

Tree Species Selection Tool overview

Goal of the Tree Species Selection Tool (TSST): to provide practitioners with the best available information for informing tree species selection decision-making at the stand- and landscape-level in the context of a changing climate. Within the decision-making processes for preparing Forest Stewardship Plans and site-level tree species selection and sowing requests, one of the key decisions is related to tree species selection.

The TSST's core element consists of the landscape-level species descriptions and ecologically suitable species that are characteristic of each BEC subzone/variant and its site series; and the other elements provide information to support the evaluation of risk and strategies in managing for those species.



AMAT tree species, photo by Ward Strong

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Ecological factors information to determine risks to tree species ecological suitability

This web page provides the following tree species-related environmental and forest health information to consider in determining risk to a tree species' ecological suitability:

- [Tree Species Compendium](#)
- [Tolerance Comparisons](#)
- [Resistance and Potential Risks Comparison](#)
- [Forest Health Hazards and Risks](#)
- [Comparison of Silvical Characteristics](#)

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BEC and Tree Species Information

The **Biogeoclimatic ecosystem classification system (BEC)** has been developed to assist in the research and management of British Columbia's great diversity of ecosystems. This hierarchical system uses climate, soil and vegetation to group ecosystems at regional and local levels. More information can be found on the [BEC web site](#).

Twelve forested Biogeoclimatic or ecological zones - large geographic areas sharing a similar climate - are largely where forest management occurs across the province. Zones are divided into subzones on the basis of differences in regional climate. Variants are finer climatic subdivision within subzones.

- Go to the [list of BEC zones](#) and their subzones and variants
- Link to the zone descriptions [BEC Web site](#) to view the subzone/variant brochures

Tree species silvics and ecology

- Link to the [Tree Species Compendium](#)

Lodgepole pine (PI) - Pinus contorta

Page Index

Overview

Ecological suitability

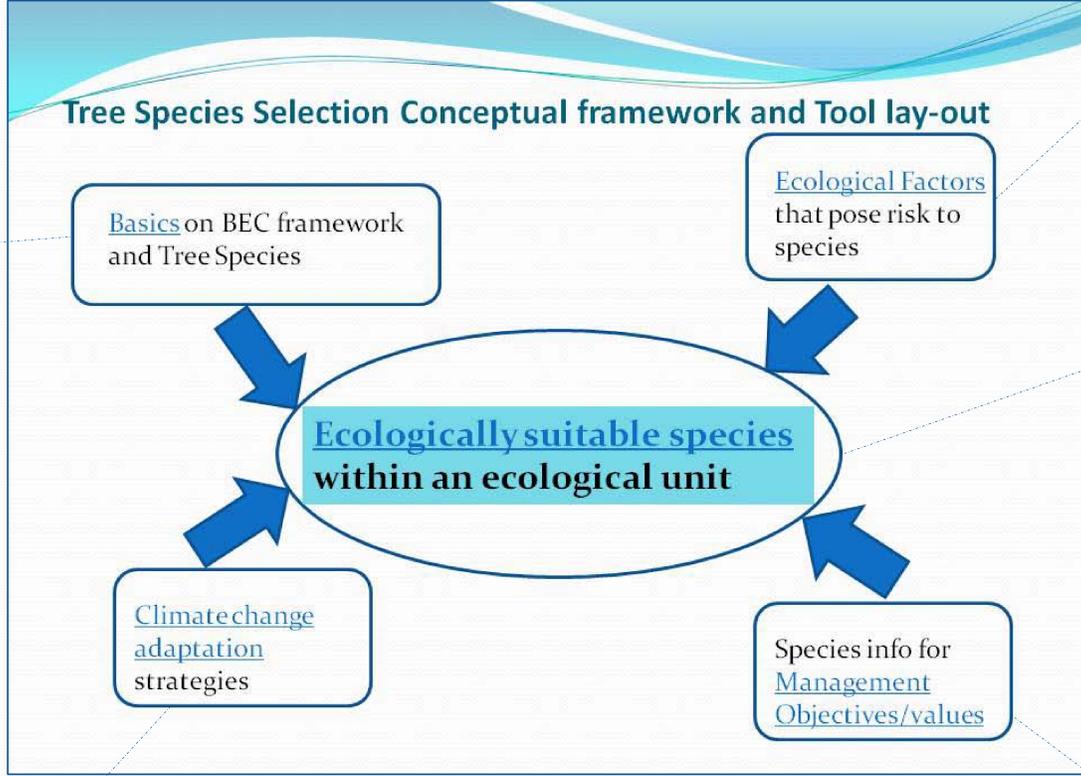
Consistency with the Timber Supply Review

Ecologically suitable species

Immediate and long-term forest health

Economically valuable supply of commercial timber

Tree species to manage



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Ecologically Suitable Tree Species

Background

The Tree Species Selection Project Working Group definition for "ecologically suitable species" is:

- *Coniferous or broadleaf tree species that are well-adapted to a site's environmental conditions, including the variability in these conditions that may occur over time.*

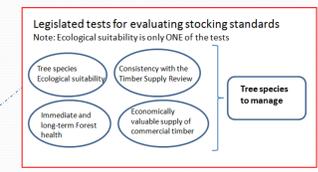
Note: Ecological suitability is only ONE of the legislated tests for stocking standards. (See: [Overview reference for the evaluation of stocking standards under FRPA](#))

Tree species selection decisions are implemented at the stand-level, but cumulatively each decision will lead to changes in the species composition and distribution within a landscape. The intent of this web page is to include key sources of species information that in combination will provide the user with an understanding of what the natural and managed species composition and distribution are at the landscape-level, i.e. a BEC subzone/variant, as a context for their stand-level decisions.

