



Tools in our Adaptation Toolkit

*BC Community Forest Association
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[http://www.for.gov.bc.ca/het/climate/
knowledge/index.htm](http://www.for.gov.bc.ca/het/climate/knowledge/index.htm)



Ministry of
Forests, Lands and
Natural Resource Operations

1. CONTEXT

Goals of the Community for its Forest

Current and Future Risks

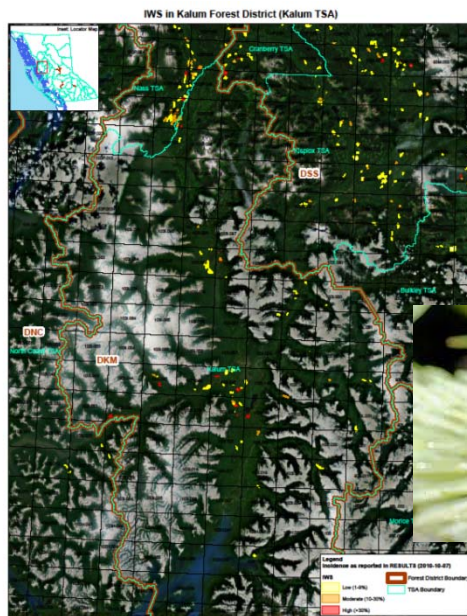
Opportunities

*Toolkit for
Practical Actions*



What are Current Risks?

Insects and Disease Forest Health Incidence Maps

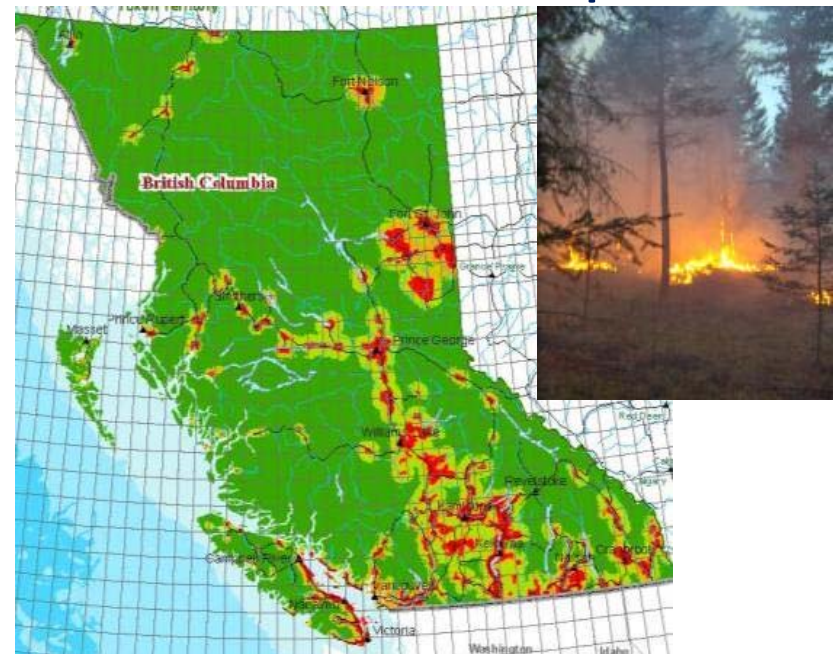


Example:
Kalum TSA
Spruce Weevil



- Tim Ebata, Regional Forest health specialists
- http://www.for.gov.bc.ca/ftp/HFP/external/!publish/Forest_Health/RESULTS%20incidence%20maps/

Fire: BC Fuel Hazard Assessment and Abatement Fire Risk Map



- Heather Chia, Fire Center Protection Officers
- http://bcwildfire.ca/Industry_Stakeholders/industry/hazrisk.htm

Species Diversity and Your Risk Profile



Tool: Species Monitoring Reports by TSA

Tree Species Diversity: Measure it TWO ways

- Number of species
- Dominance of leading species (Berger Parker Index)

Manage

- *Avoid undue simplification of stands and landscapes*

How is climate changing in your forest?

- What will that mean for ecosystems, timber production, and other values?
- How can we address the risks?





