work cooperatively with the Ministry of Forests to develop families of disease resistant Western White Pine to negate the need for pruning. At present >50% resistance is only possible with major gene resistance in combination with other resistance mechanisms. Plantations with more than 50% resistance to rust will not generally require pruning provided it has been planted in sufficient numbers to achieve minimum stocking levels. Plantations should be monitored until crowns are lifted to at least 1.5 meters in height.

Criteria to Consider:

- Seedlot selection;
- Planting density;
- Survey timing for early detection of rust;
- Incidence levels;
- Density at time of infection;
- Pruning timing;
- Pruning height;
- How long to monitor Pw stands with varying incident levels.

Block History and Points for discussion

WFP planted the block in 2014 with Fdc88Pw12 @ 1200sph. We had 30% planting survival, so we replanted in 2015 with Fdc70Pw30 @ 850sph. We coned ~600sph Fdc to ensure minimum stocking. After those efforts, we now have 850 WS sph, Fdc76Pw22Hw2.

For both plants, we used M+56 R+50 seed. There's currant throughout the block, and we are starting to see some rust. Due to coning, we have great stocking now and we aren't reliant on Pw. However, we have many blocks where we need the Pw to pass. In those situations, what's the best strategy? Make the replant decision while ghosting the Pw? Or pay for pruning?

NOTES

Stop #4

(elevation 106 m)

Transitioning to Climate Based Seed Transfer

Name: Margot Spence RPF
Affiliation: Forest Improvement and Research Management Branch, FLNRORD
Position: Tree Seed Policy Officer
Previous employment: She has also worked in treaty negotiations, strategic policy and planning, and silviculture, forest worker development and research programs, all with the BC Government over the past 30 years.

Abstract:

Amendments to the Chief Forester's Standards for Seed Use (Standards) to enable transition to Climate Based Seed Transfer (CBST) were announced April 5, 2018 and come into effect August 6, 2018. This session will briefly review the background of CBST, the content and purpose of the amendments, and the transition period. We will then look at the local BEC variants and discuss impacts of CBST and seed use strategies.

Transitioning British Columbia to Climate Based Seed Transfer

Introduction

Based on the knowledge that trees are genetically best adapted to the environment and climate in which they evolved, establishment of seed transfer limits has long been a fundamental component of reforestation. With BC warming an average of 1.4 degrees Celcius per century between 1900 and 2013,[1] trees have been unable to move or adapt fast enough to find their preferred climate niches.

In pursuit of adapting to and mitigating the impacts of climate change, while achieving the goals of forest ecosystem resilience, and health and productivity, the Forest Improvement and Research Management Branch (FIRM), has been working towards a climate based seed transfer (CBST) system for over a decade. The CBST system improves the match between seed and plantation climates through assisted migration. The approach, developed by FIRM staff with assistance from Dr. Tongli Wang at UBC, was published in 2017.[2]

Science Overview

The Province's existing seed transfer system uses a geography based methodology that limits seed transfers on the basis of longitude, latitude, elevation, and biogeoclimatic zone. The new climate based seed transfer system matches the climate and latitude of a seed source, as represented by a Biogeoclimatic Ecosystem Classification (BEC) subzone/variant, with the current and near-future climate of a planting site. The nine variables matched include:

- latitude,
- mean annual temperature,
- mean cold month temperature,
- summer/winter temperature differential,
- mean annual precipitation,
- mean summer precipitation,
- degree days above 5 degrees Celsius,
- extreme maximum temperature, and
- precipitation as snow.[3]

BC's approach to assisted migration in CBST is conservative. Most of the migration distance accounts for past climate change (1940's – 2016), or "adaptation lag"; future climate change is projected for only 15 years on the coast and 20 years in the Interior (representing a quarter of a rotation). This balances adaptation for ongoing climate change without compromising plantation establishment. Another way to look at this is we are currently planting into sites that are too warm for the seed. With CBST, we will be planting into sites that are colder than the best climate match — in anticipation of ongoing climate change. This approach to migrating seed sources is combined with provenance data to determine an acceptable transfer distance. The oval in Figure 1 identifies the set of eligible seed deployment BEC variants for the seed source BEC variant. The resulting BEC variant matrix is the foundation of CBST transfer standards.

