

# Cone Collection Workshop

June 2018



**BCTS**  
BC Timber Sales



Ministry of  
Forests, Lands, Natural  
Resource Operations  
and Rural Development

Selkirk  College

  
COASTAL SILVICULTURE  
COMMITTEE

**FGC**  Forest Genetics Council  
of British Columbia

  
**TimberWest**



# Agenda

Time	Topic	Presenter(s)
8:30	Introductions and Agenda	Don Pigott
8:45	Forest Genetics, Tree Seed Regulations and Seed Planning	Margot Spence or Brian Barber
9:15	Climate Based Seed Transfer	Margot or Susan Zedel
10:00	<b>Coffee</b>	
10:15	Seed Planning and Registry System (SPAR)	Susan or Margot
11:00	Seed Biology and Tree Seed Centre Services	Dave Kolotelo
12:00	<b>Lunch</b>	
1:00	Cone and Seed Pests	Dave
1:45	Cone Collections	Don
3:00	<b>Coffee</b>	
3:15	Cone Collections (Con't)	Don
4:00	<b>End</b>	



# Forest Genetics, Tree Seed Regulations and Planning

## Overview

1. Forest Genetic Resource Management
2. Tree Seed Use Regulations and Standards
3. Seed Planning and Availability

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Forest Improvement and  
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FLNRORD, Victoria, BC

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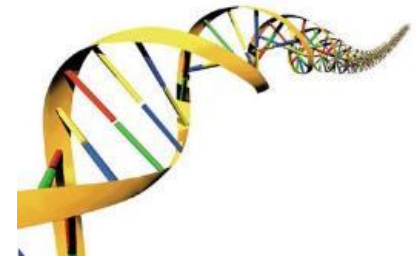
[bbarber.fgc@shaw.ca](mailto:bbarber.fgc@shaw.ca)



