

Blister Rust Screening for Whitebark Pine in BC



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Outline

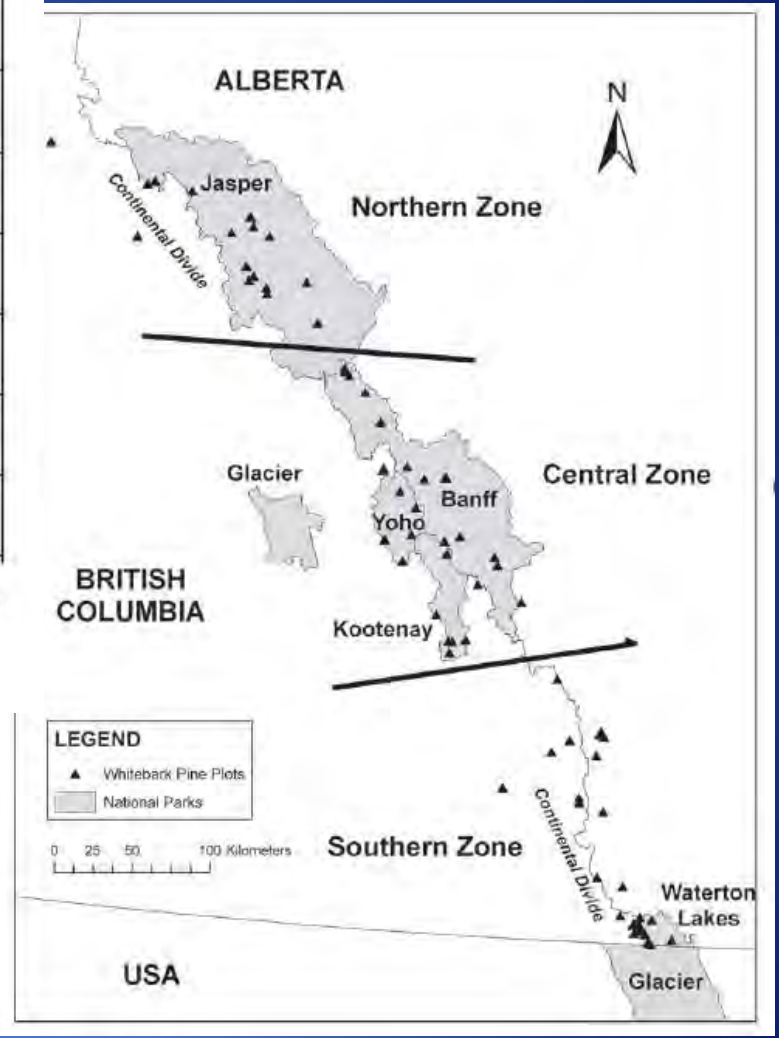
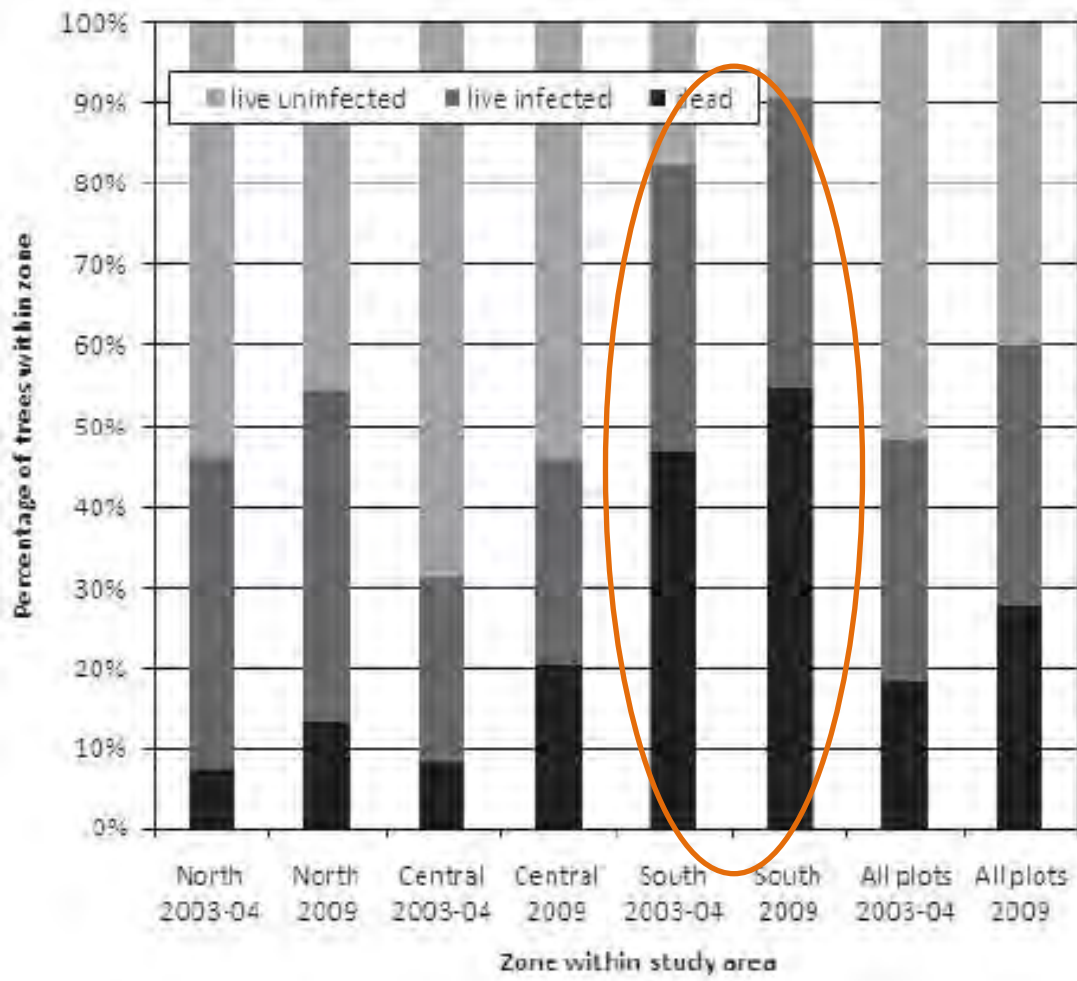
- **Intro to blister rust**
- **Why develop resistance?**
- **Rust screening procedure**
- **New BC effort**
- **Challenges**