Margot Spence, RPF, is the Tree Seed Policy Officer at the Forest Improvement and Research Management Branch, FLNRORD. She has also worked in treaty negotiations, strategic policy and planning, corporate silviculture, and forest worker development and research programs, all with the BC Government over the past 30 years.

Species Selection and Seed Selection

Under the *Forest and Range Practices Act* (FRPA), the tree species selected to reforest each site are specified in a forest stewardship plan (FSP)[4] and a seedlot is subsequently selected to achieve the *Chief Forester's Standards for Seed Use*. Given this approach, assisted migration under CBST will not move seed outside of its current species range, unless policy is also developed to apply assisted migration to tree species selection in the FSP.

Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) research ecologists[5] are currently developing an approach to climate change informed species selection (CCISS). This project is quantifying potential shifts in tree species suitability caused by climate change, and interpreting these results at the BEC site series (stand) and landscape levels. The model and decision aids are currently undergoing refinement and review.

Collaboration efforts between the CBST project and the CCISS project will continue to ensure integration and consistency between decision tools and policy realms.

CBST Policy Development and Implementation

As part of CBST policy development, FIRM worked with GIS consultants to develop a CBST tool[6] to demonstrate shifts to areas of use for seed of each species in each BEC variant. An example of a shift is shown in Figure 2.

The parameters and science behind the CBST tool were recently incorporated into the FLNRORD's Seed Planning and Registry System (SPAR) to align with the planned first amendment to the *Chief Forester's Standards for Seed Use*. This amendment is being timed to enable optional use of CBST transfer limits, starting with the 2019 seedling request season (August, 2018). Initially, seed users will be able to use the current (geographically based) transfer standards, the CBST standards, or a mix of both. The option to use the current transfer standards will be discontinued at the end of the transition period.

Further impact assessment and gap analysis, as well as stakeholder engagement, is needed to help determine the most appropriate length for the transition period. At this time, a two-year period is planned, subject to results of the impact assessment, gap analysis, and further engagement.

The adaptive policy development approach used for CBST will be ongoing. FIRM will be hosting future training and information sharing sessions to support the planned phased implementation of CBST over the coming years. More information, including training opportunities, is available at www.gov.bc.ca/climatebasedseedtransfer.

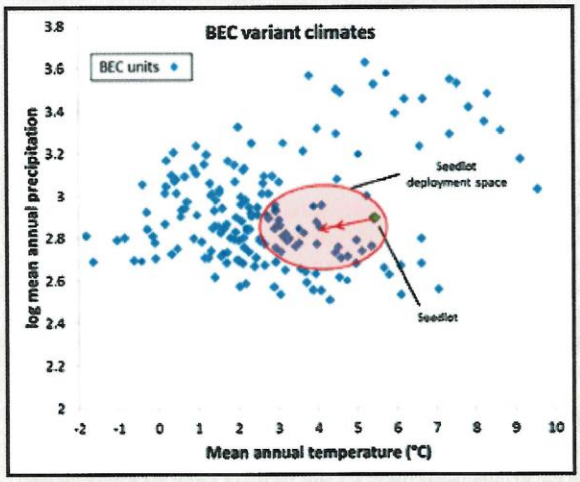


FIGURE 1: *Schematic diagram (using two of the nine CBST geoclimatic variables) illustrating how assisted migration is achieved in CBST. The seed deployment space is shifted to a location slightly colder than the seed source origin. The long arrow represents the migration distance required to account for evolutionary lag since 1945. The short arrow represents the migration distance required to account for evolutionary lag anticipated to arise in the next quarter rotation. Each point represents one BEC variant. (Source: Dr. Greg O'Neill, RPF, FLNRORD).*

Climate Base Seed Transfer and Risk

- Doing nothing about climate change is high risk.
- CBST is a climate change adaptation strategy intended to reduce the risk associated with climate change impacts.
- CBST takes a conservative approach, focusing on catching up with climate change that has already occurred, rather than projecting too far into the future; this is intended to balance establishment risk with the risk of maladaptation and loss of productivity.
- BC's network of forest genetic provenance trials has allowed scientists to use space in place of time to measure impacts of potential seed movements and advance the CBST project.
- There is no risk free approach to addressing climate change; all future climates are projections.