# Forest Genetics, Tree Seed Regulations and Planning

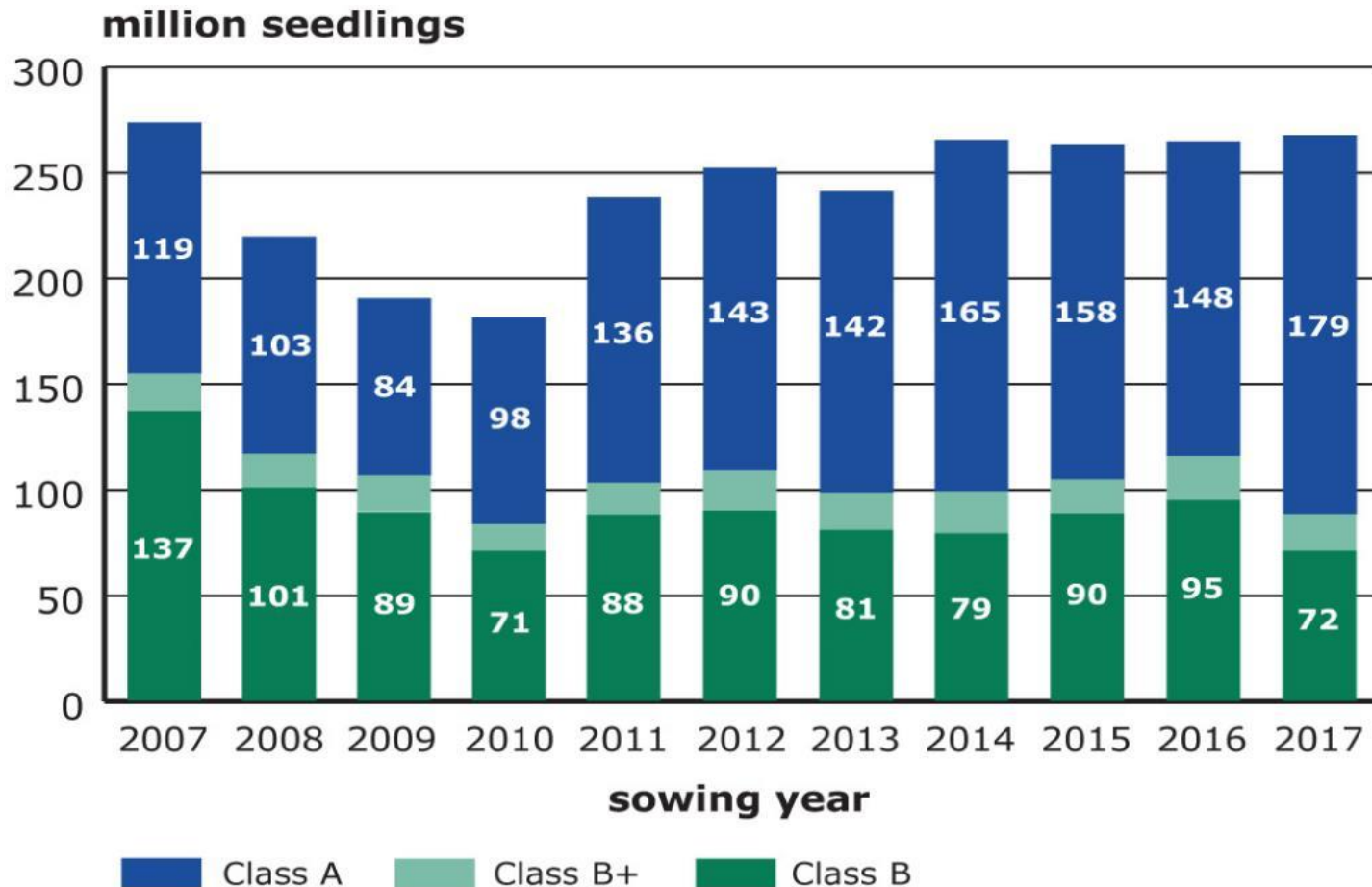
## *Why do these matter?*

- Genetic diversity foundation of biodiversity and ecosystem resilience
- High genetic diversity within a tree species and between populations
- Forest health and productivity (i.e. future timber supply) depends on genetic source of seed.
- 1000s of Kg of seed used to grow the 260M seedlings planted annually





# Seedling Requests by Source





# 1. Forest Genetics Resource Mgmt

**Value**

- Select for fast growth, wood quality, and pest resistance
- Produce seed of high genetic quality

photo: J. Woese

**Resilience**

- Understand geographic patterns of genetic diversity
- Develop seed transfer standards
- Respond to climate change

photo: www.jeffersonphotography.com

**Conservation**

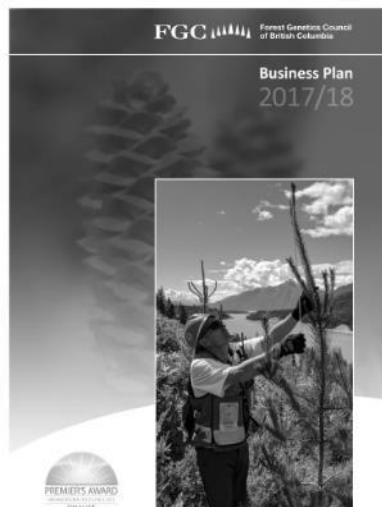
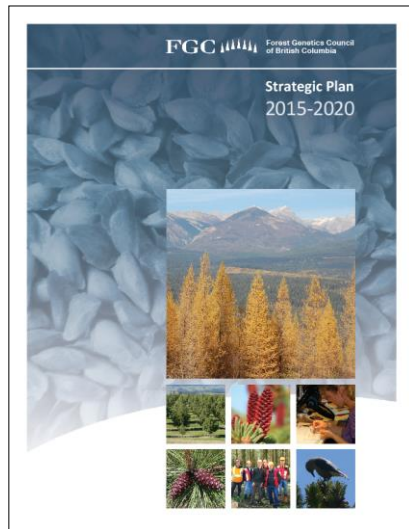
- Conserve indigenous-tree genetic diversity
- Catalogue conservation status

photo: www.jeffersonphotography.com



Forest Genetics Council  
of British Columbia

- Appointed by Provincial Chief Forester
- Develop Strategies, Goals, and Plans
- Provide Advice and Coordinates Activities
- Supported by Technical Advisory Committees





# FGC Partners



Ministry of  
Forests, Lands, Natural  
Resource Operations  
and Rural Development



