

# **Whitebark research and restoration adventures in (west) central BC**

**Sybille Haeussler**

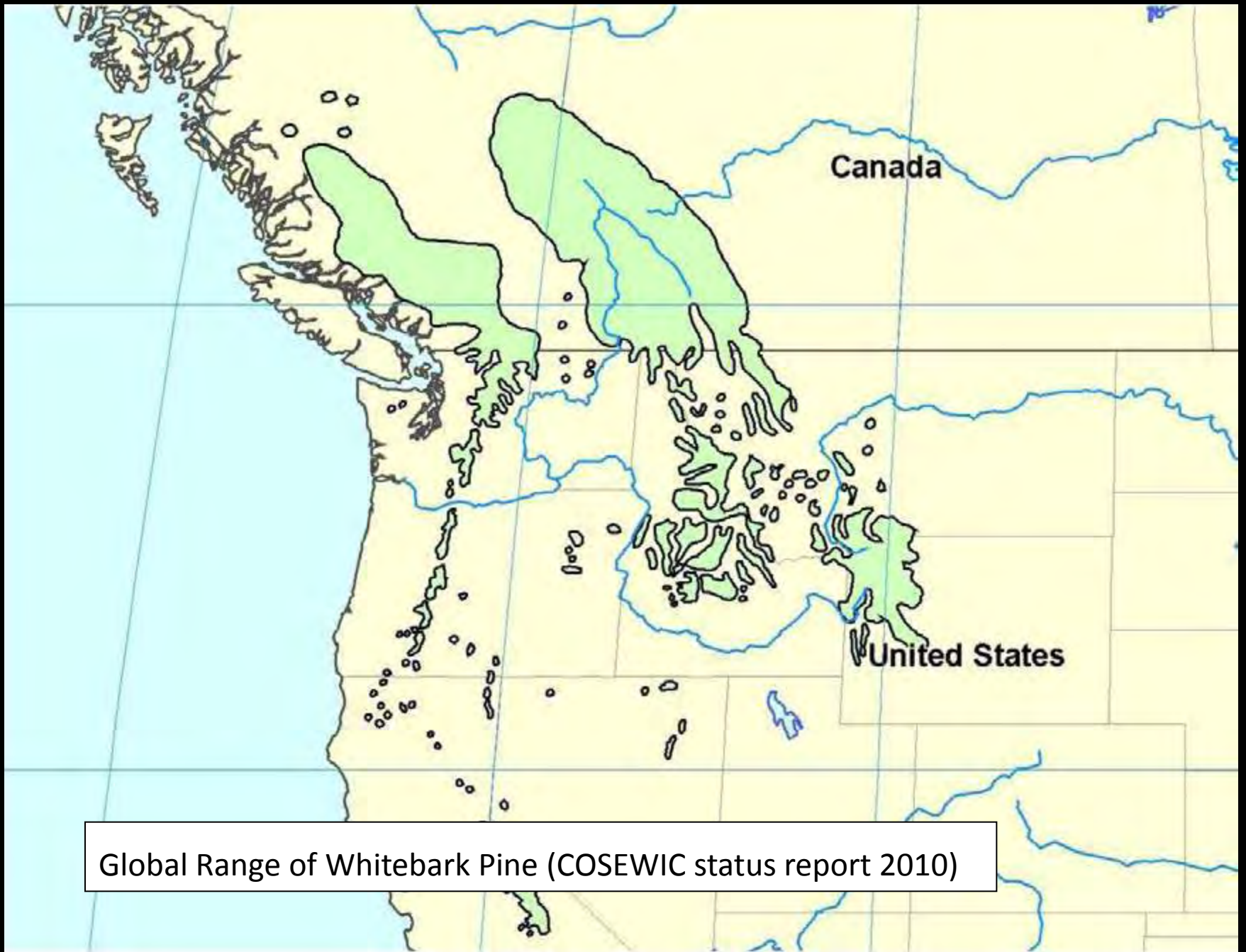