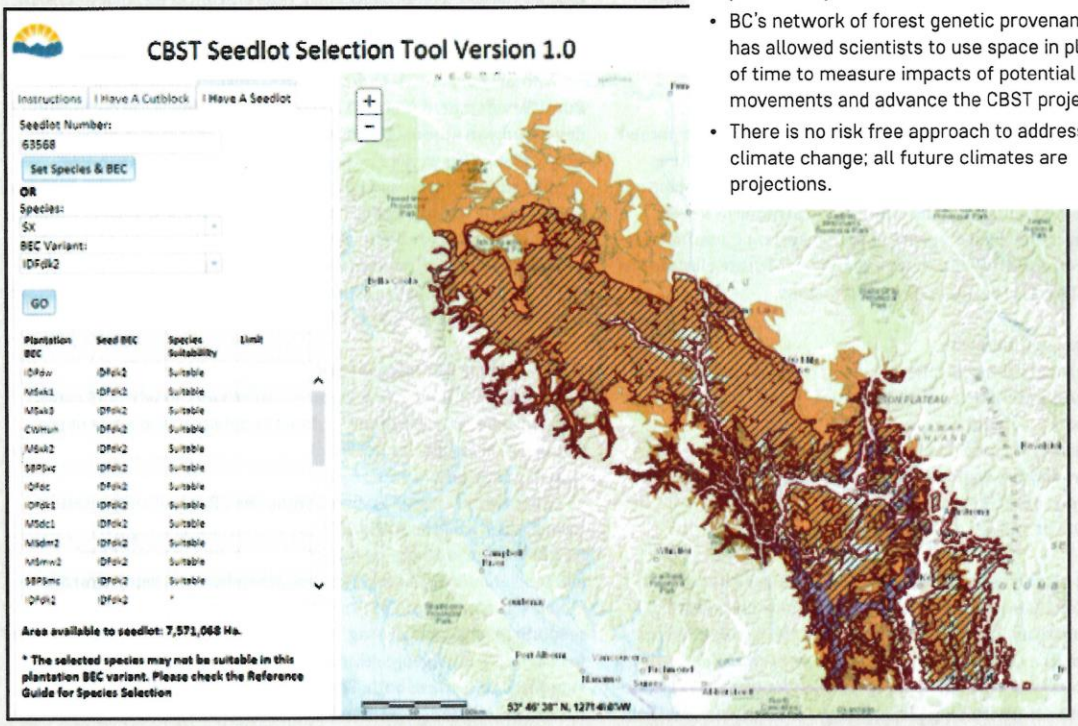


FIGURE 2. *Example of a shift to a seedlot area of use. The red hatched area is the existing area of use for seedlot #63568 (Sx from seed BEC variant IDFdk2). The area marked in orange is the new CBST area of use, represented by the following BEC variants: IDFdw, MSxk1, MSxk3, CWHun, MSxk2, SBPSxc, IDFdc, IDFdk1, MSdc1, MSdm2, MSmw2, SBPSmc, IDFdk2, MSxv, MSdm3, MSdc2, IDFdk4, ESSFxc1, MSdc3, MSdm1, SBSmc3, ICHmk2, MSdv, SBPSmk, ESSFdv1, IDFdk3, SBSmm, ESSFdc2, SBPSdc, ESSFxc3 and ESSFdc3.*