Cronartia ribicola



- **Airborne Spores enter through needles**
- **Travel towards stem**
- **Damage living tissue**
- **Girdle the tree**
- **Often kills cone-bearing branches first**





[Re-measurement of whitebark pine infection and mortality in the Canadian Rockies. Smith, Cyndi M.; Shepherd, Brenda; Gillies, Cameron; Stuart-Smith, Jon. 2011. In: Keane, Robert E.; Tomback, Diana F.; Murray, Michael P.; and Smith, Cyndi M., eds. 2011. The future of high-elevation, five-needle white pines in Western North America: Proceedings of the High Five Symposium. 28-30 June 2010; Missoula, MT. Proceedings RMRS-P-63. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.](#)

COSEWIC
Assessment and Status Report

on the

Whitebark Pine
Pinus albicaulis

in Canada



ENDANGERED
2010

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada



COSEPAC
Comité sur la situation
des espèces en péril
au Canada

**“High risk of extirpation
in Canada”**

Blister Rust Screening BC

To call a tree “putatively resistant”...

- Dominant or co-dominant tree.
- Has abundant foliage (at least average for stand).
- Tree has been carefully examined – has no cankers.
- If cankers present, only inactive, healed, or dead cankers.
- Occurs in midst of heavily impacted (very high incidence) blister rust with most trees having multiple cankers.

