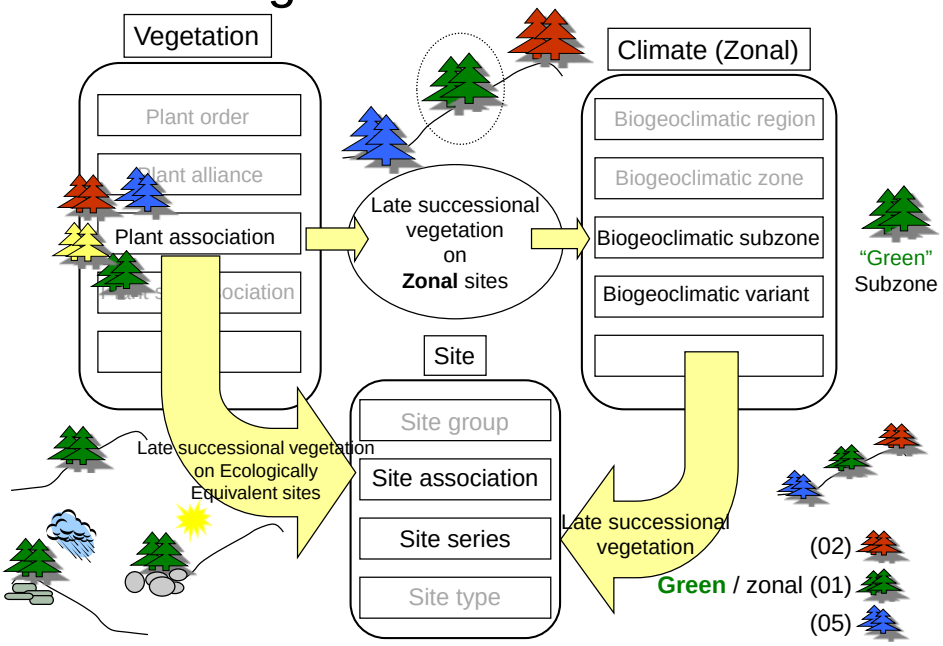
CSC Summer Field Tour- June 6, 2018

Biogeoclimatic Ecosystem Classification – the foundation for successful species selection

Sari Saunders and Heather Klassen, Research Ecologists, Coast Area, MFLNRORD

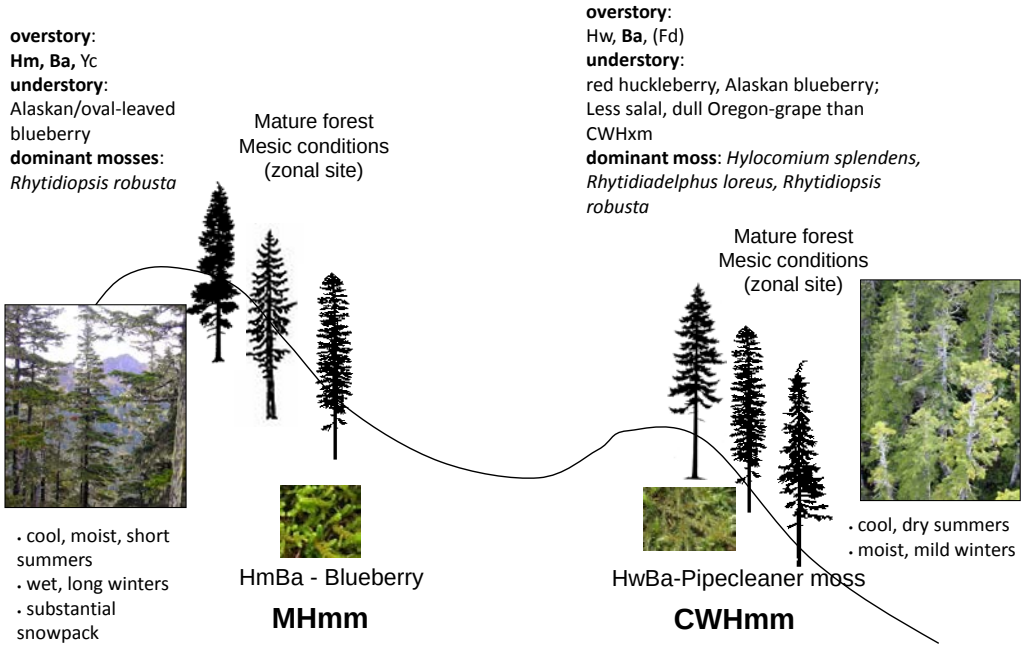
BEC - Integration of 3 Classifications



- Links climate, site and vegetation in an integrated classification across scales
- Framework for ecological understanding, planning and management

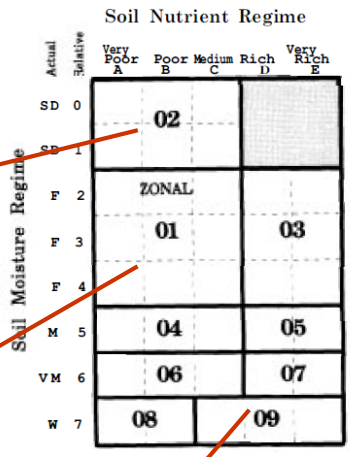
- Plant Association – on a zonal site is a diagnostic of a climatic subzone
- Occurrences of a plant association across climatic units define a site association

