Managing for Resilient Future Forests

Land Trust Alliance of BC

B. A. Blackwell
& Associates Ltd.

resiliency

•

the ability

of an ecosystem

to recover after a disturbance

Source: *A Critique of Silviculture: Managing for Complexity*.
Puettmann, K. et al., 2009

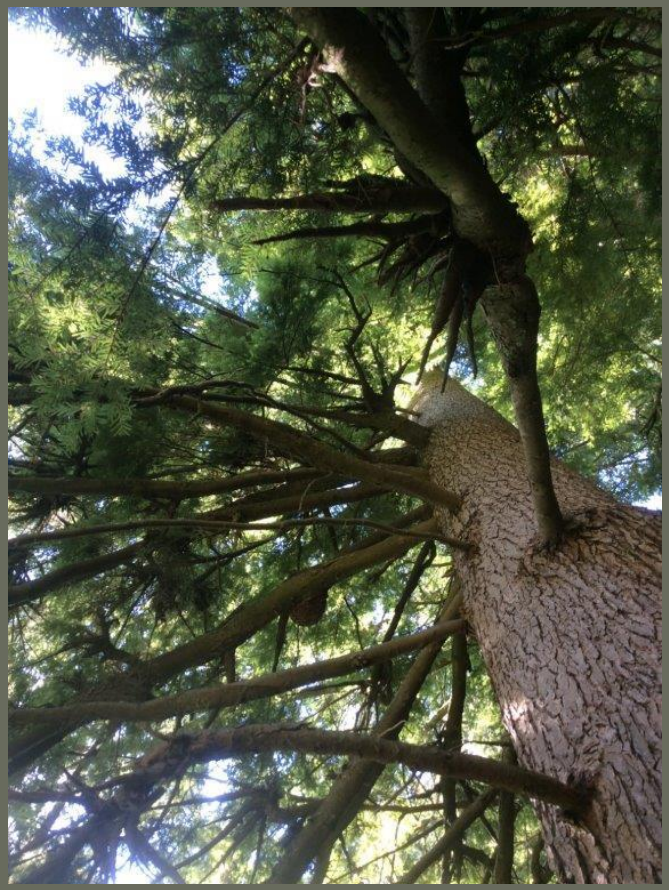
disturbance

•

any sudden, temporary, and
relatively rare event
that causes a profound change
in the dynamics of a system

Source: *A Critique of Silviculture: Managing for Complexity*.
Puettmann, K. et al., 2009