Blister Rust Screening

Selection &
Collection

Propagation
& Rearing

Inoculation

Repeated
Observation

Disease
Resistant
Trees



Summer 2011

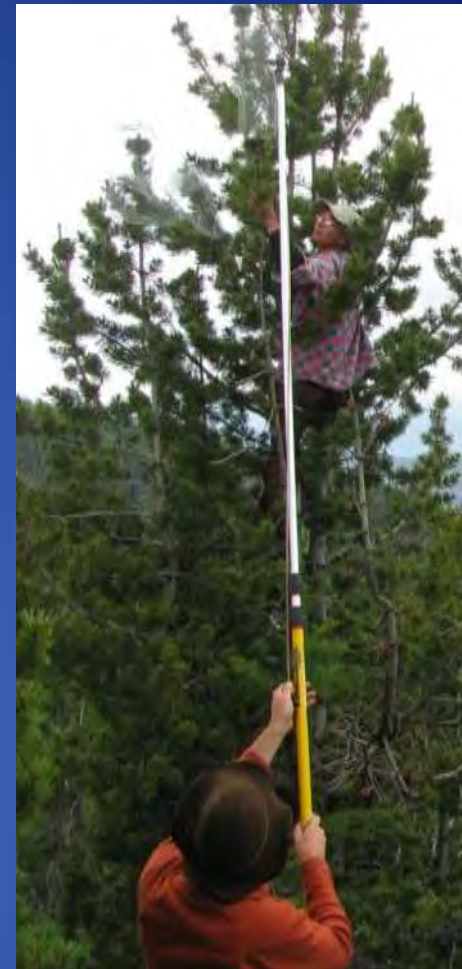
West Kootenays

- 6 Sites
- 20 Trees



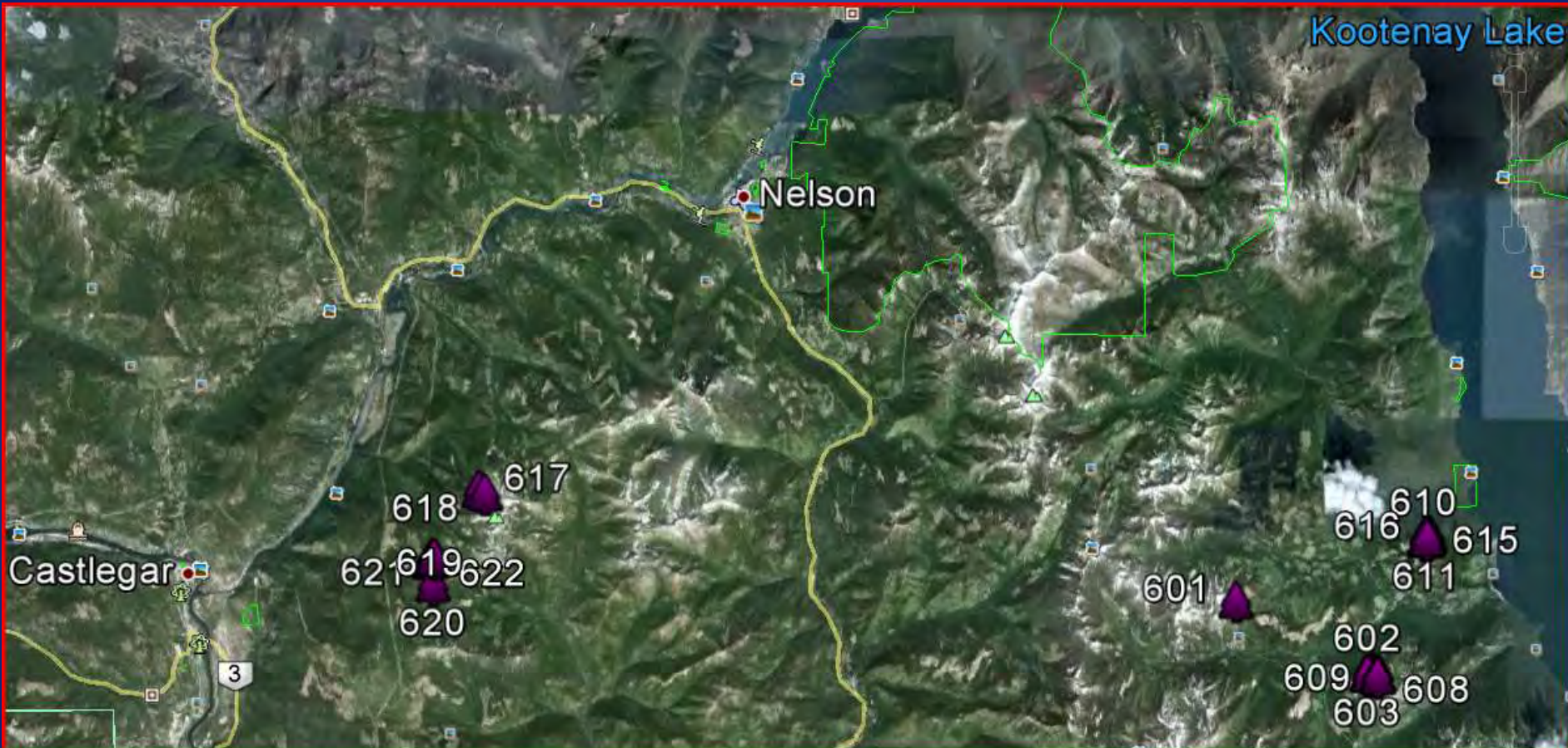
East Kootenays

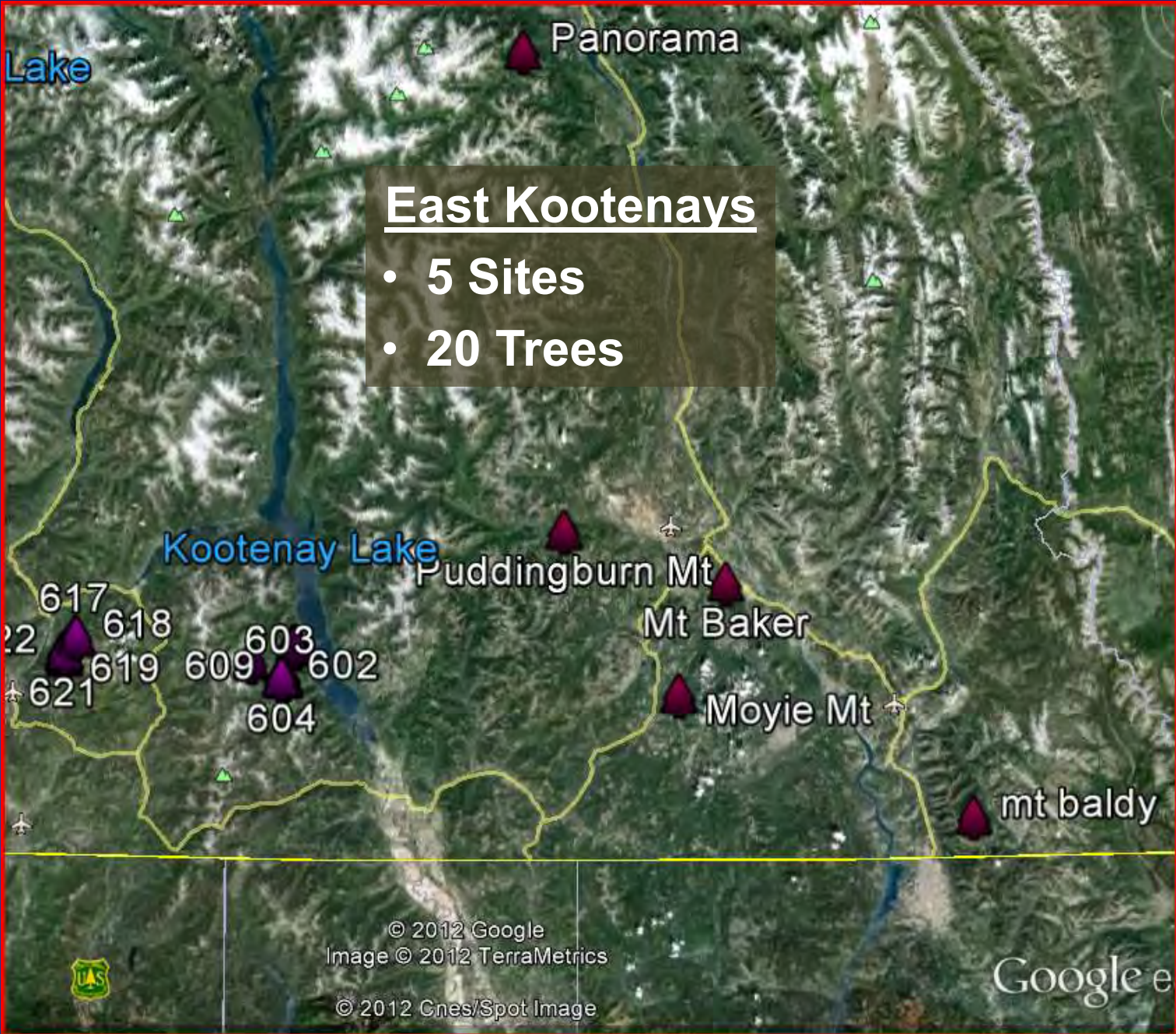
- 5 Sites
- 20 Trees



West Kootenays

- 6 Sites
- 20 Trees





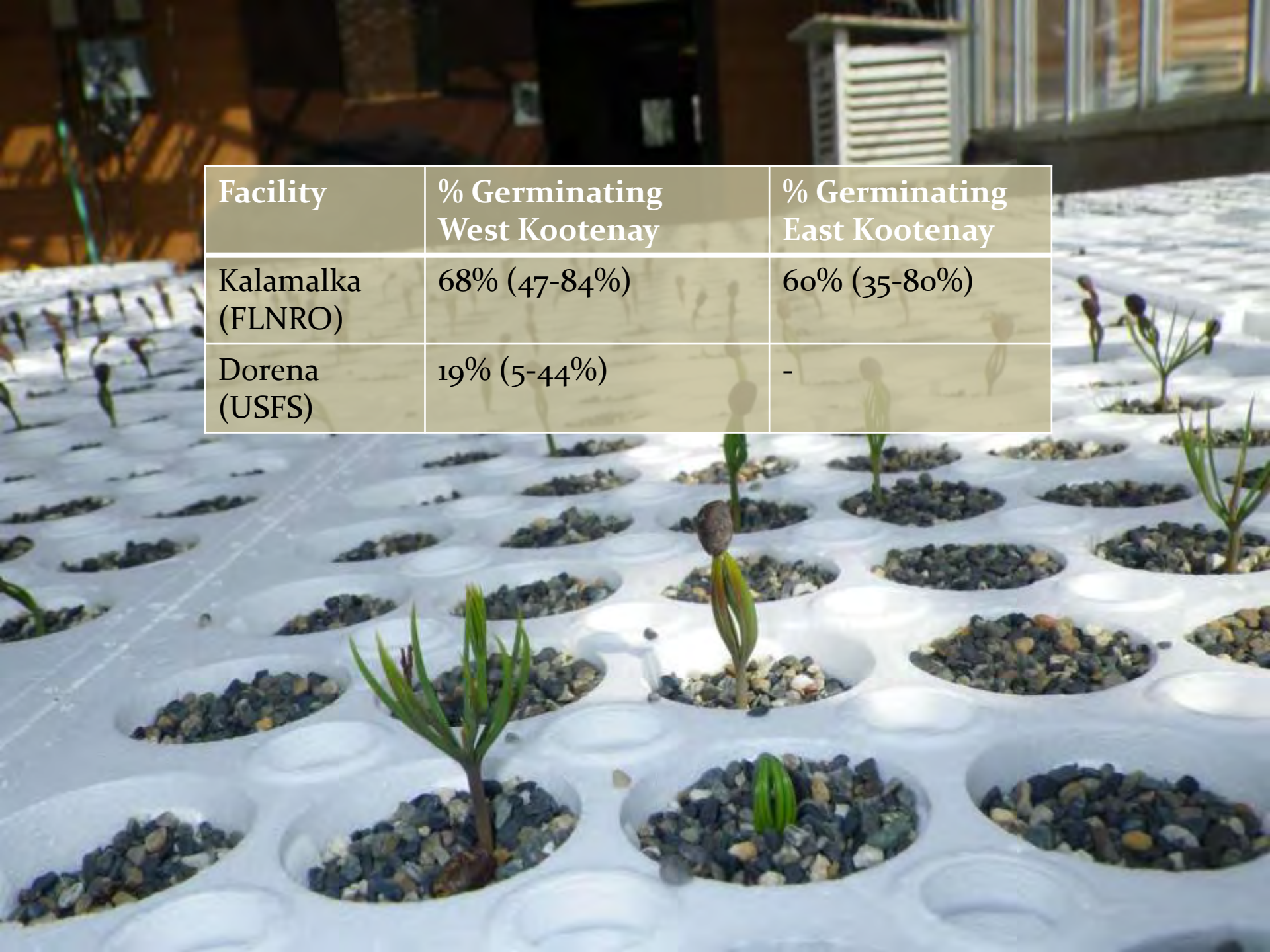
East Kootenays

- 5 Sites
- 20 Trees

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Facility	% Germinating West Kootenay	% Germinating East Kootenay
Kalamalka (FLNRO)	68% (47-84%)	60% (35-80%)
Dorena (USFS)	19% (5-44%)	-

Inoculations

A large, modern greenhouse with a high, arched metal frame and translucent panels. The interior is filled with numerous long, white trays stacked on a raised platform. Each tray is densely packed with small, young plants in individual circular cells. The plants are in various stages of growth, some showing small green leaves. The greenhouse is well-lit, and the overall atmosphere is one of a controlled, scientific environment for plant cultivation and research.

Kalamalka Research Centre (BC)
Dorena Tree Improvement Center (USFS)
Field Trials (Kootenays)