Natural Resources  
Canada

Ressources naturelles  
Canada



FPInnovations



FORESTRY



University  
of Victoria



FEDERATION OF BRITISH COLUMBIA  
WOODLOT ASSOCIATIONS







# Roles and Responsibilities

<b>Ministry of Forests... Forest Improvement and Research Management Branch</b>	<b>Licensees/BCTS</b>	<b>Academia</b>
Research	Harvesting	Research
Tree Breeding	Silviculture	Education
Seed Orchards	Seed Planning	(Climate modelling)
Policy and Planning	Seed Orchards	(In situ catalogue)
Tree Seed Centre	Reporting	
Information Systems		
<b>Region/Districts</b>	<b>Private Companies</b>	
Authorizations	Seed Orchards	Cone collections
Silviculture	Seedling Nurseries	Stock Coordination
Compliance and Enforcement	Field test measurement and maintenance	Planting



## 2. Tree Seed Regulations and Standards

- *Forest and Range Practices Act (FRPA)*
  - *Forest Planning and Practices Regulation*
  - *Woodlot Licence Planning and Practices Regulation*
    - *Chief Forester's Standards for Seed Use*





# *Forest and Range Practices Act*

## **Seed**

- 31 A person required to establish a free growing stand **must** ensure that seed used for that purpose conforms to prescribed requirements.

*Rule of Law not Professional Reliance*

## **Unauthorized timber harvesting**

- 52 A person must not cut, damage or destroy Crown timber unless authorized under the Acts or by the minister for silviculture ... or other purpose.



Photo: Fandrich cone harvesters



# *Forest and Range Practices Act*

52.1 Minister may require, comments by interested parties, impose conditions, and request security.

- Section 52.1 authorizations delegated to District Manager
- Interpretation of requirements:
  - *Required for any cutting (or 'raking') of branches or tops of standing timber by means of climbing or helicopter*
  - *Not required for picking cones from live branches, felled timber or squirrel caches.*



Photo: Fandrich cone harvesters



# Forest Planning and Practices Regulation\*

## Use of seed

43 Chief Forester authorized to establish seed use standards

Persons planting trees must follow seed standards unless alternative approved.

Persons must keep records of seed used.



## Silviculture treatment records

86(3)c Persons must report pertinent information about seeds used to reforest a cutblock (e.g. seedlot #)

\* *Woodlot Licensee Planning and Practices Regulation*  
s. 32 Use of Seed; s.76 Annual Report

Application Home					
RESULTS					
Search		Inbox		Openings	
Projects		Data Submission		Admin	
Opening Inquiry		Multi-Tenure		Stocking Standards	
Activities		Projects		Forest Cover	
Milestone					
Org Unit: DNI - North Island - Central Coast		Status: FG - Free Growing			
Client: WFP 00		Name: WESTERN FOREST PRODUCTS INC			
Opening: 92L 026 0.0 131		Opening Id: 40336		Licenses: Openin	
Licence: 1000		ID: 00		Cut Blk:	
Index	Species	Number Planted	Number Beyond Request	Transfer Limit ID	Lot T
1	CW - western redcedar	900			06538
2	BA - amabilis fir	500			39702



# *Chief Forester's Standards for Seed Use*

## **Purpose:**

*To maintain the identity, adaptability, diversity and productivity of the Province's tree gene resources*

## **Contents:**

- Registration
- Storage and Testing
- Selection and Use
- Seed Transfer





# Registration Standards – Natural Stands

## Application form submitted to Ministry (on-line via SPAR)

- Lat/long/elevation/BEC unit ([Map now required](#))
- Collection dates & methods
- Collectors name & contact information

## Seed must be:

- collected from  $\geq 10$  trees
- collected from same BEC variant, within 8km radius
- not collected from a plantation
- shipped to Tree Seed Centre
- labelled with # inside and outside of sacs
- $\geq 97\%$  pure seed, between 4% and 9.9% moisture content

## Ministry assigns seedlot #s

- Class A      Seed Orchard
- Class B+    Superior Provenance
- Class B      Natural Stand