Forest Stewardship Action Plan for Climate Change Adaptation

Three Goals:

1. FOSTER RESILIENT FORESTS
2. MAINTAIN FUTURE OPTIONS AND BENEFITS
3. BUILD ADAPTIVE CAPACITY

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and Innovation
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Climate Change](#)[Forest
Stewardship
Action Plan for
Climate Change
Adaptation](#)[**Adaptation
Knowledge and
Tools for Forest
Stewardship**](#)

Adaptation Knowledge and Tools for Forest Stewardship

This site provides links to B.C.'s forest policy, tools and knowledge for adapting to climate change. Forest managers can use this information to adjust their plans and practices so that forests remain resilient in a changing and variable climate.

- The [Forest Policy](#) elements form part of B.C.'s forest management framework. They are under the auspices of the B.C. Ministry of Forests, Lands and Natural Resource Operations.
- [Tools](#) are ready to be used by forest managers for adapting to climate change.
- [Knowledge](#) provides more in-depth information on incorporating adaptation into forest management.



<http://www.for.gov.bc.ca/het/climate/knowledge/index.htm>

How is climate changing in your area?



PCIC Home | Contact Us

- Summary
- Region & Time
- Temperature
- Precipitation
- Snowfall
- Growing DD
- Heating DD
- Frost-Free Days
- Impacts
- Notes
- References

Summary of Climate Change for South Coast in the 2050s

Climate Variable	Season	Projected Change from 1961-1990 Baseline	
		Ensemble Median	Range (10th to 90th percentile)
Mean Temperature (°C)	Annual	+1.7 °C	+1.0 °C to +2.5 °C
Precipitation (%)	Annual	+6%	-2% to +11%
	Summer	-14%	-23% to +3%
	Winter	+6%	-4% to +15%
Snowfall* (%)	Winter	-24%	-40% to -10%
	Spring	-52%	-73% to -13%
Growing Degree Days* (degree days)	Annual	+336 degree days	+205 to +519 degree days
Heating Degree Days* (degree days)	Annual	-593 degree days	-902 to -362 degree days
Frost-Free Days* (days)	Annual	+24 days	+13 to +36 days

Ann. Temp. Up 1.7°C

Summer precip. down 14%

Spring snow down 52%

The table above shows projected changes in average (mean) temperature, precipitation and several derived climate variables from the baseline historical period (1961-1990) to the 2050s for the South Coast region. The point value, chosen from a PCIC standard set of Global Climate Model (GCM) projections (see information). The range values represent the lowest and highest results within the set. Please does not reflect the 'Season' choice made under the 'Region & Time' tab. However, this setting under each variable tab.

* These values are derived from temperature and precipitation. Please select the appropriate information.

Settings

Region

South Coast

Time Period

2020s (2010-2029)
 2050s (2040-2059)
 2080s (2070-2099)