Disturbance: abiotic and biotic



Ecosystem Variability

Ecosystem Response

3 different plant communities growing on the same site

resulting from 3 types of disturbance

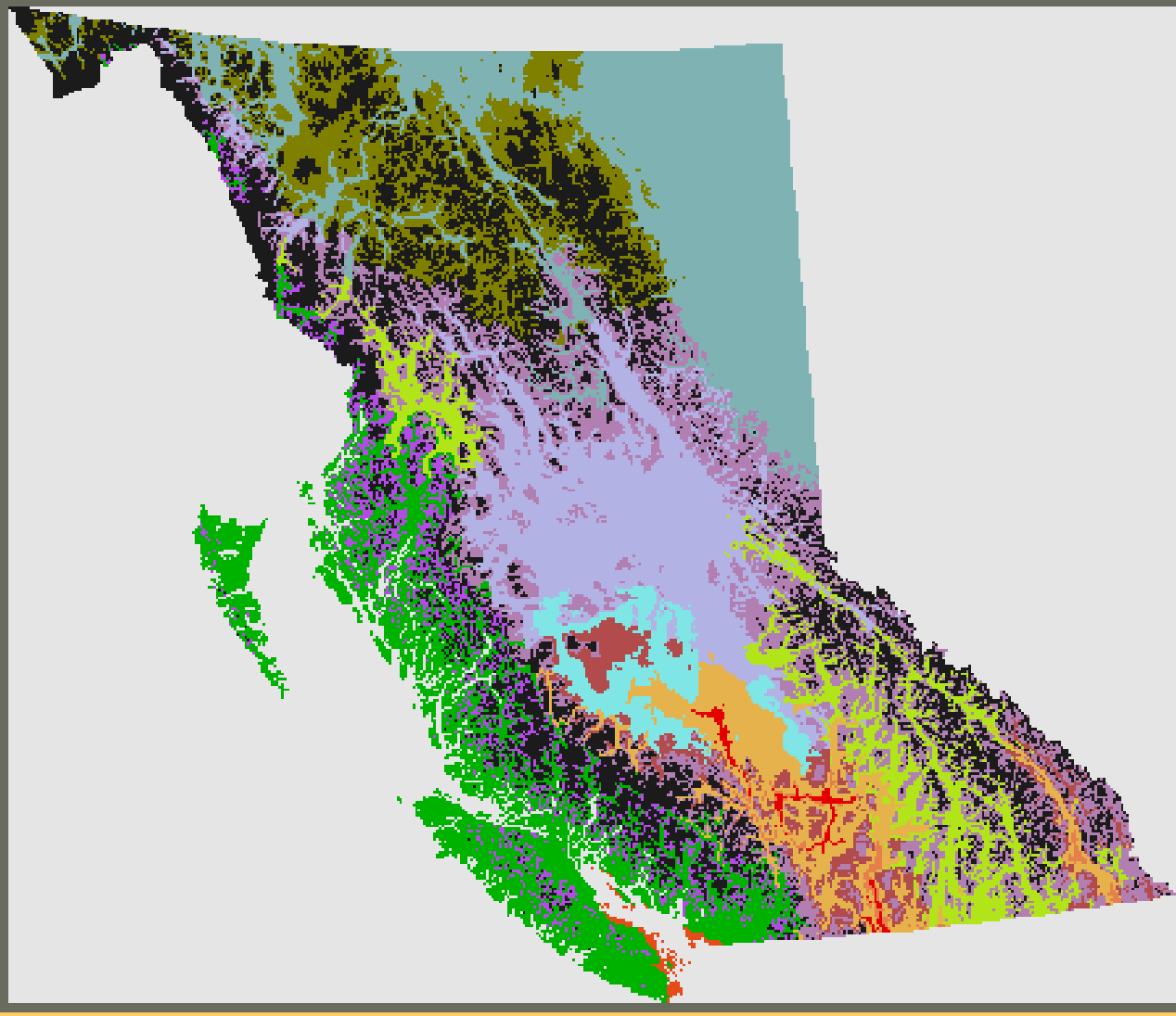
- *Land clearing and seeding for ski runs*
- *Logging followed by planting*
- *Old growth succession with gap dynamics*

The Climatic Determinant

- A macro or large-scale condition that influences ecosystems at the smaller scale.
- The Pacific Coast is a land of extremes – cool and wet in winter, warm and dry in summer.
- The extremes may be intensified with climate change.

Forest Management

In British Columbia



Biogeoclimatic Ecosystem Classification (BEC)

BC Ministry of Forests

Forest Dynamics:

Evapotranspiration

Wildfire

Wildlife / Insect habitat

Stand-level windthrow

Upper canopy

Lower canopy

Understorey

Forest health

Soil Profile

Hydrologic cycle

Nutrient cycling

Mychorrizal / Microbial interactions

Conservation Management: Challenges

- Impacts of long-term static preservation in the absence of ecological disturbance –INCREASED POTENTIAL for Disturbance
- Adjacent Land conversion, redevelopment, and densification
- Vegetation change (genus and species)
- Invasive plant management
- Hazard trees and public safety
- Ecosystem Restoration

Why plan for resilient forests?