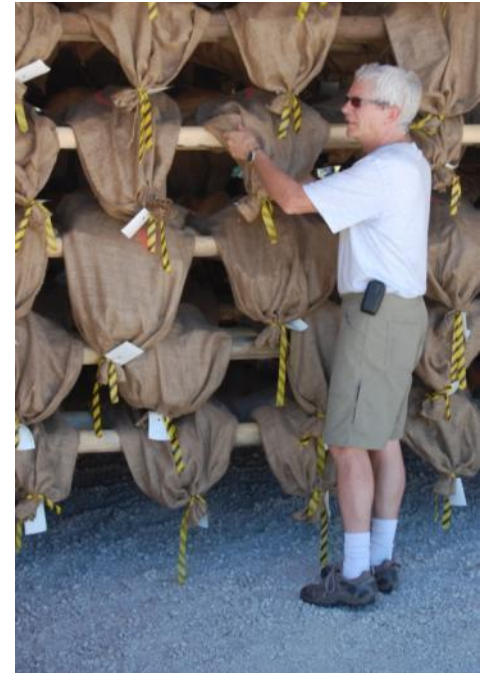


Photo: Fandrich cone harvesters



# Storage and Testing Standards

- Maintain identity and integrity of lot during collection and interim storage (keep accurate records)
  - Store seed at the Tree Seed Centre
  - TSC tests seed for purity, moisture content and germination
  - Withdrawal requests in writing to TSC or through SPAR
  - No fees\* for registration, storage, testing or withdrawal
- \*with some exceptions.







# Selection and Use Standards

- Persons must use seed with  $GW \geq 5\%$  (for the species and trait that best achieves the forest management objectives for the stand) if available....
- Genetic worth (GW) = % improvement for trait compared to natural stand seed
  - GVO+20 = 20% more volume at rotation
  - DSB+50 = 50% resistant to white pine blister rust
- ‘Available’ if...
  - you own it or it is identified as surplus on SPAR
  - of sufficient quantity for request
  - complies with the seed transfer limits
  - fair price

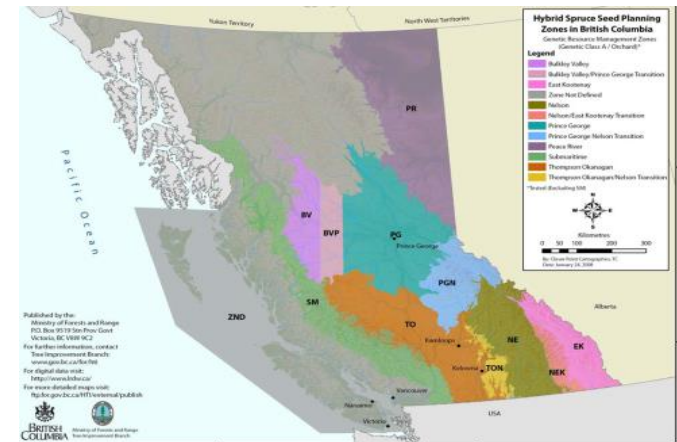
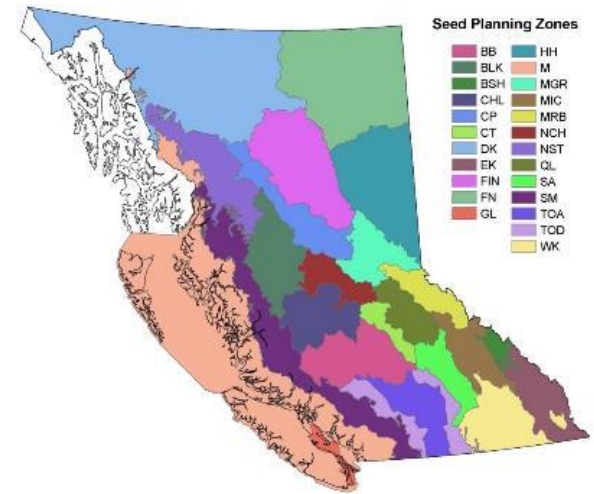


# Seed Transfer Standards



## Geographically-based seed transfer (GBST)


- Natural Stand seedlots
  - Seed Planning Zones (SPZs)
  - Lat/Long and Elev limits
  - BEC zone
  
- Seed orchard seedlots
  - Seed Planning Units (SPUs and elevation limits)
  - Latitude limits for coastal species





