STOP 4 – Transitioning to Climate Based Seed Transfer
Margot Spence, Tree Seed Policy Officer, Forest Improvement and Research Management Branch, FLNRORD
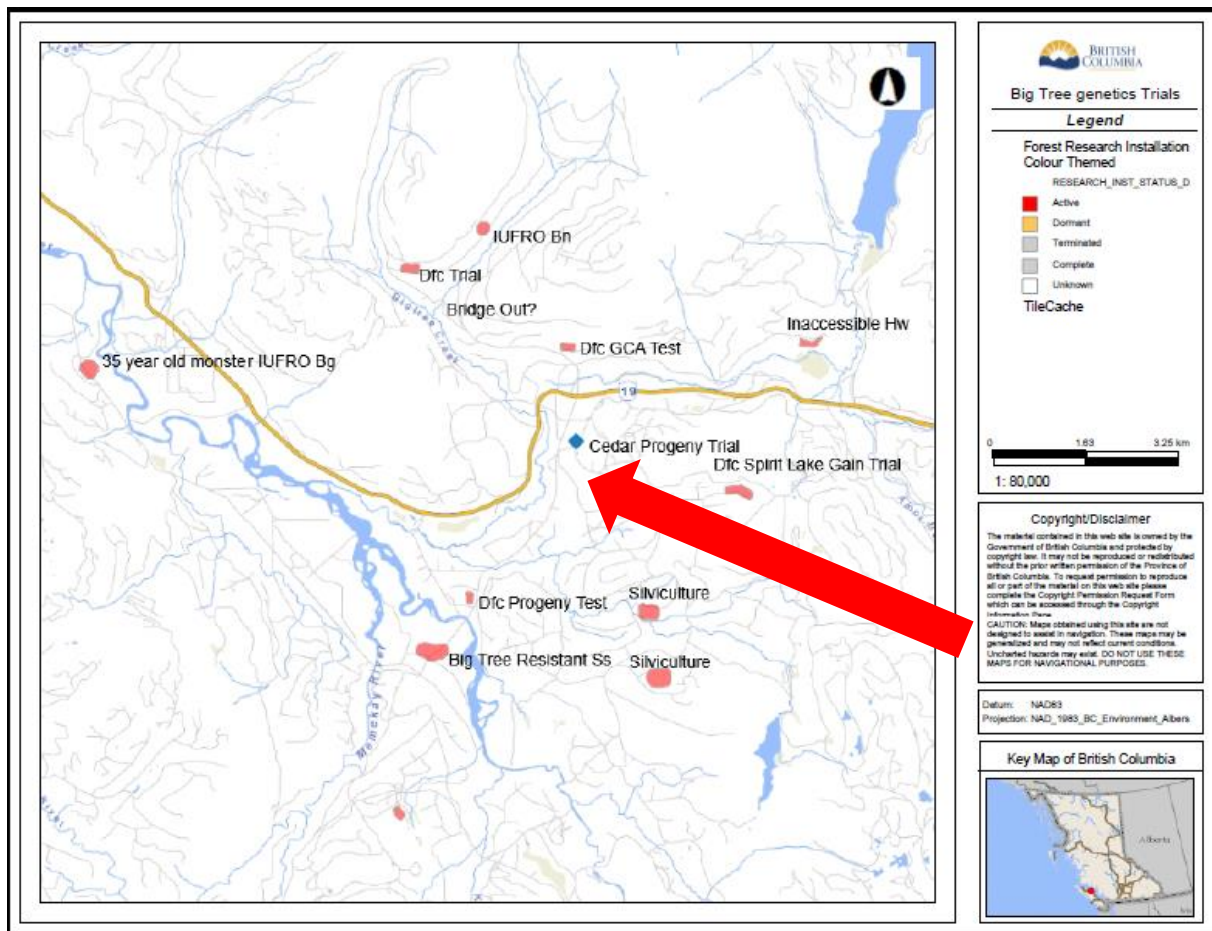
Detailed Species Suitability