To protect the

shared social and ecological values

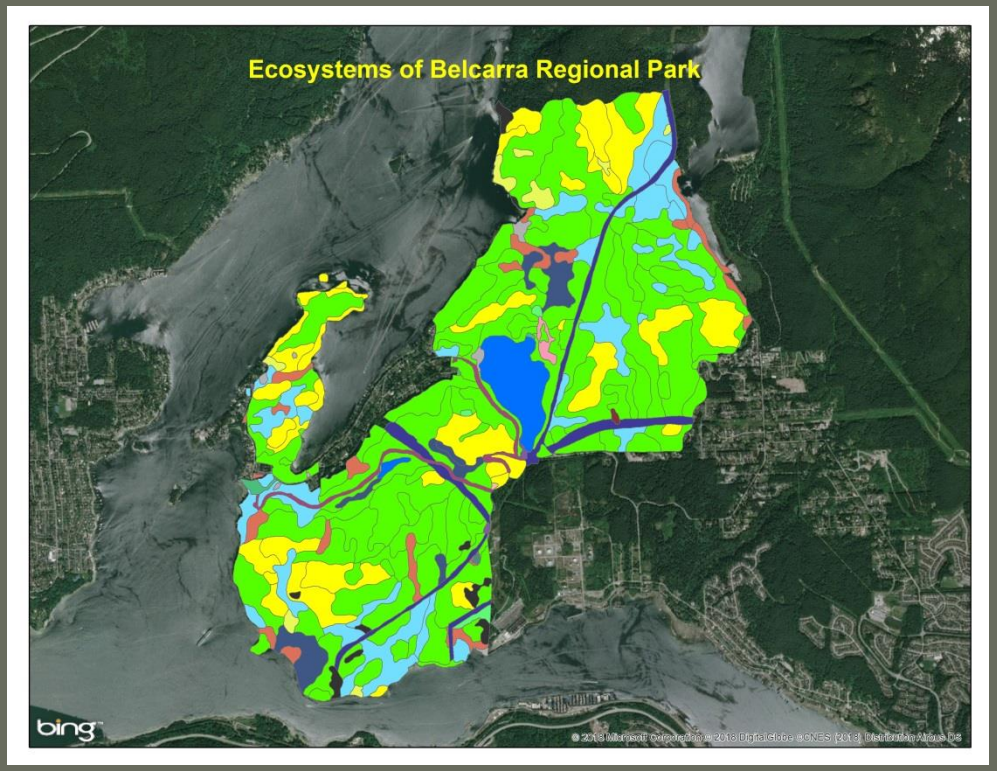
Planning for Resilient Forests

Forests must be healthy and productive with a species profile and structure that is

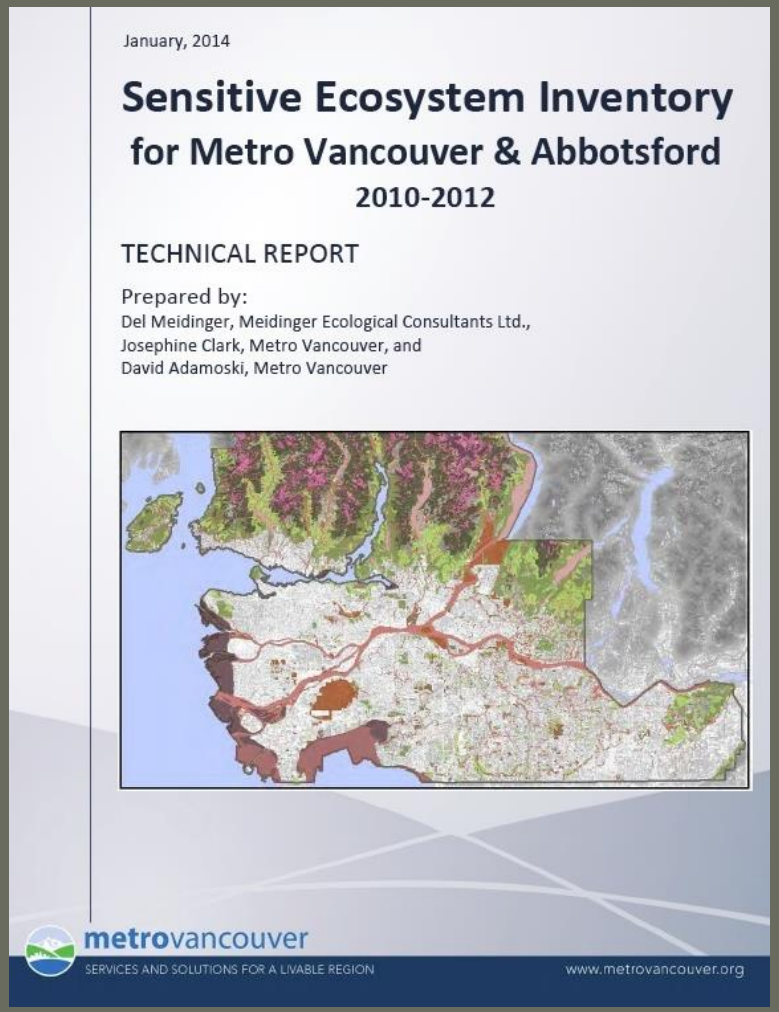
best adapted to a range of climate variability

