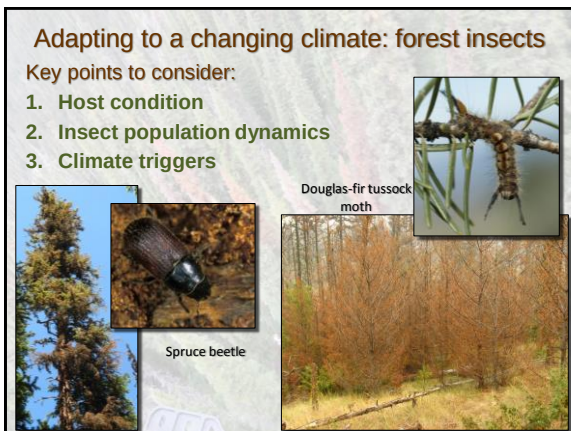








1. Host condition

What is the host condition now?

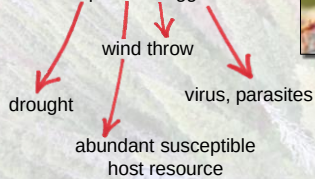
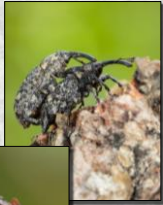
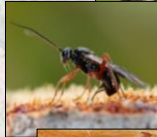
What is the host future (potential) condition?

- Old
- Young (dense, open, planted, natural)
- Stressed
- Downed, burnt, broken top, root disease
- Single-species / mixed species stand



2. Insect population dynamics

- Length of life cycle (1 yr / 2 yrs)
- Facultative vs. obligatory diapause
- Overwintering stage
- Season of dispersal / flight
- Eruptive vs. chronic
- Population *triggers*



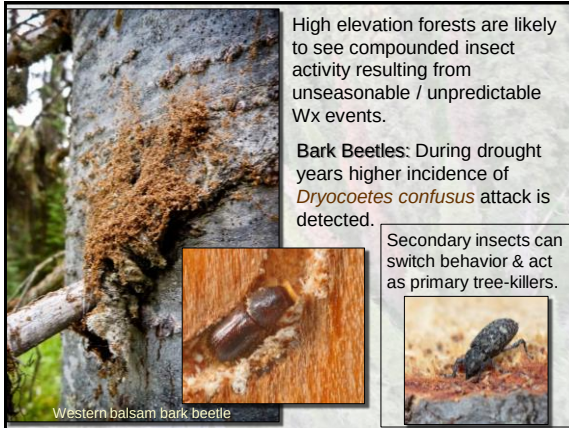
3. Climate triggers – that will affect 1 & 2

- wind/snow events that cause breakage or blowdown in Df, Sx or BI
- unseasonal weather (early spring, hotter, colder)
- drought events

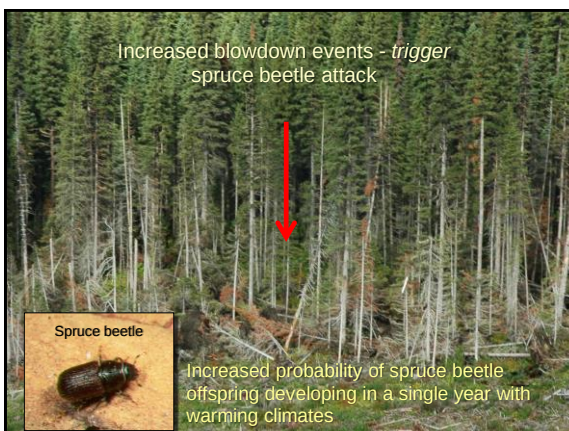


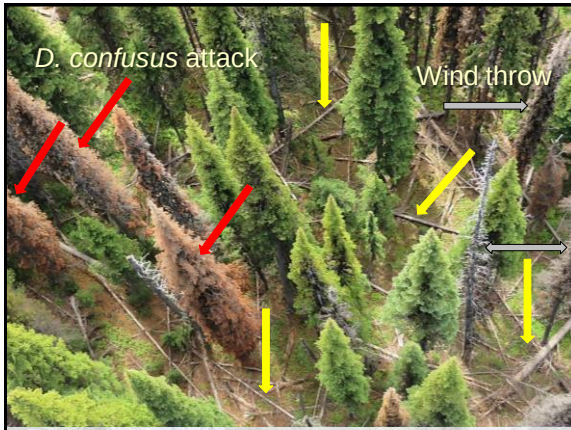
Douglas-fir beetle attracted to fresh windthrow