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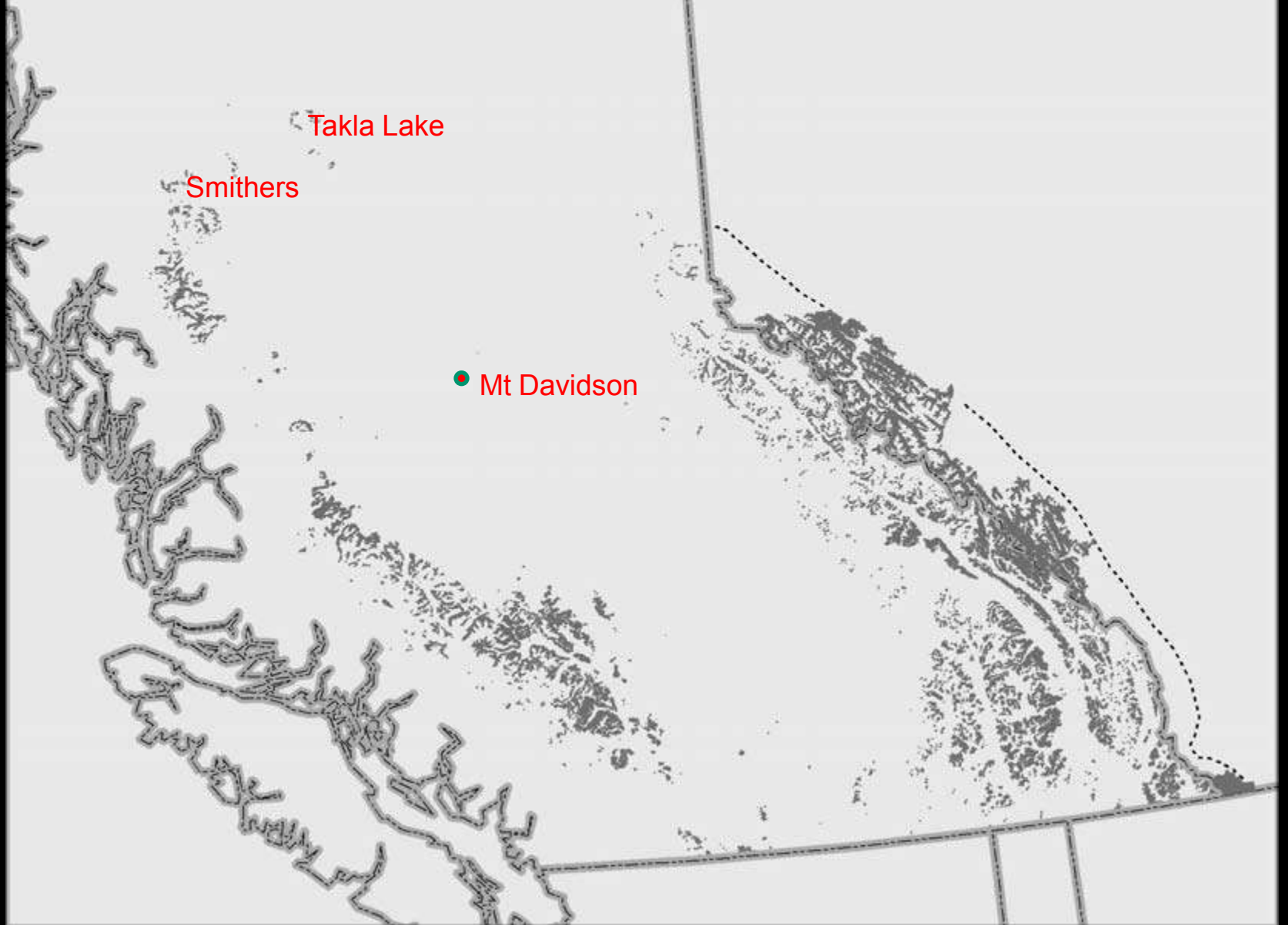
**Smithers, BC**