References

1. Indicators of Climate Change for BC, Ministry of the Environment, 2002 (2016 update).
2. O'Neill, G, T. Wang, N. Ukrainetz, L. Charleson, L. McAuley, A. Yanchuk, and S. Zedel, 2017. A proposed climate-based seed transfer system for British Columbia. Prov. B.C., Victoria, B.C. Tech. Rep. 099. www.for.gov.bc.ca/hfd/pubs/Docs/Tr/Tr099.htm
3. Precipitation as snow was added as a result of genomics information provided through the AdapTree genomics project led by Dr. Sally Aitken, at UBC.
4. The Reference Guide for Forest Development Stocking Standards provides information to assist in tree species selection.
5. Initiative led by Will Mackenzie, Provincial Ecologist, North Area; and Pamela Dykstra, Research Leader, Forest Ecology Interpretations, Resource Practices Branch, Office of the Chief Forester
6. The CBST tool can be accessed at: www.gov.bc.ca/climatebasedseedtransfer.

NOTES

Stop #5
Is Growing Alder Seedlings Difficult?
Stock types and grower/buyer communication

Name: Jamie Farrar
Affiliation: Campbell River PRT Nursery
Position: Manager
Responsibilities:
Leading the CR team, PRT have re-built the 2+0 program and used tunnels as an innovative growing structure to take advantage of the excellent climate on Vancouver Island. All the while challenging the CR team and himself to find better ways of producing our customers' trees with a *can-do attitude* and a smile.
Previous employment:
Jamie started with PRT as a Grower-in-training in 2000 and progressed to the Lead Grower, then Production Superintendent, and eventually Manager in 2012.

History of Red Alder in nurseries (last 18 years):

Started with bare root 0.5 +0.5 - small cavity alder (310B) grown in a greenhouse and then planted in bare root fields the same year. Big trees – spotty reliability due to winter injury before harvest.
Then explored various containers when it was "not possible to grow alder in containers" - tried 615A, 512A, and 415D. We settled on the 512A as a decent sized tree that was cost effective.
Have tried other sizes in recent years (412A), but are still using the 512A as the mainstay size and trialing 615s.
Issues around growing:
Germination can be tricky (small germinants coming up in hot weather) - germination can be less than reliable at times.
Balancing growth is important (not letting them get too big too quickly). Keeping the leaf size small is essential to increase air flow and allow for better irrigation penetration. Foliar and stem blights can be an issue, but preventable.
Best to restrict feed until dormancy and then increasing it to improve final bud development.