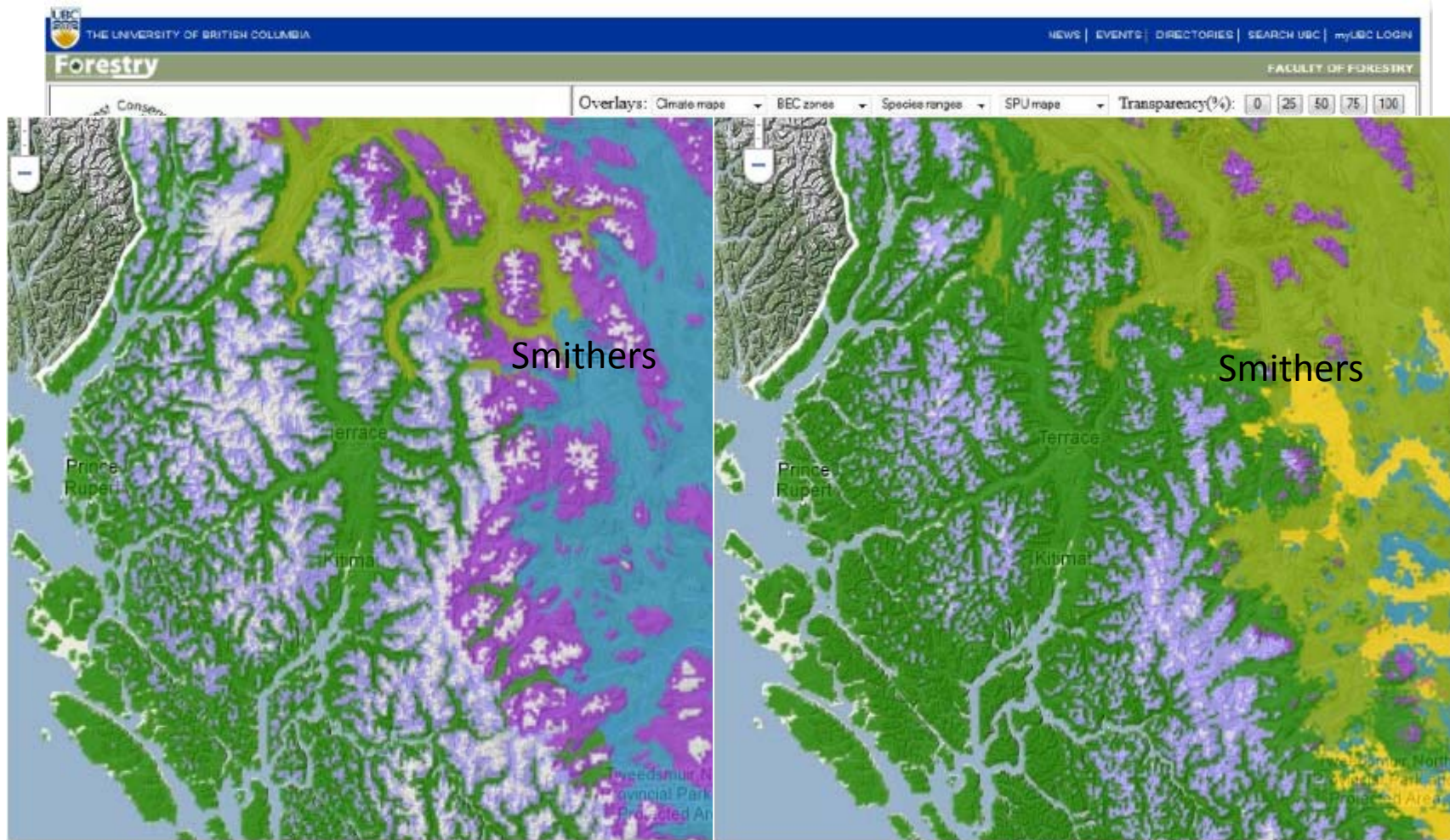
Season

Winter (DJF)
 Spring (JAM)
 Summer (JJA)
 Fall (SON)
 Annual

<http://www.pacificclimate.org/tools-and-data/plan2adapt>

How will that affect species suitability?

Climate BC map



Source: Tongli Wang et al 2012 <http://www.genetics.forestry.ubc.ca/cfcg/ClimateBC40/Default.aspx>

Ministry Home

▼ Competitiveness and Innovation Branch

- * Bio-Economy Development
- ▼ Context for Adapting to Climate Change
 - ▶ Forest Stewardship Action Plan for Climate Change Action
- ▼ Adaptation Knowledge and Tools for Forest Stewardship
 - * Forest Policy
 - * Tools
 - * Knowledge
- ▶ Forest and Land Carbon
 - * Other Links
 - * Publications
- ▶ Log Export Policy and Administration
- ▶ Natural Resource & Industry Economics

Site Map

KEY INDEXES

- ➔ News
- ➔ Offices and Programs
- ➔ Statutes and Regulations
- ➔ Reports and Publications
- ➔ Applications and Services
- ➔ Forms Index
- ➔ Subject Index
- ➔ Telephone Directory

Government

Quick access to

Ministry of Forests, Lands and Natural Resource Operations



Forest Policy and Guidance

This page provides links to B.C. forest policy and guidance for adapting B.C.'s forest management practices to address climate change and variability.

Policy

Policy includes both legally enshrined statutory Policy (legislation, regulation and Chief Forester standards) and non-statutory Ministry FLNRO policy.

- [Climate-based Seed Transfer Interim Policy Measures](#)

Guidance

- **New!** [Silvicultural Regimes for Fuel Management in the Wildland Urban Interface or Adjacent to High Landscape Values - Guidance](#). This guidance on integrating fuel management regimes into silvicultural treatments can be used to garner multiple benefits when planning and undertaking silviculture treatments.
- The Ministry's [Tree Species Selection Tool](#) provides the best-available information to support tree species selection decisions in the context of a changing climate. It was [released](#) October 17th, 2012.
- [Guidance for assessing FSP stocking standards](#) alignment with addressing immediate and long term forest health issues (June 21, 2012). This letter provides guidance for adjudicating the Forest Planning and Practices (FPPR) Section 26 requirements that stocking standards address both immediate and long-term forest health issues.
- [Flexibility options in FSP results or strategies](#) (July 21, 2011). FRPA General Bulletin 25 clarifies the mechanisms available to incorporate flexibility into Forest Stewardship Plan results or strategies.
- [Guidance for the implementation of western larch into FSP and WLP stocking standards in areas of assisted range and population expansion](#) (Dec. 15, 2010). This memo outlines the context of existing legislative requirements, and highlights some key considerations when planting larch in these areas.
- [FRPA General Bulletin \(Number 22\) – An Overview of FSP Extensions](#) (March 25, 2010). Includes guidance on the consideration of 'any significant information' (e.g. new science, operational trends, major BEC system updates, silvicultural strategies, regional forest health issues, recent TSR assumptions)' when approving FSP extensions.
- [Guidance to Tree Species Composition at the Stand and Landscape Level](#) (Sept 24, 2009). Provides guidance to professionals and tenure holders on how to address the potential risks to immediate and long