# Seed Transfer Standards

## Climate-based seed transfer (CBST)

 CBST Seedlot Selection Tool Version 2.0

Instructions | I Have A Cutlock | I Have A Seedlot

Seedlot Number:  
63568

Set Species & BEC


OR

Species:  
SX

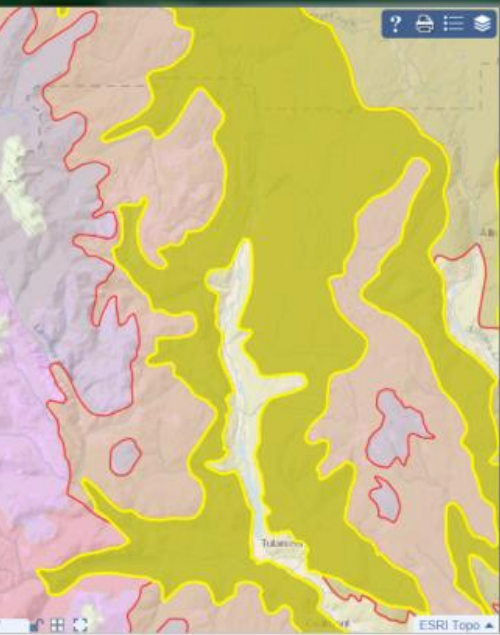
BEC Variant:  
IDFdk2

GO

Plantation RFC	Seed BEC	Species Suitability	Limit
IDFdw	IDFdk2	Suitable	
MSsk1	IDFdk2	Suitable	
MSsk3	IDFdk2	Suitable	



BEC variant mapping in SPAR



**CBST Area of Use Tool**

List of Biogeoclimatic Zone/Subzone/Variants where the Seedlot or Vegetative Lot can be planted  
(\* Species may not be suitable in this BEC unit)

Seedlot Number: 53597

- BEC Zone
- IChm1
- IChm2
- IDFc
- IDFk1
- IDFk2**
- IDFk3
- IDFk4
- IDFk5
- IDFm1
- IDFm2
- IDFdw
- IDFh2
- IDFm
- MSdm1
- MSdm2
- MSdm3
- MSk1
- MSk2
- SBPSc



# 3. Seed Planning & Availability

1. Determine seed/seedling needs (by BEC variant of planting sites)
2. Identify BEC variants from which seed can be procured and suitable seedlots in SPAR (or by SPU)
3. Review FGC Species Plans for seed orchard coverage and availability
4. Contact seed owners and seed producers to purchase seed
5. Collect if insufficient seed available



# Seed Orchards

- 100 seed orchards in BC
- Managed by Ministry, private companies and SelectSeed
- 12 conifer species, plus alder & birch
- Yellow cypress cuttings hedges
- Contain 20-50 parents







# Orchard Seed Availability

See Handouts of Seed Demand (RESULTS) and Class A Inventory (SPAR) for:

- Geographic Based Seed Transfer Standards
  - Climate Based Seed Transfer Standards
- CBST seed availability covered in next section*



# Orchard Seed Contacts

<b>Acronym</b>	<b>Agency Name</b>	<b>Contact</b>	<b>Email</b>
FLNRO	BC Ministry of Forests...	Stephen Joyce	Stephen.Joyce@gov.bc.ca
PRT	PRT Growing Services	Dan Livingston	Dan.Livingston@prt.com
SelectSeed	Select Seed Co. Ltd	Brian Barber	bbarber.fgc@shaw.ca
Tolko	Tolko Industries Ltd	Rod Massey	Rod.Massey@Tolko.com
TW	TimberWest Forest Corp.	Bevin Wigmore	wigmoreb@timberwest.com
VSOC	Vernon Seed Orchard Co.	Dan Gaudet	Dan@vsoc.ca
Vernon private	Coldstream Seed Orchards	Barry Kasdorf	kasdorffamily@gmail.com
WFP	Western Forest Products Inc.	Annette van Niejenhuis	AVanniejenhuis@westernforest.com
YPP	Yellow Point Propagation	Don Pigott	ypprop@shaw.ca

Also included in 2017/18 FGC Business Plan, Appendix 3

<http://www.fgcouncil.bc.ca/doc-03-businessplans.html>





# Summary

- Seed matters
- Determine if suitable seed is available before investing in a collection
- If collecting, abide by the regulations and standards
- When in doubt, give a shout





# References

- [Forest Genetics Council of BC](#)
- [Forest & Range Practices Act \(FRPA\)](#)
- [Tree Seed](#) (FLNRORD website)
- [Chief Forester's Standards for Seed Use](#)
- [Species Plans](#) (e.g. seed orchards)