Site Series
CWHxm2/01 : -

🟩 Primary 🟦 Secondary 🟧 Tertiary ⬜ Not Suitable

Species	Period		Calculated Suitability	Inter-period Trajectory	Survival Risk	Model Agreement
Act : black cottonwood	Current	100%				
	2010-2040	63% / 37%	4.00	No Change	High	Moderate
	2040-2070	87% / 13%	3.27	Improving	Low	High
	2070-2100	73% / 27%	4.00	Declining	Moderate	Moderate
Cw : western redcedar	Current	100%				
	2010-2040	100%	3.00	No Change	Low	High
	2040-2070	100%	3.00	No Change	Low	High
	2070-2100	100%	3.00	No Change	Low	High
Dr : red alder	Current	100%				
	2010-2040	100%	2.00	No Change	Low	High
	2040-2070	100%	2.00	No Change	Low	High
	2070-2100	100%	2.00	No Change	Low	High
Ep : common paper birch	Current	100%				
	2010-2040	63% / 37%	2.37	No Change	Low	Moderate
	2040-2070	70% / 30%	2.30	No Change	Low	Moderate
	2070-2100	87% / 13%	2.13	No Change	Low	High
Fd : Douglas-fir	Current	100%				
	2010-2040	100%	1.00	No Change	Low	High
	2040-2070	100%	1.00	No Change	Low	High
	2070-2100	100%	1.00	No Change	Low	High
Hw : western hemlock	Current	100%				
	2010-2040	63% / 37%	2.37	No Change	Low	Moderate
	2040-2070	70% / 30%	2.30	No Change	Low	Moderate
	2070-2100	87% / 13%	2.13	No Change	Low	High
Lw : western larch	Current	100%				

From the Climate Change Informed Species Selection Tool, Will Mackenzie, Provincial Ecologist, FLNROR

Coastal Douglas-fir seedlots for the CWHxm2

A cutblock in the CWHxm2 can be planted with FDC seed sources from the CWHdm, CWHxm1, and CWHxm2.

Eligible Seed BECs for the CWHxm2 using CBST

Fdc	Cw	Hw	Pw
CWHdm CWHxm1 CWHxm2	CWHdm CWHxm1 CWHxm2	CWHdm CWHxm1 CWHxm2 CHWds1 CWHmm1 CWHvh1	CWHdm CWHxm1 CWHxm2
Enough A class seed to meet demand	ONLY Class B avail under CBST	Lots of A class inventory	No change to A class seed availability

Where is the Cw Class A seed useable under CBST?

"I have Seedlot": 63337 (CW – CWHvm1; Class A Orchard 152

CBST Seedlot Selection Tool Version 2.0

| Instructions | I Have A Cutblock | I Have A Seedlot |

Seedlot Number:
63337

[Set Species & BEC]

OR

Species:
CW

BEC Variant:
CWHvm1

[GO]

Plantation BEC	Seed BEC	Species Suitabililty	Limit
CWHvm2	CWHvm1	Suitable	S of 52'30 and below 800m
CWHwh2	CWHvm1	Suitable	
CWHvh2	CWHvm1	Suitable	S of 52'30
CWHvm1	CWHvm1	Suitable	S of 52'30
CWHmm2	CWHvm1	Suitable	below 800m
CWHvh3	CWHvm1	Suitable	
CWHdm	CWHvm1	Suitable	
CWHmm1	CWHvm1	Suitable	
CWHvh1	CWHvm1	Suitable	

Area available to seedlot: 14,332,336 Ha.