And disturbance risks

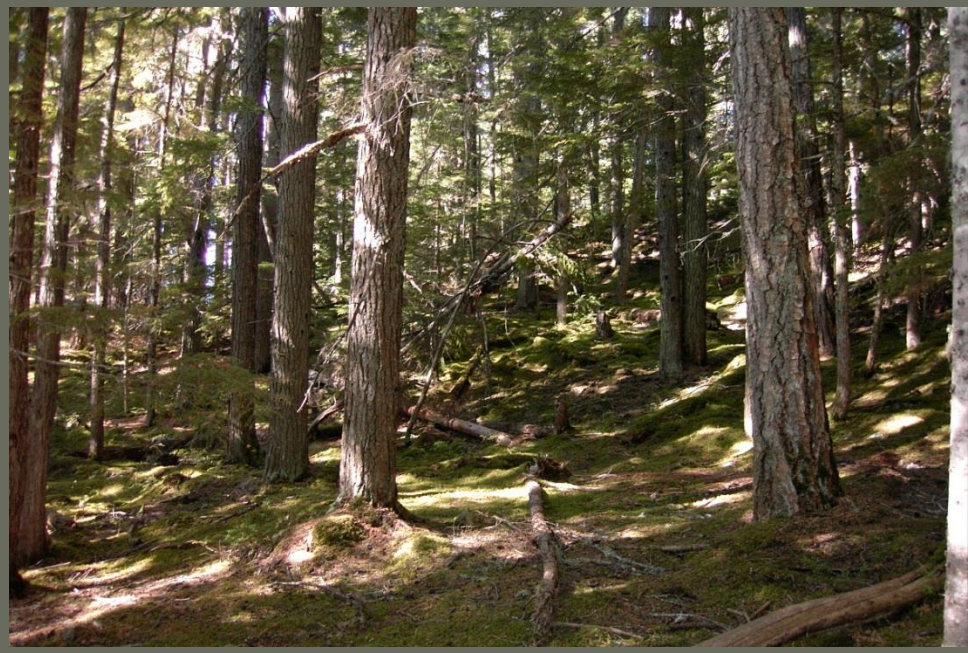
Resilient Forests: Gather an Inventory



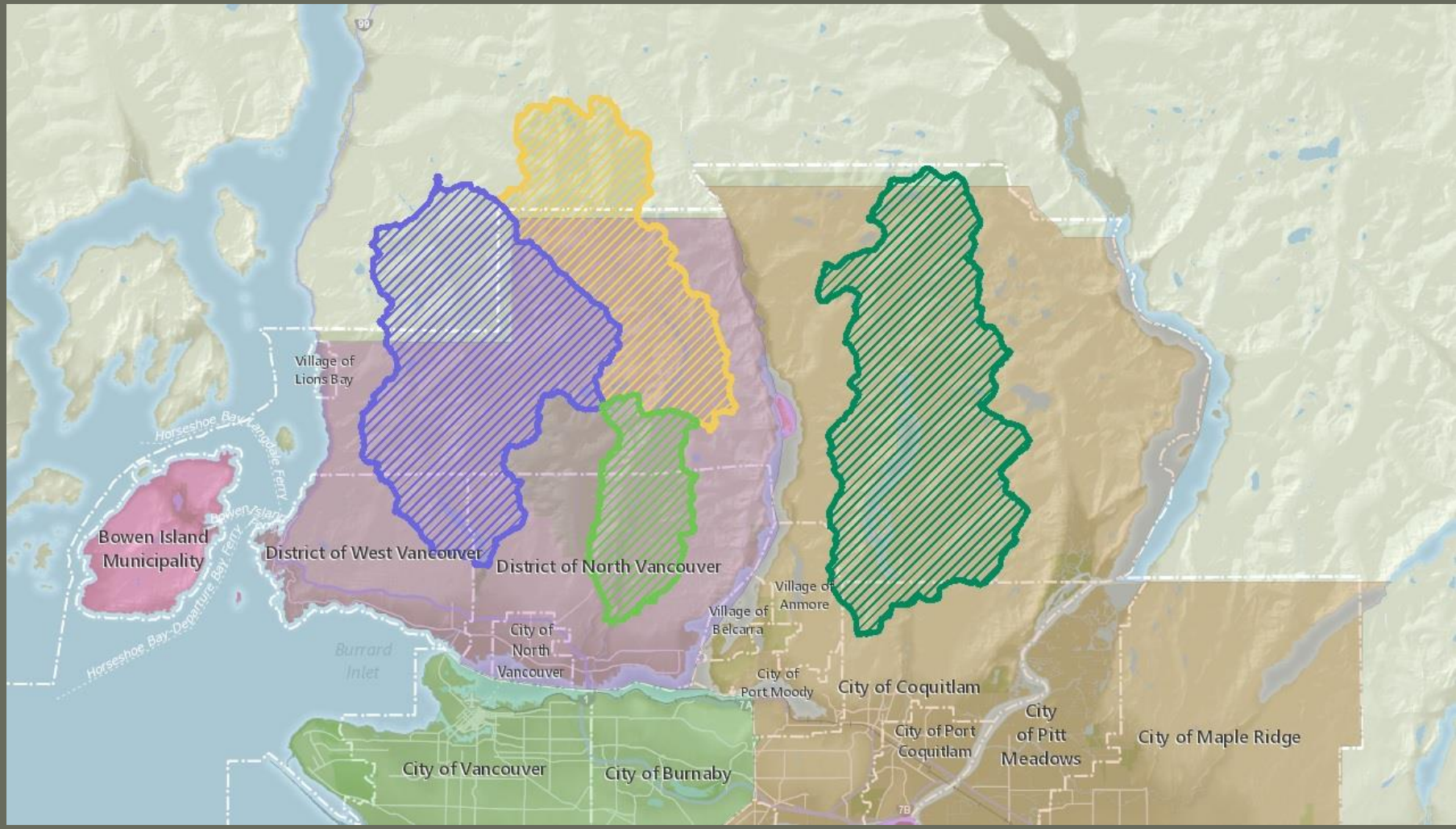