Beginning 2013 - 2014

Challenges encountered

Hungry Nursery Rodent

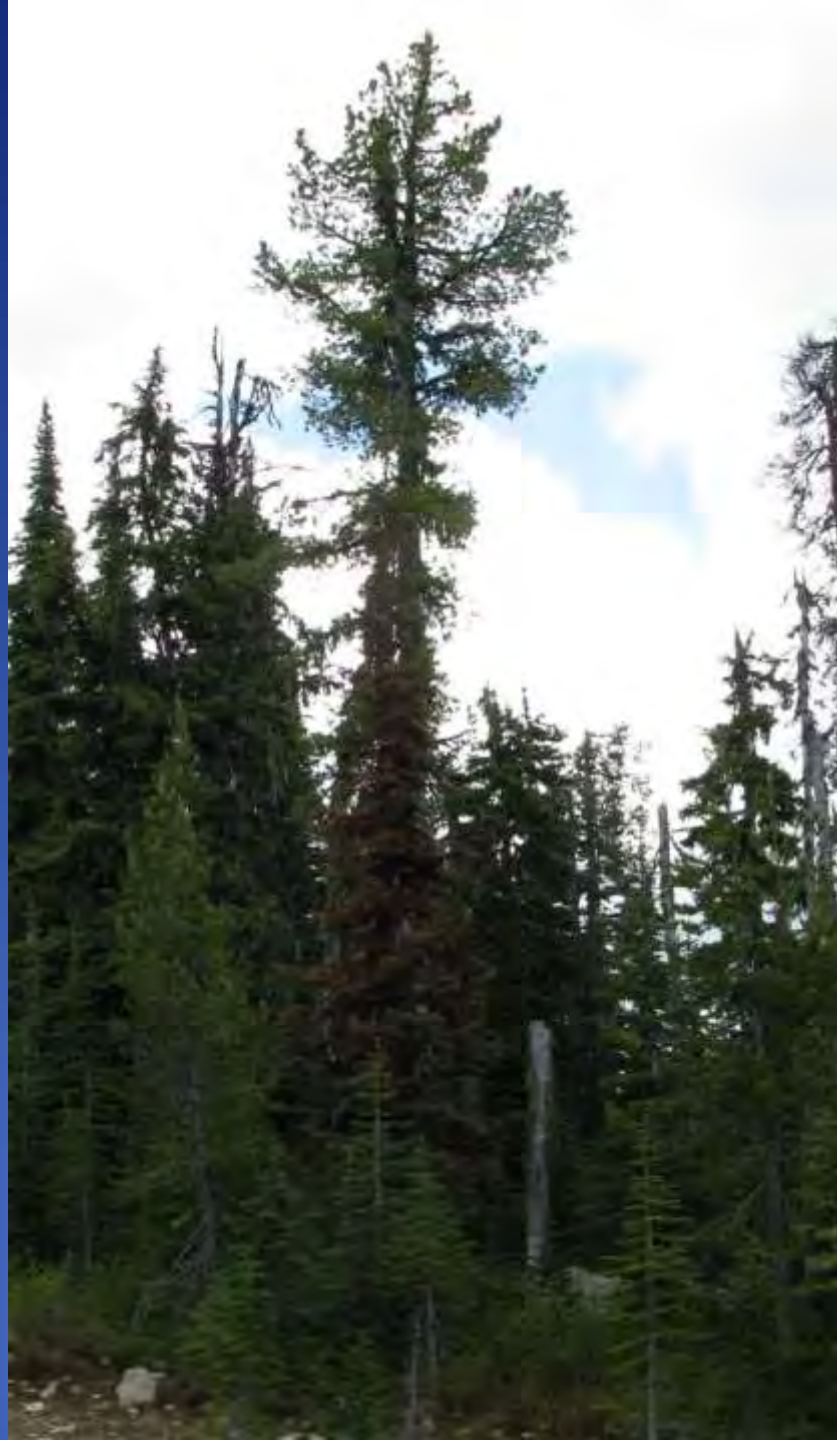


Challenges encountered



Challenges Encountered





Challenges encountered

Mountain Pine Beetle



Puddingburn Mtn, BC



THE SCIENTIST, JESSE LOGAN, FIGHTS A BATTLE AGAINST FIRE-RESISTANT PINE AND WHITE-BARKED PINE BEETLES ON HIS MOUNTAIN TRAIL.

Beetle Maniac

One backcountry-loving scientist's wild musings have become a frightening reality.

JESSE LOGAN MAY BE A SCIENTIST, but he's no doghead. A lifelong Rockies resident, Logan is an avid fly-fisherman and expert backcountry skier, and he's spent an enviable number of days exploring off-trail. And like anyone who has rugged terrain wilderness time in the northern Rockies, he has caught shocks from the slaw-wick among the white-bark pine that grows just below treeline.

So, to find that Logan, who began his career as an agricultural entomologist, ultimately focused on the mountain pine beetles that led his straight back to those same trees.

Known in his field as the beetle guy, Logan spent most of the 1990s studying how forest swarms nested below on lower-elevation lodgepole pines. At the USDA Forest Service's Rocky Mountain Research Station in Logan, UT, where he dedicated 15 years to beetles, he noticed that the bugs were highly sensitive to temperature.

As more evidence of global warming emerged in the mid-1990s, Logan began to get a sinking feeling in the pit of his stomach. With difficulty, he wrangled funding from high-ups in DC to plug some globally warmed temperatures into a mathematical model. "I was really