**Margot Spence, RPF**

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Extra slides with seed use

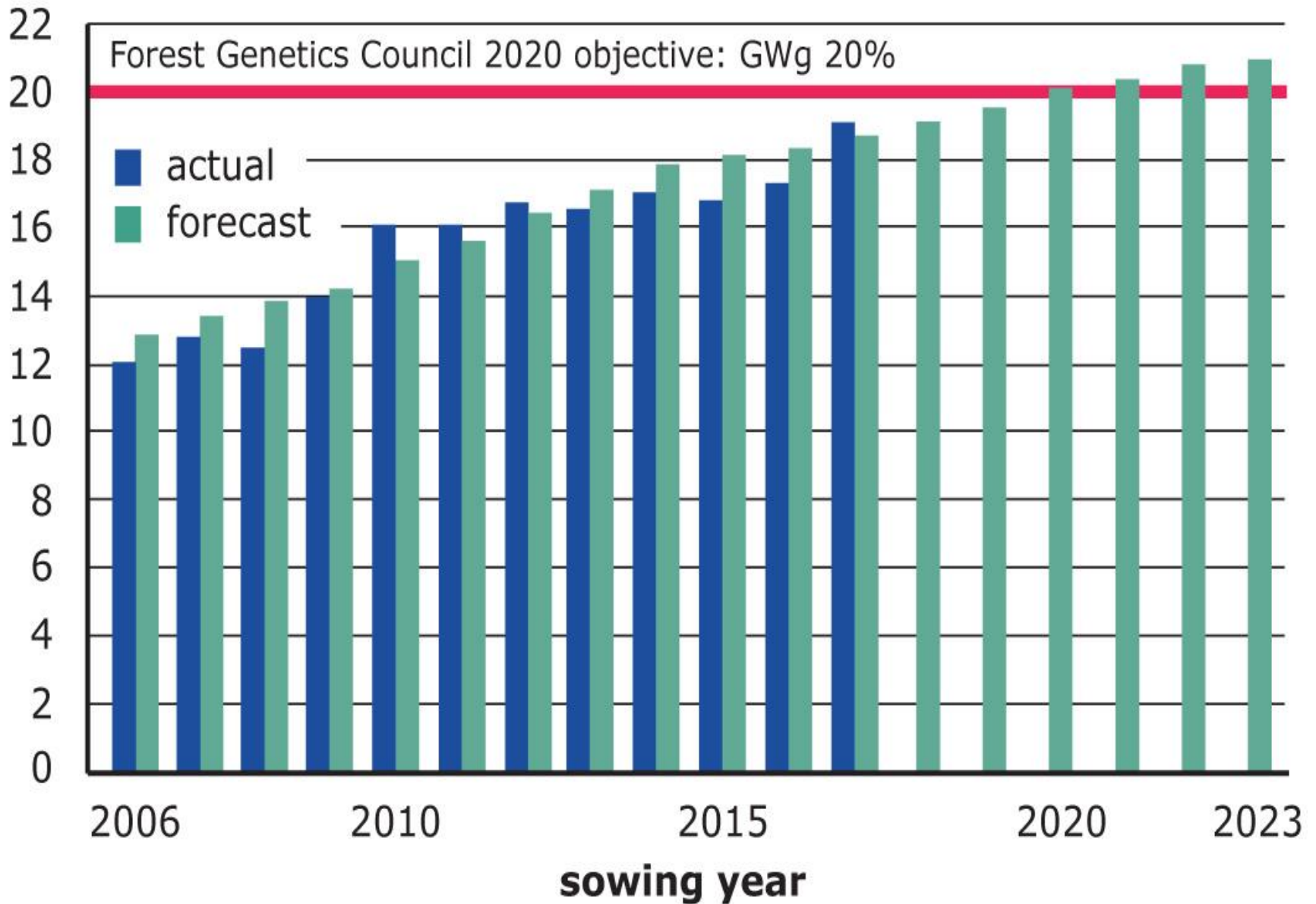
# Superior Provenances (B+ stands)