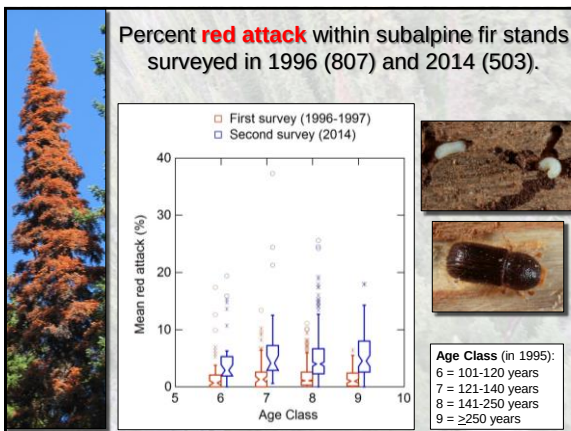


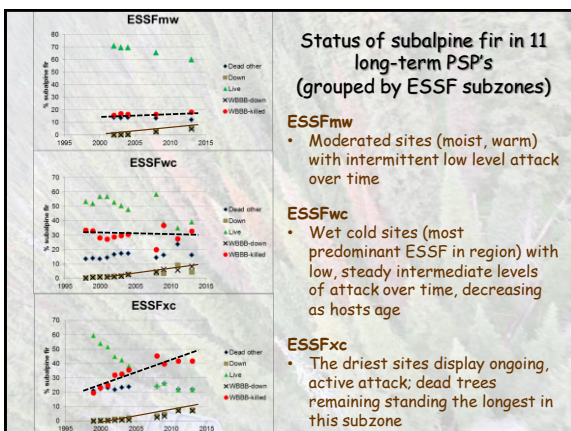














Defoliator response to changing climate is very complex.

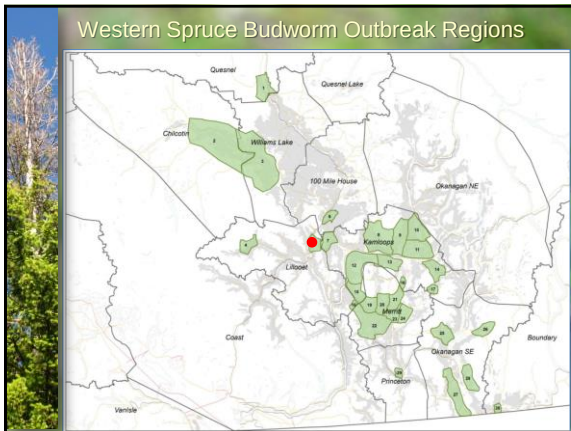


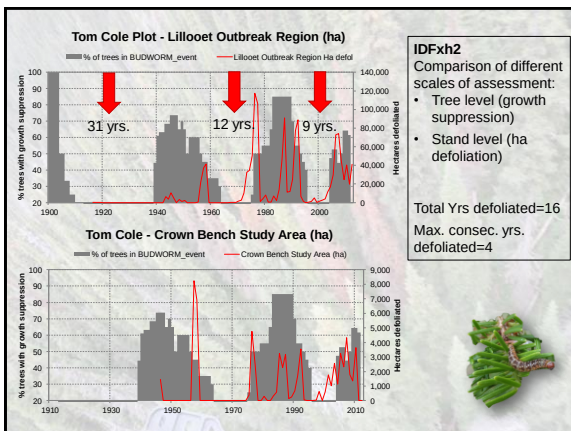
Western spruce budworm

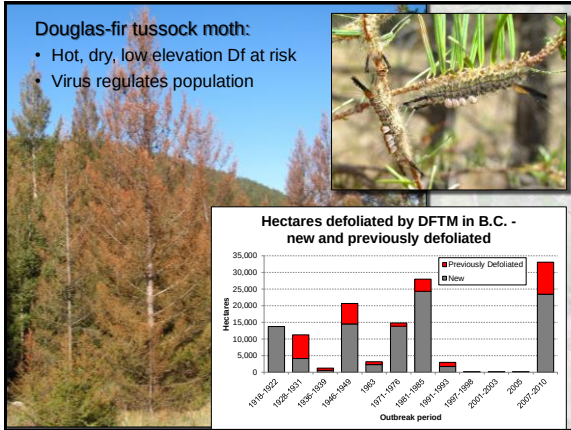
- insect and host phenology must be synchronous
- 3 dispersals - summer (moth); late summer (larvae); early summer (larvae)

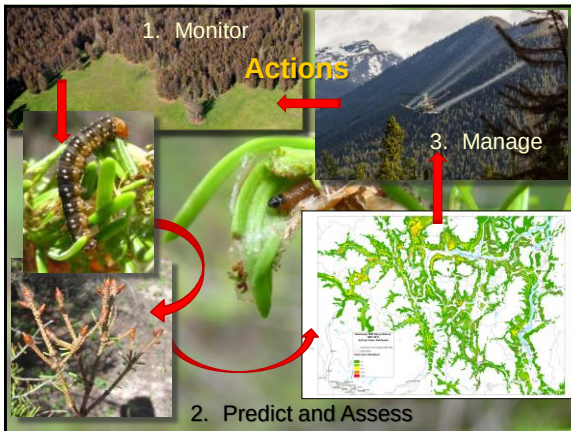












Actions:

- stand (periodic) and landscape (annual) monitoring of insect damage/activity
- respond and assess impacts of severe or uncharacteristic weather events
- implement existing hazard rating systems and support development of new risk models
- expect multiple pest impacts over life of a stand: defoliator; bark beetle; stem/root disease cumulative effects
- direct control to mitigate damage when and where appropriate – develop new control methods

