Whitebark & limber pine in the Crown of the Continent: status, trends & restoration

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Outline

• Range of WBP and LP in the CoC, in context of global range
• Health status & trend of WBP & LP from 2003 to 2014 in Cdn Rockies
• Health status & trend of WBP in Bob Marshall Wilderness Complex 1994 to 2014
• Threats from human development
• Restoration activities to date
• Challenges to restoration in CoC
• LP near northern limits of its range in CoC
• CoC important for LP in Canada
• CoC almost centre of N-S distribution for WBP
• Available at whitebarkfound.org
Overlap of both species creates identification challenges on the ground: look at cones & pollen cones.
Waterton-Glacier International Peace Park

highest levels of infection
- 62% increase to 82% in just southern stands
- **ALL plots:** 1.1% annual increase, 41% to 52%
39% increase to 80% in just southern stands

ALL plots: 2.4% annual increase, 35% to 62%
Bob Marshall Wilderness

- 87% decline in live trees/ha (graph)
- 90% decrease in live but unhealthy trees
- 137% increase in number of dead trees
Threats from development

- Logging mostly incidental in mixed species stands
- Oil & gas & coal mining: exploration roads, well pads, pipelines, mine sites
- Wind farms: potentially LP ridges
- Recreational properties – LP ridges, WBP at backcountry lodges
- Ski areas: removing WBP new & old runs
- One case where heli ski company cut down high elevation WBP for a landing site
- Climate change – leave to Bob
Restoration: plus trees

- Plus trees: those that appear healthy in stands of high WPBR mortality
- Protect from MPB with Verbenone & GLVs
- Cage cones, collect & extract seeds
- Bank some seeds for gene conservation
- Collect scion & pollen
- Rust screening & seed orchards
Restoration: fire

- Fire reduces competition from other conifers
- Enhances seed bed
- Wildland or prescribed fire
- Plant after fire
Restoration: planting

- Potentially rust-resistant seedlings outplanted (seeds)
- Experiments with fungi inoculation
- Monitor survival
Restoration challenges

• Restoration of WBP further ahead than LP
• No rust screening facility in Canada
• Seed sources declining; CLNU threshold
• MPB & interactions with climate change
• Many dead forests might not have “right” fungi
• Site (in)accessibility impacts caging & planting
• Declared wilderness areas on US federal land have restrictions
• Plus side: “natural selection” already happening
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• Consultation on legal listing of LP; go to www.sararegistry.ca … deadline May 4