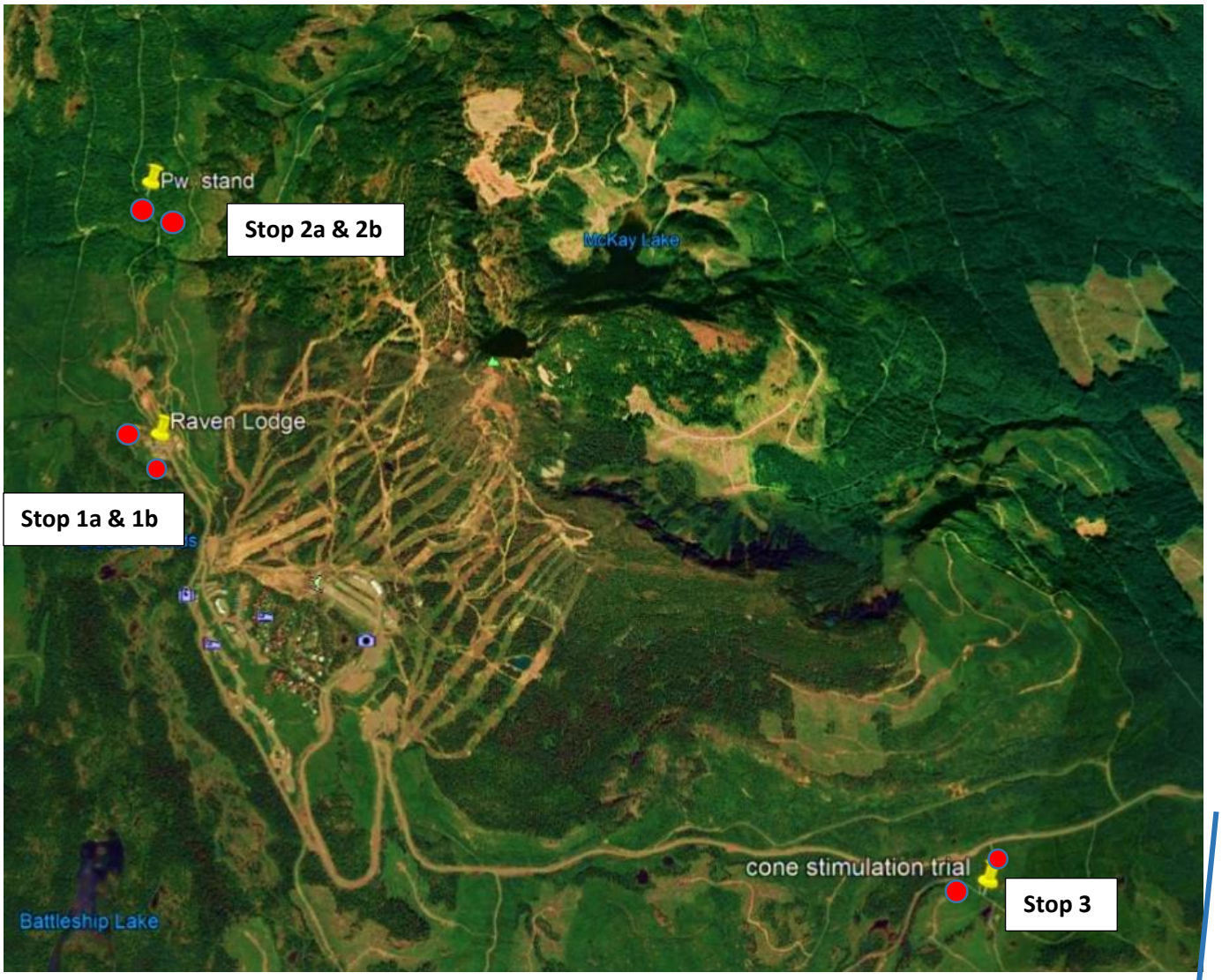
NOTES

Field Program – Day 2

Mount Washington

		Higher Forest Management - *Above Vancouver Island's Douglas fir Plantations*	
Stop #1a	Page 24 -25	BEC **–** the foundation for successful species selection **-** considering the Mountain Hemlock (Hm) zone	**1)Sari Saunders and Heather Klassen** – FLNRORD Regional Research Vegetation Ecologists
Stop #1b	Page 26 - 27	1)High elevation species choices considering Climate Change 2)1980's Engelman Spruce (Se) plantations walk about - *replacing poor performance high elevation true firs.*	**1)Bryce Bancroft –** Symetree Consulting **2)Dave McBride-** W*ho planted the Se*
Stop #2a	Page 28 - 29	High Elevation Pw – Performance and value	**Ken Epps RPF** - Island Timberlands Ltd., Strategic Forester
Stop #2b	Page 30 - 31	High Elevation Pw Forest Health	**Stefan Zeglen RPF** - FLNRORD Regional Pathologist
Stop #3	Page 32 - 33	*"Sex in the Cypress"* -The complex reproductive life of "Cypress" - Yellow Cedar	**1)Don Pigott –** Yellow Point Propagation
Stop #4	Page 34 - 35	Local Woodlot Management -Collaborative Silviculture at a smaller scale	**1)Harold Macy (and/or Ben Racher) –** Woodlot Licensee #1677

Map – Day 2 – Mount Washington



Stop 4 WL #1677
Strathcona Parkway
and HWY 19

Stop #1a

(elevation 1086 m)

Higher Forest Management - Above Vancouver Island's Douglas fir Plantations

1) Biogeoclimatic Ecosystem Classification (BEC)– the foundation for successful species selection - considering the Mountain Hemlock (Hm) zone