BEC Variant
CWHvh2
Zoom to

52° 11' 12" N, 135° 2' 58" W

CBST Seedlot Selection Tool Version 2.0

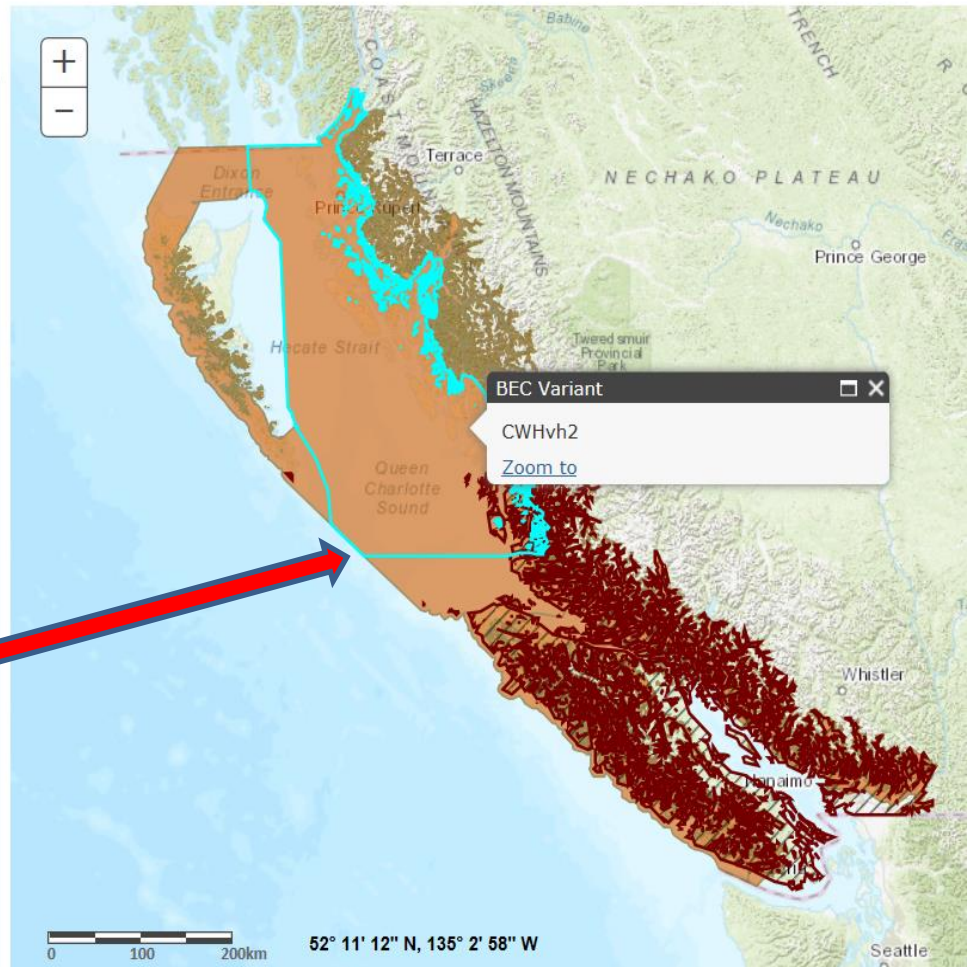| Instructions | I Have A Cutblock | I Have A Seedlot |

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Plantation BEC	Seed BEC	Species Suitabililty	Limit
CWHvm2	CWHvm1	Suitable	S of 52'30 and below 800m
CWHwh2	CWHvm1	Suitable	
CWHvh2	CWHvm1	Suitable	S of 52'30
CWHvm1	CWHvm1	Suitable	S of 52'30
CWHmm2	CWHvm1	Suitable	below 800m
CWHvh3	CWHvm1	Suitable	
CWHdm	CWHvm1	Suitable	

▸ Switch Basemap
▸ Print
▸ Layers

51° 25' 39" N, 127° 16' 42" W

Zooming In

Instructions | I Have A Cutblock | I Have A Seedlot

Seedlot Number:
63337

Set Species & BEC

OR

Species:
CW

BEC Variant:
CWHvm1

GO

Plantation BEC	Seed BEC	Species Suitabililty	Limit
CWHvm2	CWHvm1	Suitable	S of 52'30 and below 800m
CWHwh2	CWHvm1	Suitable	
CWHvh2	CWHvm1	Suitable	S of 52'30
CWHvm1	CWHvm1	Suitable	S of 52'30
CWHmm2	CWHvm1	Suitable	below 800m
CWHvh3	CWHvm1	Suitable	
CWHdm	CWHvm1	Suitable	
CWHmm1	CWHvm1	Suitable	
CWHvh1	CWHvm1	Suitable	

Area available to seedlot: 14,332,336 Ha.

Deployment from Orchards assigned to CWHvh1 shrinks even further (Orchard 128 - retired).