BGC Subzones - Definition and Delineation with Zonal Plant Associations



- Focus on the vegetation on zonal sites to determine and delineate your BGC subzone
- Zonal sites
  - vegetation driven by climate rather than site conditions
  - average moisture and nutrient conditions

Site Series



- Subzone/variants have multiple site series indicating site conditions capable of producing different plant associations
- Site series are the most commonly used category for field use
- Edatopic grid presents the range of soil moisture and nutrient conditions associated with the site series

Site Identification Procedure

Biogeoclimatic Unit (Subzone/Variant)

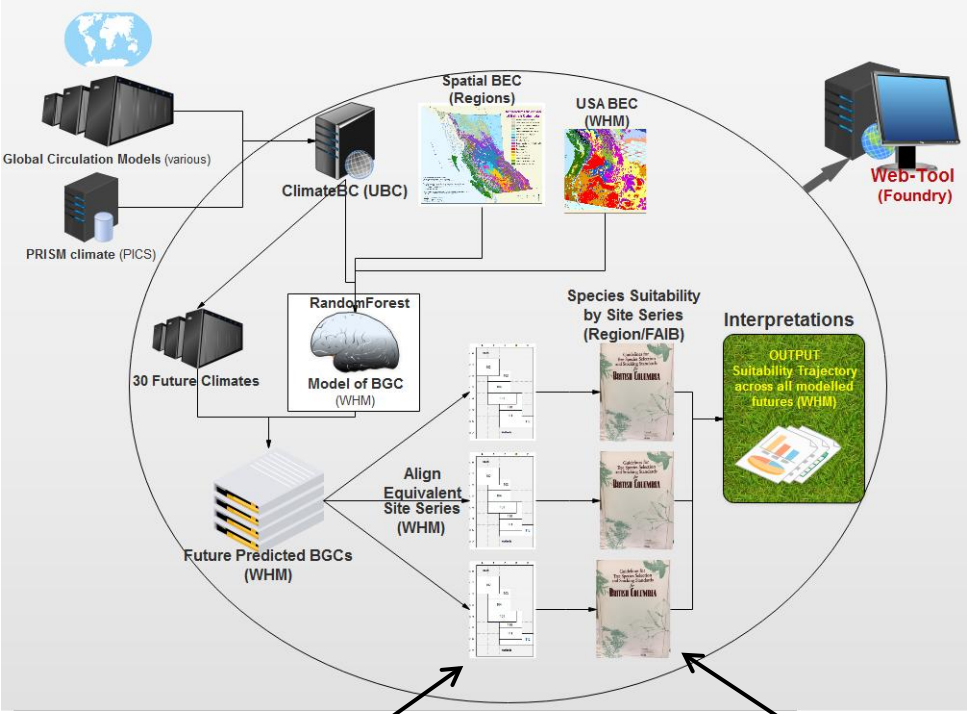
PREFIELD	• Determine geographic location (including elevation) • Refer to maps of BGC unit distributions and cross-sections • Refer to other resource mapping (e.g., soils, terrain, TEM)
EN ROUTE TO SITE	• Observe terrain and zonal vegetation en route to the site • Refer to environment and vegetation summary tables for BGC units

Site Unit (Site series)

AT SITE	• Describe site, soil and vegetation conditions
	  • Select sample area
	  • Estimate % cover for vegetation in plot
	  • Collect site information
	  • Collect soil information from soil pit
	  • Determine soil moisture and soil nutrient regime
	• Identify site unit
	  • Examine description of units
	  • Integrate site, soil, and vegetation information

Coast Area BEC- Working on updates to: • Classification • Mapping	Also inputs to: • Climate Change Informed Tree Species Selection (CCISS)/stocking standards • Climate-based Seed Transfer (CBST)

Climate Change Informed Tree Species Selection (CCISS) – components and research inputs



BEC considerations:

- Predictability of bioclimate envelopes
- Changing site – vegetation relations
- Shifting species interactions and individual responses

- Increase in reliance on site factors, less on vegetation

Site level/site types

- Sayward Forest (Carpenter & Dymond)
- Dry south coast climate change project (Coast Research, MFLNRO)

Species

- Tree species (and ecosystems) (Gray; Rehfeldt; Iverson; Aitken)
- Dry coastal species (CDFmm and CWHxm) (Klassen)
- Seed source and deployment zones (O'Neill)
- Plant hardiness zones (CFS – McKenney)

- **BEC provides a foundation for prediction and detection of climate change at multiple scales**
- **BEC to inform silvicultural decisions at stand and landscape scales to reduce economic and ecological risk and increase these values**

Stand Level Diversity:

- Reduces:
  - risk of complete stand failure
  - pest outbreak severity
- Enhances:
  - stand yield in a changing environment
  - structural attributes of habitat diversity
  - range of forest products

Landscape Level Diversity:

- Reduces:
  - cumulative effects of individual stand-level decisions
  - risk of widespread losses from species-specific pests
  - spread and impact of other natural disturbances (e.g., fire)
- Enhances:
  - flexibility in stand management while meeting broader targets
  - feasibility of evaluating experimental options