Name: Heather A. Klassen; Sari C. Saunders
Affiliation: Coast Area Research, FLNRORD
Position: Research Vegetation Ecologist;
Research Vegetation Ecologist/A/ Section Head
Responsibilities: Biogeoclimatic Ecosystem Classification for coastal BC**;** applied research and research consultation on current and emergent operational topics, e.g., climate change, forest and landscape structure and dynamics, disturbance ecology, and Ecosystem-based Management'

Sari and Heather sampling in the Skagit Valley in the southern Coast-Interior transition

Biogeoclimatic Ecosystem Classification – the foundation for successful species selection

The Biogeoclimatic Ecosystem Classification is the foundation for forest and landscape management across the province, guiding planning for resources as diverse as wildlife habitat, old forest reserves, culturally-important plants, and timber supply. Provincial species selection guidance and stocking standards utilize BEC to provide tools towards successful silviculture. BGC classification requires an integration of climatic, site, soil, and vegetation information at multiple scales. We will discuss characterization and synthesis of these factors and consider their roles in identifying site series and determining preferred and acceptable species. Climate change projections are now being used to consider potential shifts in species selection guidance to promote ecological resilience of forests and sustainable timber production. Collaboration among research and operational personnel will facilitate refinement to the classification and improve understanding of ecological suitability and limiting factors.

NOTES

Stop #1b

(elevation 1087 m)

1)High elevation species choices considering Climate Change

Name: Bryce Bancroft, RPBio
Affiliation: Symetree Consulting
Position: Owner and operator

Responsibilities / Interests: Bryce is for embracing challenging resource management questions and helping clients to design effective solutions, that are grounded in current biological thinking and local operational realities.

Previous employment:
Over the past thirty years he has worked with clients such as MacMillan Bloedel / Weyerhaeuser, Tolko, Riverside, Western Forest Products, Canadian Forest Products, Potlatch Corporation, Forestry Tasmania, several BC First Nations, and a number of provincial and national agencies.
Bryce has had an interest in species and their deployment since his early years as an ecological classifier in the Kamloops Region. Subsequent work on species use and climate change has been ongoing.

ABSTRACT:

The stop will focus on the Climate Change Informed Species Selection tool. This tool uses output from Climate BC along with 15 Global Circulation Models and two Representation Concentration Pathways to compare and contrast present species direction and future climate based projected options.

The talk will discuss what species to promote and which to demote based on the model outputs and local knowledge.

NOTES

Stop #2a
(elevation 1064 m)
High Elevation Pw – performance and value

Name: Ken Epps RPF ATC
Affiliation: Island Timberlands (13 yrs.)
Position: Strategic Forester
Responsibilities: Strategic initiatives, Inventory, Environment, Local Community, Research
Academic training: BCIT Forestry, & RPF Pupil Program
Previous employment:

- 19 yrs. MacMillan Bloedel
- 6 yrs. Weyerhaeuser

Topic and/or Title: White Pine market opportunities

Island Timberlands Strategy: Balancing value and maximizing growth on a hectare of forest land is always a challenge especially for minor species. Historically alternate species were selected due to disease, insect, or browsing issues, and rarely improved volume yield, but now we have the added challenge of climate change.
Add to this the broad range of $ value between species and the wide range of distribution costs, and silvicultural costs the solution is not straight forward.

Marketing challenges:

- Finding and keeping clients for minor species
- Developing good market value for minor species.

Silvicultural challenges:

- Pruning White Pine
- Stumping root rot areas
- Seedling protection for browsing
- Climate change impacts
    - Mortality
    - Snow and ice damage
    - Species adaptation

NOTES

Stop #2b

(elevation 1064 m)

High elevation Western White Pine Management from a Forest Health perspective.