Instructions | I Have A Cutblock | I Have A Seedlot

Seedlot Number:
61172

Set Species & BEC

OR

Species:
CW

BEC Variant:
CWHvh1

GO

| Plantation BEC	Seed BEC	Species Suitabililty	Limit
CWHvh3	CWHvh1	Suitable	
CWHvh1	CWHvh1	Suitable	
CWHwh1	CWHvh1	Suitable	
CWHvm1	CWHvh1	Suitable	
CWHvh2	CWHvh1	Suitable	

Area available to seedlot: 13,105,133 Ha.

Strategic Use of Policy Options in Transition to CBST

To maximize productivity of your site, use policy options is this order of priority:

1. Use Climate Based Seed Transfer (CBST) standards and Class A seed with the highest genetic gain (GW)
2. Use Geographically Based Seed Transfer (GBST) standards with Class A seed with the highest genetic gain (GW)
3. Use CBST standards and Class B seed
4. Use GBST standards and Class B seed

Seed Transfer under GBST – Use Cw in the Maritime SPZ
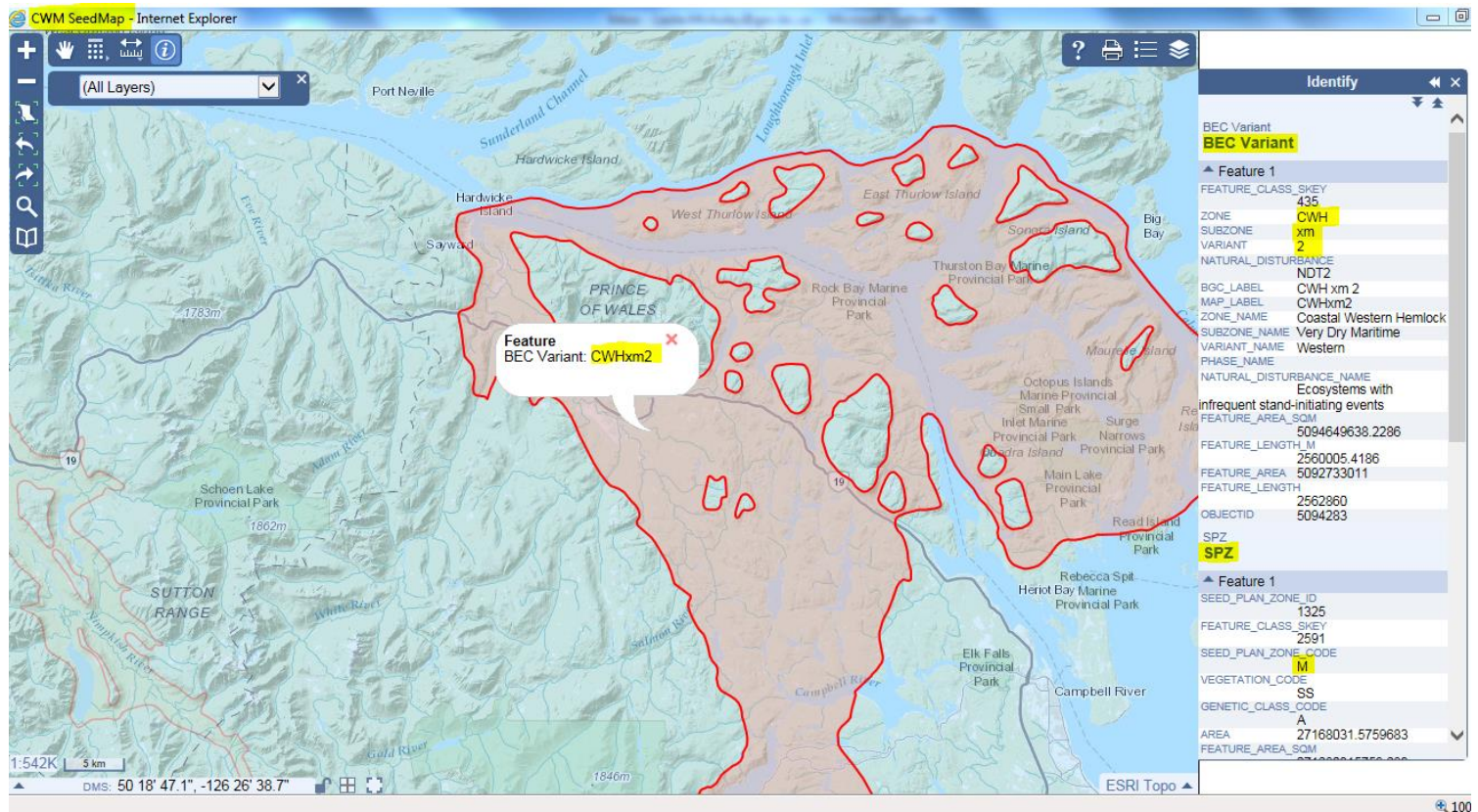
Source: Seedmap