Forest Policy Page

Policy and Guidance (examples)

Climate Based Seed Transfer



Forest Stewardship Plans



- Assess stocking standards re: Forest Health
- Consider climate change in LT FH test
- Flexibility in FSP results or strategies
- Consider new information



Silviculture

- Tree species composition at the stand and landscape level
- Planting western larch – assisted range expansion
- Silviculture regimes for fuel management in the WUI



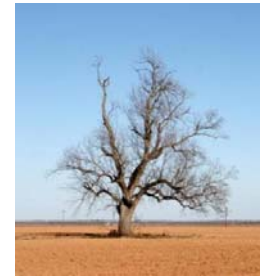


Tools Page

Examples:



- **Checklist** for adapting BC's landscapes (FORREX)
- Guidance for adapting forest mgmt in **Kamloops** TSA
- Stand Level Risk Analysis
 - Drought risk: soil moisture regime /species
- Tree species selection tool
 - Ecologically suitable tree species



<http://www.for.gov.bc.ca/het/climate/knowledge/tools.htm>

Coming Soon

What species to promote or demote?

Regional Guidance for Species Use based on Climate Change
 e.g. **SBPSmc** (Prince George)

Species	Present Category	Suggested Category	Preferred/ Acceptable Recommendation	Promotion or Demotion	Rationale/Footnotes
Fd	0	2	Acceptable	Promotion	Consensus BGC projections see most of the SBPSmc climate shift to SBSdk and to lesser degree IDFxh2 climate. Fd is sometimes found on circum-mesic sites in the SBSdk and on mesic sites in the IDFxh2.

DRAFT

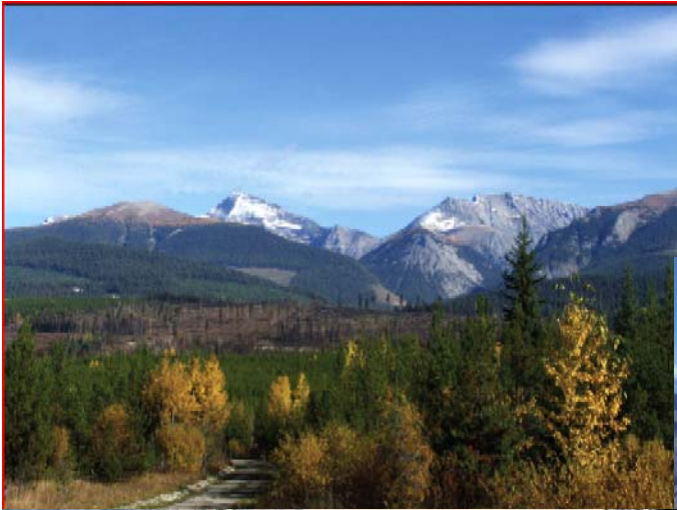


My Challenge to You

- Look at your forest through a risk lens
 - and opportunities!
- Use the adaptation toolkit to reduce risks
- Talk to your regional specialists and district staff

Move the Ball Forward





For FSPs to pass the climate change 'test*'

1. Does your **long term forest health test** consider **climate change risks**?



2. Have you considered **species diversity**?
 - Avoid simplification of stands and landscapes



3. Are you looking **outside the block**?



*Based on Chief Forester Guidance (vs. regulation)

<http://www.for.gov.bc.ca/het/climate/knowledge/policy.htm>

Three types of management

- Most areas



- Practice **Good Forest Management**



- High risk ecosystems



- Special management



- Areas unlikely to support forests in future

- Don't invest here



Principles of Climate Change Adaptation
Climate Trends

Shifts of climate envelopes

Note: This is one representation at the zonal level using BC analogues

