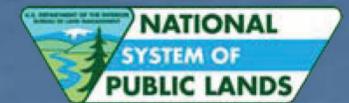


Whitebark Pine Stand Conditions after Mountain Pine Beetle Outbreaks in the Intermountain West



(preliminary results from year 1 of 2-year study INT-EM-08-02)

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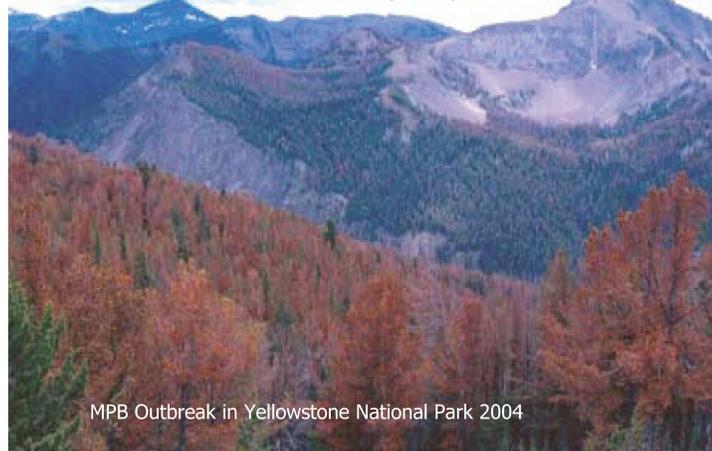


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Introduction

Whitebark pine (WBP) is a keystone species of high-elevation ecosystems and is currently at risk due to a combination of white pine blister rust, forest succession, and recent outbreaks of mountain pine beetle (MPB). We need to quantify WBP health following MPB outbreaks to determine potential restoration needs in severely impacted areas.



MPB Outbreak in Yellowstone National Park 2004

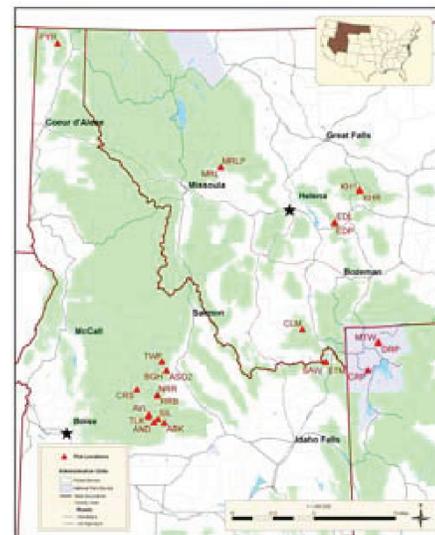
Objectives

1. Quantify the extent and severity of MPB impacts in whitebark pine stands following outbreaks.
2. Document blister rust status of remaining mature live whitebark pine.
3. Record health of whitebark pine regeneration.
4. Determine probable stand trajectory by recording health and abundance of other tree species
5. Compare current outbreak losses with losses from the 1930's in central Idaho



Blister rust on whitebark pine

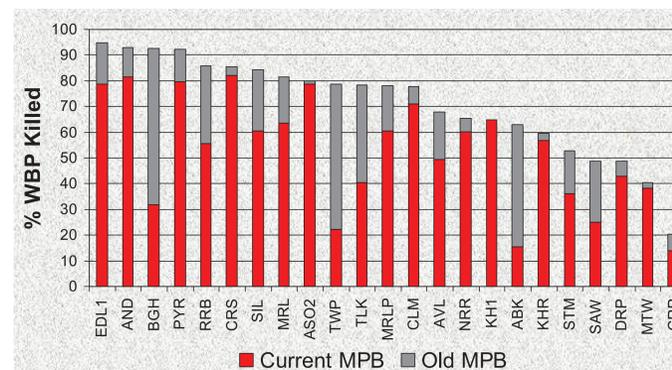
Methods



- Sampled 24 stands with variable radius plots in ID, MT, Yellowstone NP
- Site data included: elevation, slope, slope position, aspect, GPS
- Tree data included: species, DBH, MPB, blister rust, and other damage
- Regeneration was tallied on 1/300th acre subplots

Preliminary Results

MPB Killed Whitebark Pine



From 20 – 95% of WBP tallied in each area were killed by MPB including current and older mortality.

WBP density dropped by more than 50% in the majority of areas surveyed.



MPB Adult

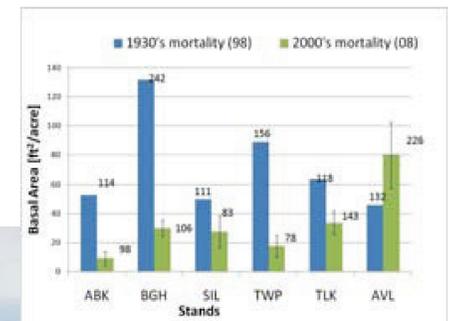
Photo by Ryan Bracewell



MPB galleries

Preliminary Results

Comparing current MPB outbreak with the 1930's outbreak in Central Idaho



In 5 of 6 stands attacked in both periods, more WBP basal area was killed in the 1930's.



White Pine Blister Rust

Infection levels on remaining live mature WBP in the sampled areas averaged:

- 70% in northern Idaho & western Montana
- 4% in central Idaho

Regeneration

- Other species outnumbered WBP in more than half the areas
- WBP regeneration was >200 TPA on all but three areas
- Most WBP regeneration was <1 foot tall
- Blister rust infected 0% to 68% of the WBP regeneration



Future Work

Additional sites will be surveyed and data analysis completed in 2009-2010