Options available using Geographically-based Seed Transfer (GBST) on a CW Maritime **CWHxm2** planting site, include:

- Seedlot **63718;** ORCH 184 Saanich; GW 24
- Seedlot **63738;** ORCH 198 Saanichton; GW 23
- Seedlot **63616;** ORCH 998 Cowichan; Deer Resistant

Gap Analysis

Cw Historical Planting (Province)

	A	B	C	D	E	F
1	**Historical number of tree/seed planted (annual 5-year average - 2012-2017)**					
2	Version 1.0					
3						
4	**Management_Unit** / **Species**	**Sum of SUM_NUMBER_PLANTED** Column Labels				
			CWMLOW1 {128} CWHvh1	CWMLOW2 {155, 190} CWHvh3	CWMLOW3 {993, 198, 140, 152, 186, 184} CWHvm1	Grand Total
5	Arrowsmith TSA / Fraser TSA (BA, CW)	**Row Labels**				
6	GBR North TSA	CDFmm	22		3,438	3,460
7	(FDC)	CWHdm	26,172		480,529	506,701
8	GBR South TSA (FDI)	CWHds1	5,416		14,328	19,744
9		CWHmm1	480		93,436	93,916
10	Kalum TSA (HW)	CWHmm2	312		9,957	10,269
11	Kingcome TSA (LW)	CWHms1			13,805	13,805
12	Mid Coast TSA (PLI)	CWHvh1	150,572	4,608	886,059	1,041,240
13		CWHvh2	8,582	37,580	309,161	355,323
14	North Coast TSA (PW)	CWHvh3	0	2,094	0	2,094
15		CWHvm1	148,136	14,673	2,396,722	2,559,531
16		CWHvm2	31,226	9,597	695,937	736,760
17		CWHwh1	0	146,892		146,892
18		CWHwh2		0		0
19		CWHws2			32	32
20		CWHxm1	4,987		80,960	85,947
21		CWHxm2	7,868		280,219	288,087
22		**Grand Total**	383,773	215,444	5,264,584	5,863,800

Sheet tabs: **Historically Planted** / Inventory (Plant) / Surplus_Deficit (Plant) / Inventory (Area) / Surplus_Deficit (Area)

Source: RESULTS data in CBST Gap Analysis file

Cw Class A Inventory in SPAR (June 2018)

...roportion of suitable gross area

Species	**Sum of Available * Area** Column Labels				
	Row Labels	CWMLOW1 {128} CWHvh1	CWMLOW2 {155, 190} CWHvh3	CWMLOW3 {993, 198, 140, 152, 186, 184} CWHvm1	Grand Total
BA	CDFmm	0		0	0
CW	CWHdm	0		1,227,359	1227359.319
FDC	CWHds1	0		0	0
FDI	CWHmm1			501,179	501179.0448
HW	CWHmm2	0		746,731	746730.5561
LW	CWHms1			0	0
PLI	CWHvh1	1,141,282	0	2,286,757	3428038.828
PW	CWHvh2	2,933,563	833,557	5,877,901	9645020.868
	CWHvh3	577,221	164,015	1,156,563	1897799.344
	CWHvm1	4,187,872	0	8,391,126	12578997.93
	CWHvm2	0	0	5,912,578	5912577.814
	CWHwh1	478,262	135,896		614157.8041
	CWHwh2		19,032	134,206	153238.4953
	CWHws2			0	0
	CWHxm1	0		0	0
	CWHxm2	0		0	0
	Grand Total	9,318,200	1,152,500	26,234,400	36,705,100