At the bottom of each page describing a BEC Zone, you will find the following information:

Landscape-level tree species information

- BEC subzone/variant field guide (PDF) - provides the description and identification guide to the site series (ecosystems) within a BEC subzone/variant
- BEC subzone/variant-tree species overview (PDF) - these descriptions are a landscape-level 'snapshot' of the tree species composition by age class in natural and harvested stands, regeneration trends and any species selection issues within the BEC subzone/variant.



- The next step in the process of selecting Ecologically Suitable Species is made up of 3 components:
1. Select the specific Ecological Unit listed for the particular BEC Zone of interest
 2. Landscape-species info
 3. Ecologically suitable species info
- Access this information by selecting your [BEC zone](#).

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Climate Change - Tree Species Information to Consider in Developing Adaptation Strategies

Health and productivity of trees declines when they are planted outside of the climate in which their recent ancestors occupied. Climate is changing faster than populations can migrate naturally or adapt through natural selection, suggesting that forest trees may become maladapted as the climate changes. As many forest tree species are foundation species, negative downstream impacts on dependent organisms and ecosystem function may also be anticipated. Species diversification and assisted migration are two adaptation strategies to consider in managing within a changing climate.

Species Diversification

The nature and magnitude of likely changes to climate are still somewhat uncertain. Increasing species diversity in forest management may help buffer the impacts of climate uncertainty, and extreme climate events. For example, regenerating a stand or landscape with most or all of the species that are ecologically-suitable for a site may help reduce the uncertainty of which species in a stand will perform well over the rotation.

- [Chief Forester's Memo on Stand and Landscape Level Species Composition \(PDF\)](#)

Assisted Migration

In assisted migration, seed sources are moved northward and upward in elevation in a manner that mimics recent observed climate change and expected shifts in climate over the next few decades. Planting seed sources and species that are adapted to current and future climates exploits finely tuned plant-climate adaptations wrought through millennia of natural selection to help maintain forest health and productivity.

- Key Features and Content** in the Tree Species Selection Tool:
- Ecologically suitable tree species (climatically suitable species and populations) for BEC site series without a management filter; and landscape-level descriptions of the tree species for a given BEC subzone/variant
 - The current set of ecologically suitable species lists have not been modified for future climates. As it becomes available, new information on assisted range and population expansion of tree species will be provided on the Climate Change Adaptation web page
 - Northern Interior content completed in Spring 2012; work is in progress for the Coast and Cariboo regions
 - New research and information can be easily added to all the elements of the Tool as they become available

Working group members – multi-disciplinary specialists, practitioners from industry and government

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Tree Species Selection Tool homepage: www.for.gov.bc.ca/hfp/Silviculture/TSS/tss.htm

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Management Objectives/ Values: Species-related information

One of the most important decisions made in any reforestation program is how to meet stand and landscape objectives over time. This requires a clear understanding of how a stand fits within a management unit and within landscape priorities and how best to meet those priorities. In British Columbia, forest land is managed for timber, range, recreation, water, fisheries, wildlife, and other purposes. The desired stand structure and tree species composition may not be the same for each of these management strategies, and may have to be adjusted, depending on various management needs.

Information to assist in evaluating tree species in the context of Management Objectives/Values is provided below.

Timber

- Forest Practices Board Report - [Western redcedar - issues for managing desirable characteristics under retention of various levels \(pdf\)](#)
- [Reference Guide - stocking standards for FDP \(MS Excel 2007 workbook\)](#)
- [CF and ADM Operations direction on incorporation of mixedwoods and broadleaves into FPS, stocking standards, SP amendments and TSR regeneration assumptions \(pdf\)](#)
- Silviculture Working Group - [Hardwood Management in the Coast Forest Region](#)
- [FREP Timber Values Site](#)
- [Site Index Estimates by Site Series \(SIBEC\)](#)
- [Information on tree improvement, forest tree genetics and seed transfer](#)

Wildlife Habitat

- [Silviculture guidelines and practices for maintaining or recruiting key habitat objectives](#)
- [FREP Wildlife Values Site](#)

Fuel and Fire Management

Tree species diversity in BC!



Greg O'Neill's Assisted Migration Adaptation Trial tree species – left to right
photo by Ward Strong

- Bl - sub-alpine fir - *Abies lasiocarpa*
- Ba - amabilis fir - *Abies amabilis*
- Bg - grand fir - *Abies grandis*
- Cw - Western redcedar - *Thuja plicata*
- Cy - Yellow cedar - *Callitropsis nootkatensis*
- Hw - western hemlock - *Tsuga heterophylla*
- At - trembling aspen - *Populus tremuloides*
- Ep - paper birch - *Betula papyrifera*
- Ss - Sitka spruce - *Picea sitchensis*
- Sx - interior spruce - *Picea glauca* X *P. engelmannii*
- Lw - Western larch - *Larix occidentalis*
- Fd - Douglas-fir - *Pseudotsuga menziesii*
- Pli - lodgepole pine - *Pinus contorta*
- Pw - white pine - *Pinus monticola*
- Py - ponderosa pine - *Pinus ponderosa*