Source: BA Blackwell and Associates, TEM mapping



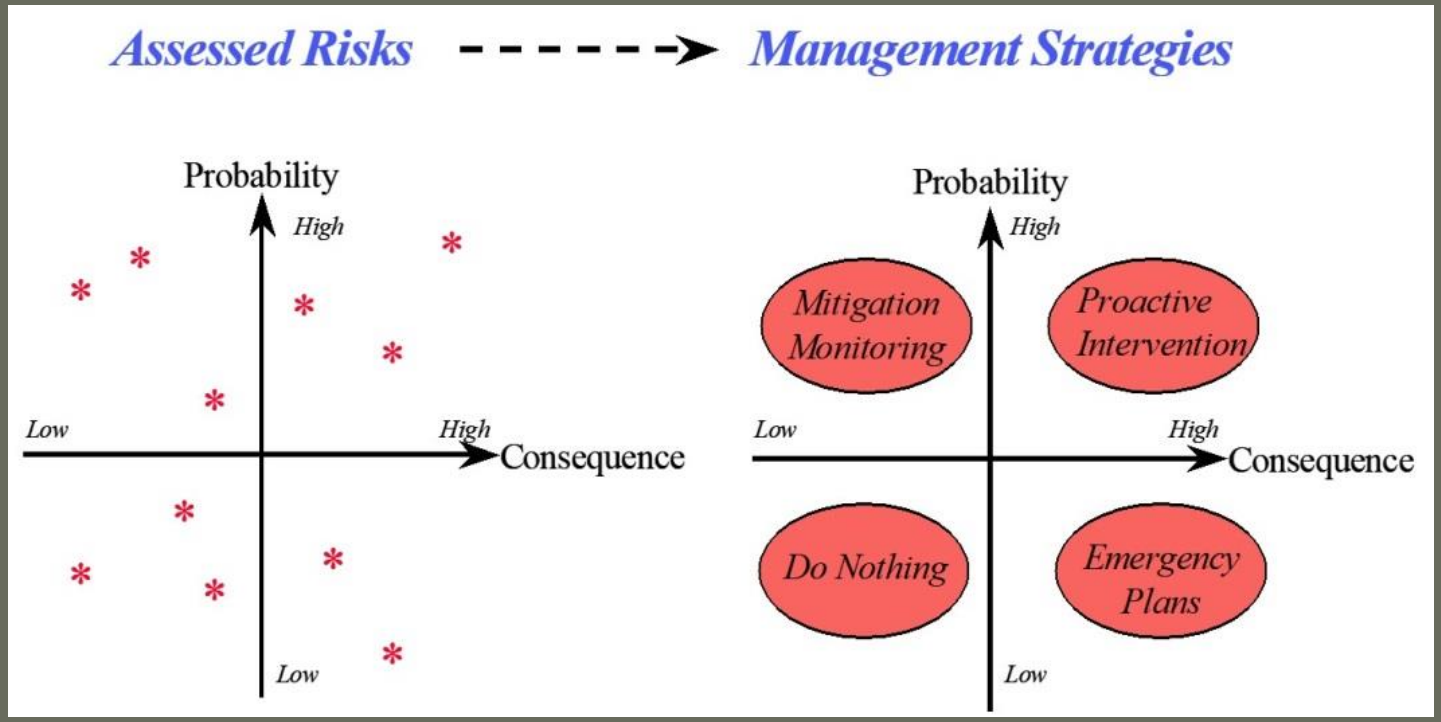
Resilient Forests: Vision Desirable Future Forests



