

Cranbrook Notes from Climate Change Adaptation Workshop,

February 13th, 2013

Personal Observation exercise:

- Species changes in life histories. For example, robins are now found year round, spring birds are showing up early.
- Resulting in an asynchrony in food sources.
- Plantation mortality in certain areas, especially on South and Southwest aspects.
- Observing increases in Fd and Lw mortality, PI appear to be OK but limited in numbers, Cw die off at lower elevations.
- Lw needle disease appears to be chronic over the past number of years – relates to warmer and wetter springs.
- Hay crops are difficult to get off as there are few periods of three days or more without rain.
- Less ground frost, noticed with snow-shoeing. Less time with ground frozen, impact on breakup and hauling.
- Burn window has been shortened from 2 weeks to 2 days, due to venting etc.
- More extreme events appear to be happening, e.g., more high winds, more intense rain, landslides, tornado. Monitoring is key – in some cases the total amount of precipitation is the same, i.e., the mean remains the same, it is when it occurs appears to be changing to more intense and shorter periods.
- Extended fire season – on both ends. For example the Bull River snow melt is 4x the traditional rate, water levels at freshet.
- Rain in winter is more common – and new, not a usual event in the past.
- Forest road infrastructure and community impacts have been stretched to the limit due to changes in early season precipitation.
- Invasive species have increased. Here there is an interaction between climate and human development.
- Shorter cold snaps.
- Mid and lower elevation snow packs are declining – may trigger similar issues to Yc decline, possibly with Hw?
- MPB – cold wet spring conditions appear to be influencing staggered flights, and an increase in tree resilience to pitch out the beetle. This is occurring in Parson, Canal Flats and Kootenay Lake.
- Premature insect and pollinator emergence with nothing to eat (bee example provided). Also mosquitoes in February?
- Soil temperature and decomposition rate changes resulting in changes in nutrient cycling.

Vulnerable species exercise

Vulnerable species – where and why

- Cw – mid to low elevations, especially on dry sites – i.e., drought an issue.
- Hw – in areas where snow melt exposes roots to frost events resulting in root mortality
- Alpine Larch – warming in the upper elevation areas they are found.
- Se – in the ESSF, warming is resulting in greater weevil impacts.
- At – drought
- Ep – where it is found – multiple impacts in place now.
- Fd – drought and insects in areas such as the ICHmw2.
- Pl in the IDFdm2 – already on the edge of its range, susceptible to increased summer temperatures where leaky stomata cause drought stress.
- Bunch grasses.
- All trees will be vulnerable somewhere – this is key, some more so than others depending upon the species and site conditions.

Vulnerable ecosystems – where and why

- Grasslands – where they are found, with more invasive species – need to minimize impacts on these areas.
- Alpine and subalpine as their climates shift away from what was previously established.
- Riparian ecosystems due to hydrologic changes in water tables.
- Riparian reserves in dry areas may be considered wicks or chimneys for fire.

Species Exercise

Discuss what might cause you to promote or demote a species within for a specific BEC site series today, knowing that it will be under a different climate in the future.

- Issues regarding survival in the first few years – feasibility of establishing lower elevation species now.
- Productivity over time.
- Value of the species – both as timber and for other values.
- Current costs for reforestation.
- Risk which translates into costs. There remains a legal obligation with liabilities.
- Availability of seed – is the local seed appropriate for future climates?
- Will there be appraisal allowances for innovative approaches?
- Is there a different model from block by block free growing? Could it be done over a larger area with percentage targets? This requires a strategy and a defined area. An example would be meeting 90% of FG criteria, 10% not. Different spatial scales may have different targets.
- Possible future markets may influence decisions.
- Whether something has already been done to what was considered excess or not enough, looking at it from the landscape may point towards promoting or demoting a species in a specific situation. Use redundancy as well as not doing the same thing everywhere.

- Be innovative and try things where you think they may work.

Describe who you think should be involved in the elements necessary to consider for any changes – e.g., feasibility, reliability, productivity.

- Silviculturists
- Ecologists
- Forest Health specialists
- Local expertise
- Broad scale expertise – e.g., what has worked elsewhere.
- Wildlife biologists.
- Hydrologists.
- Consumers
- Fire ecologists
- Fire risk specialists
- Those who are working on the general principles of resilience.

Species directional shifts

ESSFwc4

- Pl no change.
- Se to Sx – begin to reduce dependence – numerous forest health issues, especially at the lower elevation ranges.
- Use of Sx resistant to the weevil.
- NO monocultures
- Denser stands in areas where moisture is not limiting.
- Play at the edges – introduce species in areas where they have potential for success.
- Think of using alternative silvi systems to address frost.
- Still need more direction on how to deploy mixes – which species to mix, at what scale? E.g, mixed bag, microsite, mesosite...
- For innovative practices – expect failures – may have to go back.
- Provide some room for error - % variation from the desired condition.

IDFdm2

- Py over Lw – increase this ratio
- Fd survival has been an issue – seed could be the issue. This needs exploration.
- Fd may need shelter to establish, this should be pursued.
- Fire / community issues – may wish to reduce densities to reduce ladder fuel risk.
- Microsites will either promote or demote species use – e.g., some areas are better suited to grass.

What was learned or what we will do differently

- Better networking, recognize the need for interdisciplinary inputs.
 - E.g., ecologist's knowledge of ecosystems and climate relationships.
- Use the various tools that were shown and will explore others that were not.
- Try some different species – e.g., push the envelope in areas that are considered high risk.
- Keep in touch with the ABCFP – to track their progress in promoting the use of Climate Change as part of professional reliance.
- Suggest integration into TSR – will promote this in upcoming timber supply reviews
- Reinforce actions taken through the Ecosystem Restoration project – projects will be viewed now with an added lens of climate change. (e.g., reanalyze what is being done with the lens – e.g., riparian strips in dry ecosystems, are they creating a fire issue?).
- Ask more questions and look for more information.
- Speak on the subject with more confidence. Greater understanding of the principles of climate change and where to find more information.
- Possibly pursue legislative or policy changes when issues emerge.
- Share the information gained with colleagues.
- Look for areas on the edge for validation and opportunities.
- Look at all management options now with the climate change lens.

Thanks to Deb MacKillop for the detailed flip chart notes.