frustrated," he says. "Just an amateur." But what he found scared him. With just a slightly longer summer season, his model predicted, mountain pine beetles could complete their life cycle in one season instead of two, emerging in greater numbers to overwhelm trees and habitats that were once mostly beyond their reach.

Sadly, those theories have become hard fact. Logan caught his first glimpse of the oviducts in 2003 at the top of the Sawtooths outside Stanley, ID. The higher-elevation white-bark pines were under attack. By the next year, the needles would turn red and drop, leaving a wash of dry, weathered, beetle-free stumps. Even as a scientist who had witnessed numerous beetle kills, Logan was dumbfounded. "It's absolutely heart-breaking," he says. "I can't find other words."

His findings drew the Forest Service toward more long-term ecological research, but Logan left the agency last year—in part, he says, because of a lack of enthusiasm for such research. Now mostly retired at 63, he tries to enjoy the wilderness as much as he can. The Forest Service allowed one of his favorite ski slopes on the northeast aspect of Emigrant Peak in southern Montana, and Logan says that white-bark pine forests could become functionally extinct in as soon as a generation. "It's now one of the most stark ecosystems in the world," he says. "But my grandchildren may never see it."

Roscoe Wilcox



Thanks

Vicky Berger

Adrian Leslie

Randy Moody

Richard Sniezko



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