photo H.Williams



Global Range of Whitebark Pine (COSEWIC status report 2010)

Canadian Range of Whitebark Pine (COSEWIC status report 2010)



# Northern Research

## Alana Clason's PhD Thesis Objective:

Evaluate the probability of persistence and expansion of whitebark pine (*Pinus albicaulis*) at the northern edge of its range over time under a changing climate



<http://www.nps.gov/nepe/naturescience/birds.htm>



# Study area

## Omineca Mtns

## Coast Mtns

Babine Mtns Provincial Park



Mt. Sidney Williams



## Rocky Mtns

Willmore Provincial Park



## Central BC

Mt. Davidson



## Cariboo Mtns

Dore River Fire, McBride



# Thesis Components

1. Map current northern distribution
2. Estimate the probability of regeneration and mortality across gradients in site and climate within current northern populations
3. Forecast distributional change over time:
  - where is whitebark pine most likely to persist or expand under a changing climate?



# Since 2004, 3 significant wildfires in whitebark pine country



Atna Fire, Morice Lake Provincial Park, Aug 2012

L. Helkenberg photo





**2010 Gosnell Fire**

**1974 Clore  
Canyon Fire**

**2012 Atna Fire 1400 ha**

Morice Lake

**2004 Nanika Fire**

Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
© 2012 Cnes/Spot Image

21.9 km  
0846.81 m E 5989196.11 m N

Streaming ||||| 100%

# Poor natural regeneration on wildfires

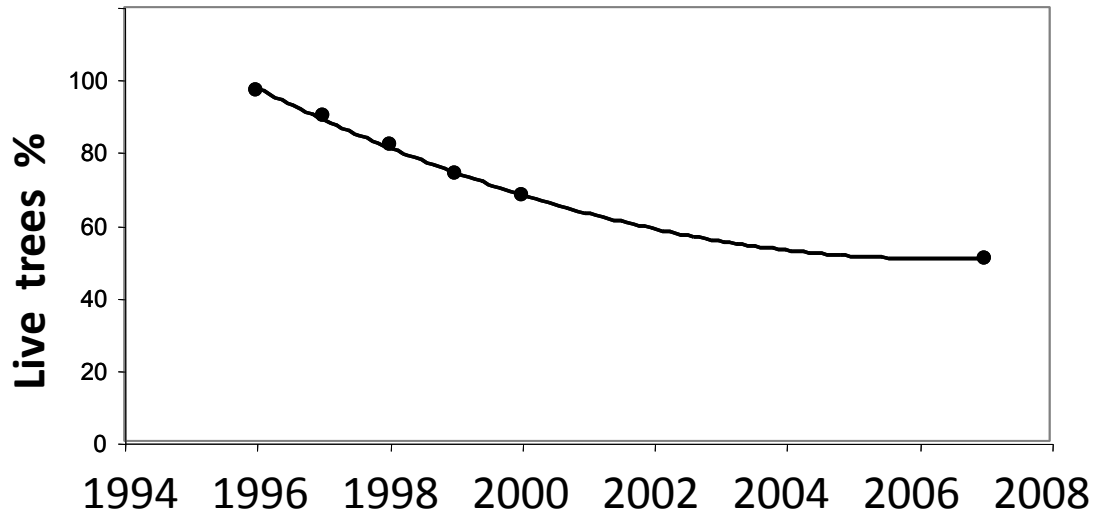


**1974 Clore Canyon Fire**

S. Curtis-McLane

# 1967 Chapman Fire, near Smithers

## Blister rust mortality



WBP dying at 10% per year in 1995-1996, but rate has declined as numbers of trees goes down

Data from Alex Woods (forest pathologist, Smithers).



40-yr old rust resistant tree

# 2004 Nanika Fire



2004 Nanika wildfire

# Clear need for Restoration

1. Non-local Seed – to jump start learning process
  - 2011 Gosnell Fire trial
  - 2012 Wetzin'kwa - Hudson Bay Mtn trial
2. Local Seed
  - 2011 west central BC seed collection
  - 2011-2012 local nursery seedling production
  - Future? –rust resistance



Gosnell Fire – severely burned restoration site



**Gosnell Fire – MPB overstory + low severely burn**

# Non-local, non-rust resistant seed



- ~400 UNBC seedlings (2008)  
Linda Tackaberry, Hugues Massicote
- Mt. Sidney Williams seed



# Spring 2011- Gosnell Fire



101 3-yr old seedlings planted



500 seeds cached

# Spring 2012 Gosnell Fire



First yr survival: 99%  
Best vigour on severe burn



1st-yr germination rate  
19% on severe burn  
4% on MPB/light burn

# Weed introductions



# 2012 planting trial

## Wetzin'kwa Community Forest

## McBride Community Forest



Iconic Hudson Bay Mtn, Smithers

Elevational transect in northwest and northeast BC

# Hudson Bay Mtn Spring 2012



Low elev. (1000 m)