Name: Stefan Zeglen, RPF
Affiliation: BC MFLNRO
Position: Forest Pathologist
Responsibilities: Dead trees
Academic training: B.Sc.(For.), M. S.
Previous employment:
1994 to present – regional forest pathologist, Nanaimo
1989 to 1994 – regional forest pathologist, Smithers

NOTES

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Stop #3

(elevation 889 m)

"Sex in the Cypress"

The complex reproductive life of "Cypress" - Yellow Cedar

Name: Don Pigott
Affiliation: Yellow Point Propagation Ltd
Position: Owner
Responsibilities: Tree Improvement, seed collection, and gene conservation.
Academic training: Selkirk College Forestry
Previous employment: Ministry of Forests, Tahsis Co, MacMillan Bloedel Ltd. (13 years). For the past 36 Years, we have operated Yellow Point Propagation, a company specializing in tree improvement, cone and seed collection, supply and sales, and gene conservation. Currently a lot of time is devoted to Whitebark pine recovery**.**

Cy and more……

Historically, Yellow cypress cones have been one of the most difficult and expensive of all species to collect. Good collectable crops are infrequent, and the germination low as compared to other conifers (5-year average 47%). Yellow cypress cuttings are relatively easy to produce and grow, albeit the cost is higher than seedlings. It is also important to have vigorous, juvenile donor material.

There has not been a good cone crop since 2007 which was a mast year for Yellow cypress. As seed inventories were dwindling, both Island Timberlands and TimberWest agreed to try to induce cones on young stand at four locations, Mt Brenton, Mt Washington, Mt Hall, and Iron River.

Young trees, 4-15 meters tall in natural stands were sprayed at two times with a commercial available formulation of GA3.This material is a hormone found naturally in plants and fungi. It was discovered in Japan in 1926, and is used routinely for cone induction in Western red cedar orchards in the Pacific NW.

Between 1998 and 2003 we conducted numerous field trials using GA3 in both natural stands and plantations of both Yellow cypress and Western red cedar. The results were a dramatic increase in reproduction flowers provided the hormone was applied at the correct time and rate.

Roadside trees are sprayed with a simple truck mounted RV pump mounted on a small tank. With 125 feet of garden house, a large number of trees can be sprayed quickly and efficiently. It takes two years from the time of induction until the cones are harvestable. Fortunately, however it also appears that there will be a good natural crop in 2018, and we are encouraging people to look for collection opportunities.

NOTES

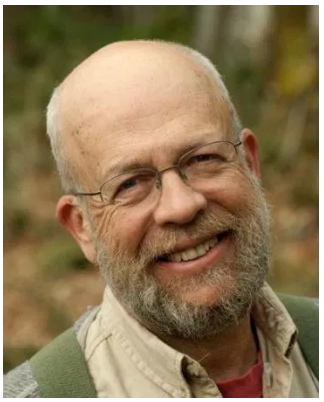
Stop #4

(elevation 124 m)

Local Woodlot Management

Collaborative Silviculture at a smaller scale

Name: Harold Macy
Affiliation: Headquarters Creek Woodlot Ltd.
Position: Woodlot Licensee #1677
Previous employment:



Harold Macy began his career in the woods by setting chokers on a steep sidehill near Bella Coola. He soon realized that scrambling in panic had little future and began his studies in forestry. Over the following years he has worked for the Forest Service in tree breeding and seed production. Summers were spent as a Fire Warden. For many years he was the Forestry Manager at the UBC Research Farm at Oyster River. During his tenure there, he wrote and delivered the Master Woodland Manager program and taught the weekend course "Forestry: from the ground up" and many other extension courses.

Woodlot #1677 Management:

In 1998 Harold and his family were awarded Headquarters Creek Woodlot License near their rural home northwest of Courtenay. For many years, he hosted hundreds of visitors from school groups, service clubs, forest land owners and environmental organizations.

Three years ago, all this came to a sudden halt when he was diagnosed with Parkinson's Disease which stole his legs and energy. Fortunately, within his family are two RFT's and an RPF, so the torch is passed to the next generation as Ben assumes a leadership role.

NOTES

NEW CSC LOGO IDEAS – Voting

1a

1b

2a

2b

3

4 Current Logo