Cells highlighted with green dots = CBST Area of Use.
Inventory is based on seed currently in the bank (potential trees) – proportioned to BEC variants within the CBST Area of Use (based on the proportion of area of each BEC var in the area of use.) Source: SPAR

Cw Surpluses and Deficits for CBST

| Total Surplus/Deficit =	30,858,320	Source BEC ↓		8,935,027	937,056	20,986,237	
Species		Deploy BEC →	Sum of A*A Difference	Column Labels			
BA				CWMLOW1 {128} CWHvh1	CWMLOW2 {155, 190} CWHvh3	CWMLOW3 {993, 198, 140, 152, 186, 184} CWHvm1	
CW		**Surplus/Deficit**	**Row Labels**				**Grand Total**
FDC		(3,460)	CDFmm	-22		-3,438	-3,460
FDI		720,658	CWHdm	-26,172		746,831	720,658
HW		(19,744)	CWHds1	-5,416		-14,328	-19,744
LW		421,838	CWHmm1			421,838	421,838
PLI		736,461	CWHmm2	-312		736,773	736,461
PW		(13,805)	CWHms1			-13,805	-13,805
		2,386,799	CWHvh1	990,710	-4,608	1,400,697	2,386,799
		9,289,698	CWHvh2	2,924,981	795,977	5,568,740	9,289,698
		1,895,705	CWHvh3	577,221	161,921	1,156,563	1,895,705
		10,019,467	CWHvm1	4,039,736	-14,673	5,994,404	10,019,467
(2,856)		5,175,818	CWHvm2	-31,226	-9,597	5,216,641	5,175,818
		467,266	CWHwh1	478,262	-10,996		467,266
		153,238	CWHwh2		19,032	134,206	153,238
		(32)	CWHws2			-32	-32
		(85,947)	CWHxm1	-4,987		-80,960	-85,947
		(285,641)	CWHxm2	-7,748		-277,893	-285,641
			Grand Total	8,935,027	937,056	20,986,237	30,858,320

Surplus_Deficit (#Trees) is based on SPAR Inventory minus Historical Planting by BEC variant
Green cells = Surplus / **Red** cells = Deficit   Source: GIS-based spatial overlay

Cw Options to address deficits

- Current spp suitability is tertiary ("3") - so already not preferred – use a different spp?
- Establish a new Cw Orchard with parents from drier and warmer BECvars (BC or US) – for a tertiary spp?
- Infuse existing Cw orchards with drier warmer parents
- Use A Class seed from US (if it exists & is available)
- Use B Class seed (BC or US)
- Continue to use A Class from the CWHvm1 and vh2 (POLICY OPTION – lower the GS at end of transition period)

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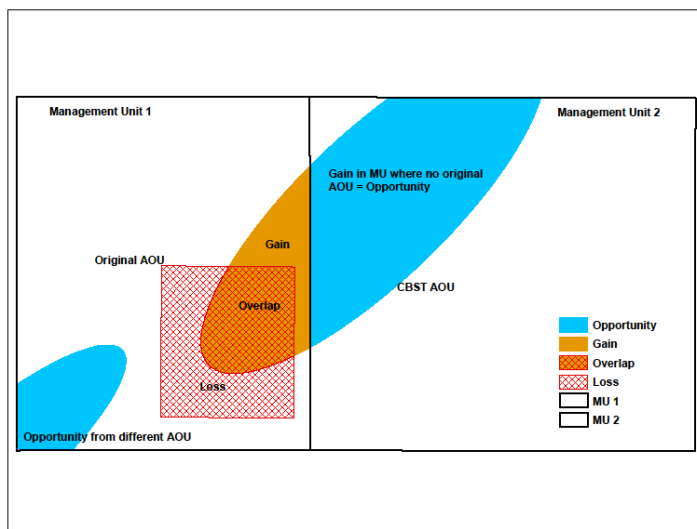
CBST Impact Assessment Tools also includes analysis by Management Unit – Timber Supply Areas and Tree Farm Licences