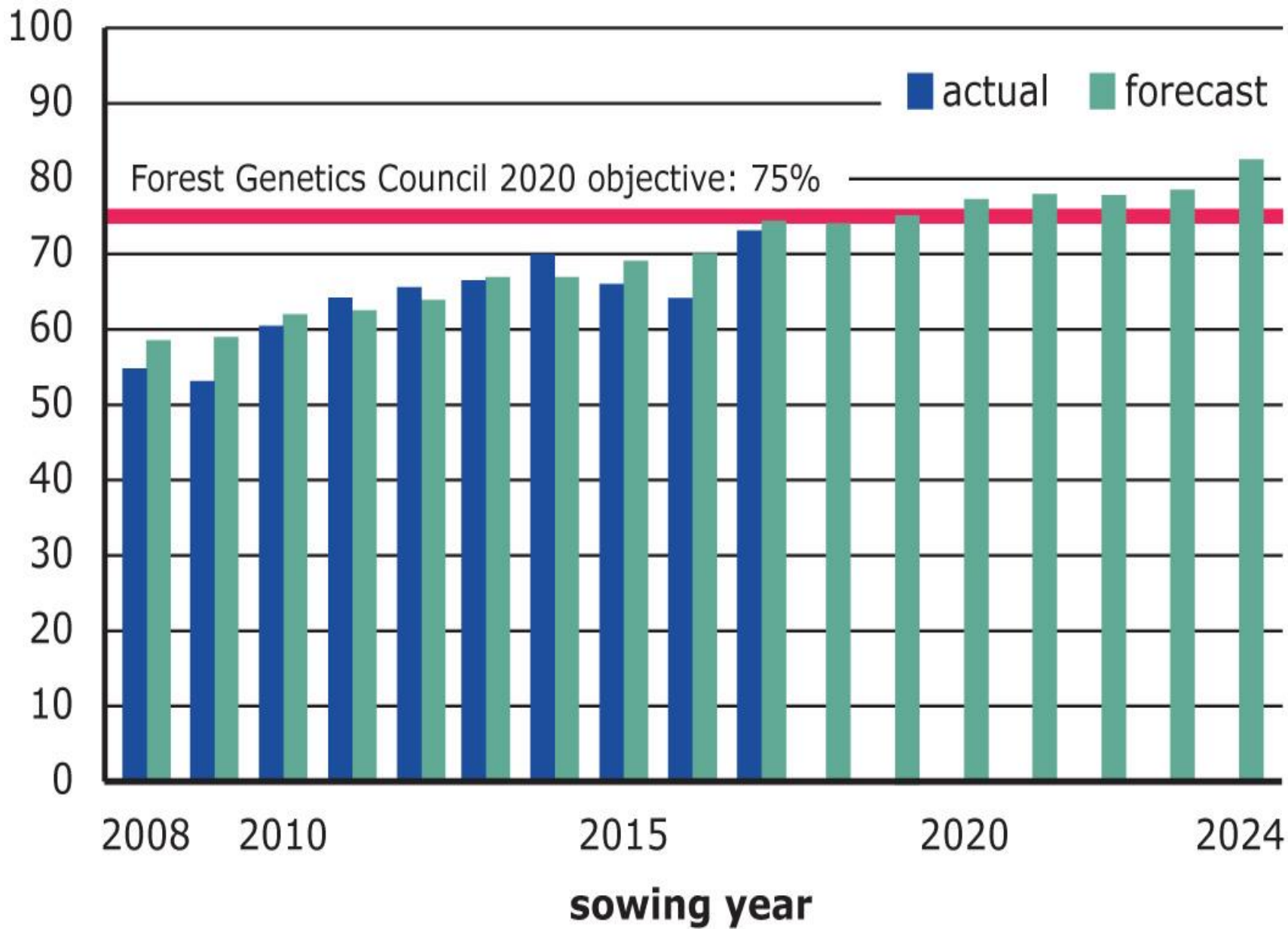
**Table 5.1 Lodgepole Pine Superior Provenances**

Species		Provenance	Collection Area Criteria Section 5.2.1.2 (b)				Genetic Worth Section 7.2 (a) (iii)
Code	Common name		Located within the following elevation range (metres)	Latitude of centre point of area (degrees / minutes)	Longitude of centre point of area (degrees / minutes)	Additional criteria	
Pli	Interior Lodgepole Pine	Bowron River	620 – 720	53° 54'	122° 00'	Within natural stands located within an 8 km radius of the latitude and longitude of centre point of area	G+03
		Canoe Creek	840 – 940	50° 42'	119° 11'		
		Cartwright Lake	1120 – 1220	50° 49'	116° 26"		
		Champion Lakes	950 – 1050	49° 11'	117° 35'		
		China Valley	1080 – 1180	50° 44'	119° 30'		
		Inonoaklin Creek	530 – 630	49° 54'	118° 12'		