Mid elev. (1350 m)



High elev. (1700 m)

# Local Seed Collections 2011



# Caging and collection: 5 sites, 52 trees



# Seed Extraction: 31,000 seeds

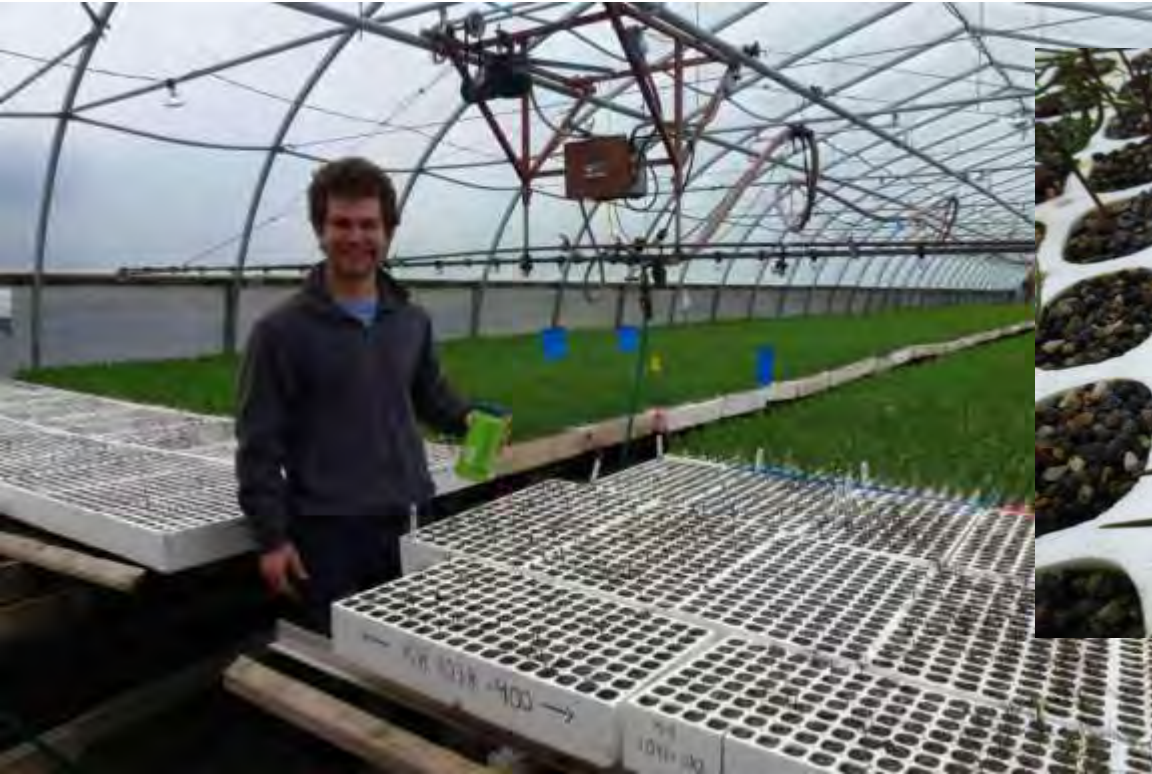




# Seed stratification: 7,000 seeds



# Nursery: 1,000 seedlings!!!!



Big Thanks to Woodmere Nursery, Telkwa, BC

# Future Plans – Rust resistant local trees





# Top 5 random discoveries

**5. Grizzly bears can be very scary up close**

4. Nutcrackers are everywhere, but what do they eat?



Nutcracker survey transects: Kerrith McKay 2011

3. *Pineus pinifoliae*  
Pine leaf adelgid



On 5-needle pine



On spruce



2. Bear marking & climbing

Grizzly or black?



# 1. Lots of whitebark regen. under dead lodgepole pine stands





# Acknowledgements

2011: K. McKay, N. Thum, J. Krakowski

2012: A. Sheriff

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Nursery, NSERC, PICS