Resilient Forests: Identify the Values-at-Risk



Resilient Forests: Create a Risk Profile



Resilient Forests: Define Management Objectives

- Mitigation of hazards
- Protection of sensitive and rare ecosystems
- Restoration of previously degraded or disturbed areas
- Minimizing disturbance of key sensitive ecosystems
- Interventions to mitigate interface wildfire, limit propagation of pests and diseases, manage invasive species

Resilient Forests: Operational Planning

- Tree species selection and stand density management
- Coastal Ecosystems encourage gap dynamics and the retention of acceptable levels of coarse woody debris (CWD)
- Interior Ecosystems maintain fire regime by applying prescribed fire

Resilient Forests: Implement a Monitoring Program

- To evaluate success
- Adapt to emerging issues
- Feedback to re-align management priorities

Forest resiliency planning is an

acknowledgement of forest ecological processes

in the face of any disturbance

Wildfire Risk : Key High-level Issues

- Wildfire risk is increasing in B.C.
  - Both from a climate and historic fire suppression perspective
  - Greater number of human ignitions
- Risk is a function of ecosystem
  - Areas with a frequent fire regime
  - Those areas impacted by disease and insects
  - Those areas heavily impacted by invasive plants

Wildfire Risk : Specific to Conservation Lands

- Monitoring is Key
  - Need to understand what is going on both within and adjacent to the area
  - Need quality data to measure changes
  - Need to relate this to wildfire risk
  - Need to understand the land use context you're operating within – historic harvesting, oil and gas development, urban etc.. – these may have specific impacts and concerns

Wildfire Risk : Inventory is Valuable

- Important to understand hazard and risk to each property – need to quantify these
- Where is the high risk spatially and if there was a disturbance would it be detrimental or beneficial – not all disturbance is bad
- Need to understand liability – if there was a person caused fire could it impact adjacent values –

Wildfire Risk : Understand the potential impacts

- Important to understand what the fire impacts – high severity fire has the potential to significantly degrade or damage the ecosystem
- Need to know values at risk and properly protect them

Wildfire Risk : Mitigation

- If the risk is assessed as intolerable there may be a need to plan and implement mitigation
- Mitigation on conservation lands is synonymous with restoration – you need a restoration approach
- Detailed plans and prescriptions are a requirement – they must be ecologically appropriate sound with clear objectives

Wildfire Risk : Mitigation techniques

- Fuel Reduction
  - Burning ,chipping and or fuel disposal removal
- Fuel Conversion
  - changing species composition
- Creation of Fire breaks

QUESTIONS??