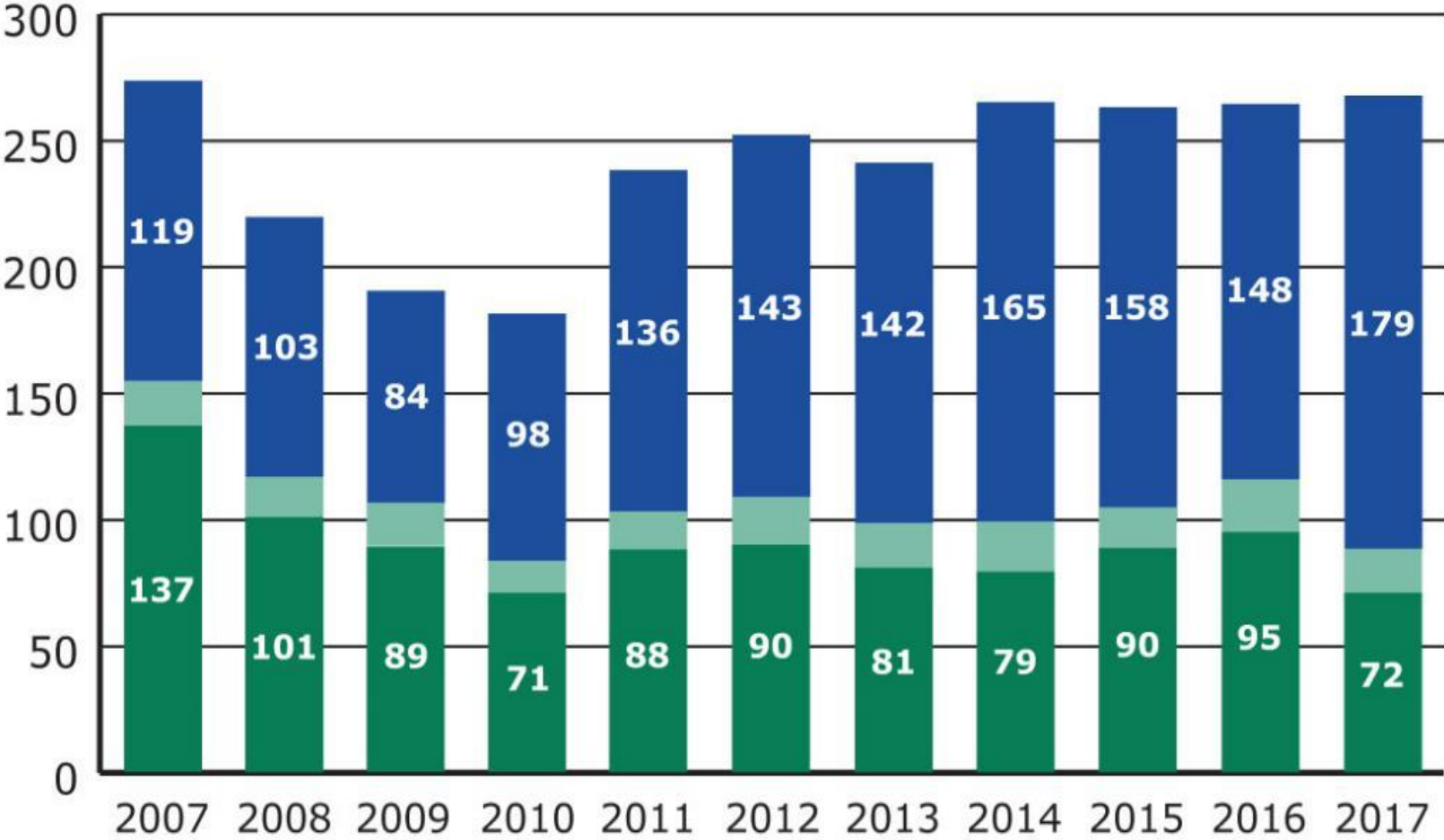


# FGC SelectSeed Use Target: GW





**million seedlings**



**sowing year**

Class A    Class B+    Class B

# Class A sowing requests by Species

