

# Whitebark Pine Direct Seeding Trials

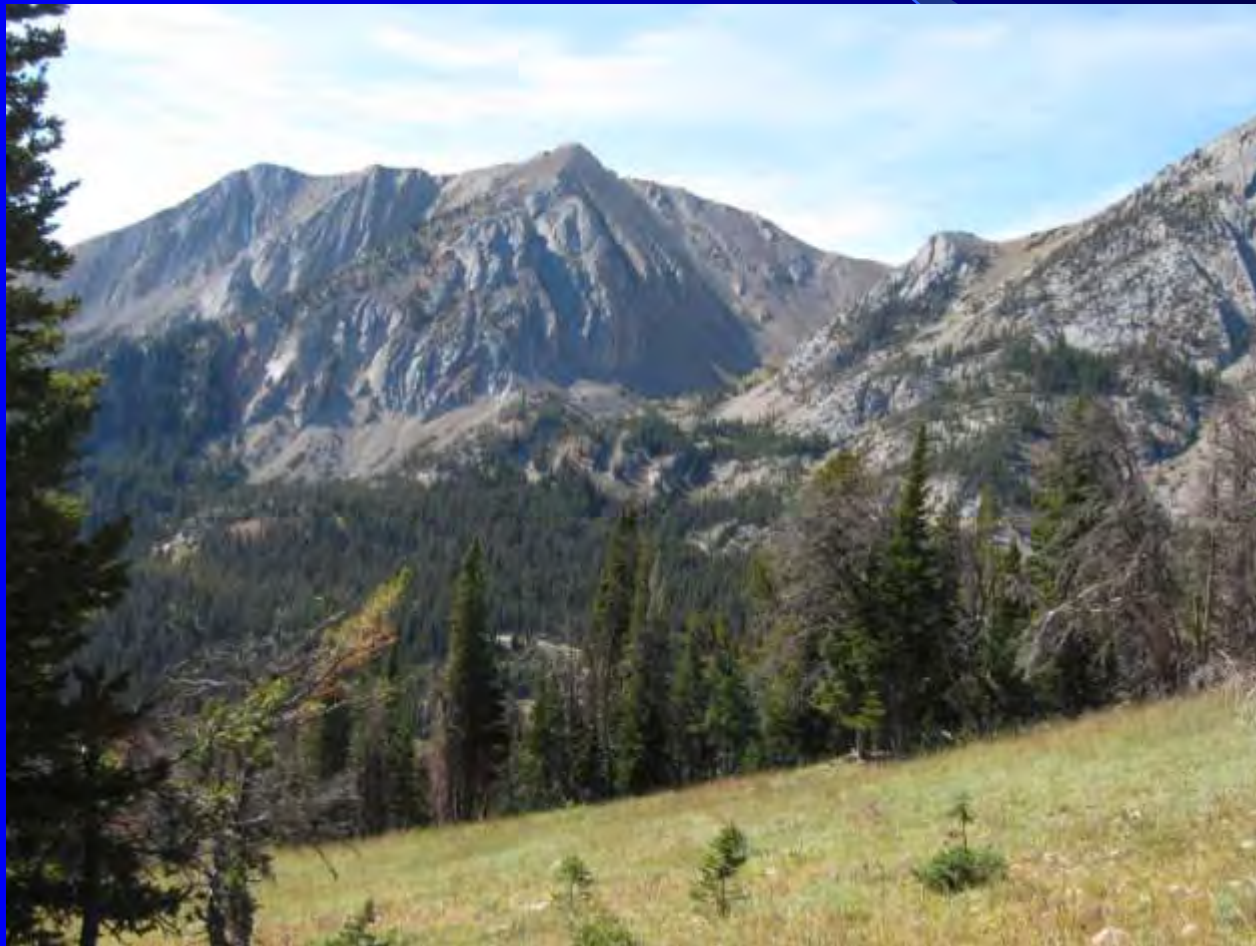
John Schwandt, PhD

with a huge assist from a large cadre  
of whitebark pine enthusiasts



# Justification

- Remoteness of many sites needing planting
- Logistics/costs of planting seedlings





# Objectives

- To test direct planting of seeds in field conditions
- To test efficacy of 3 seed treatments to promote germination
  - 30-day Warm stratification
  - Seed scarification
  - Warm stratification & scarification
  - Control (untreated)
- Compare 3-seed caches with planted seedlings



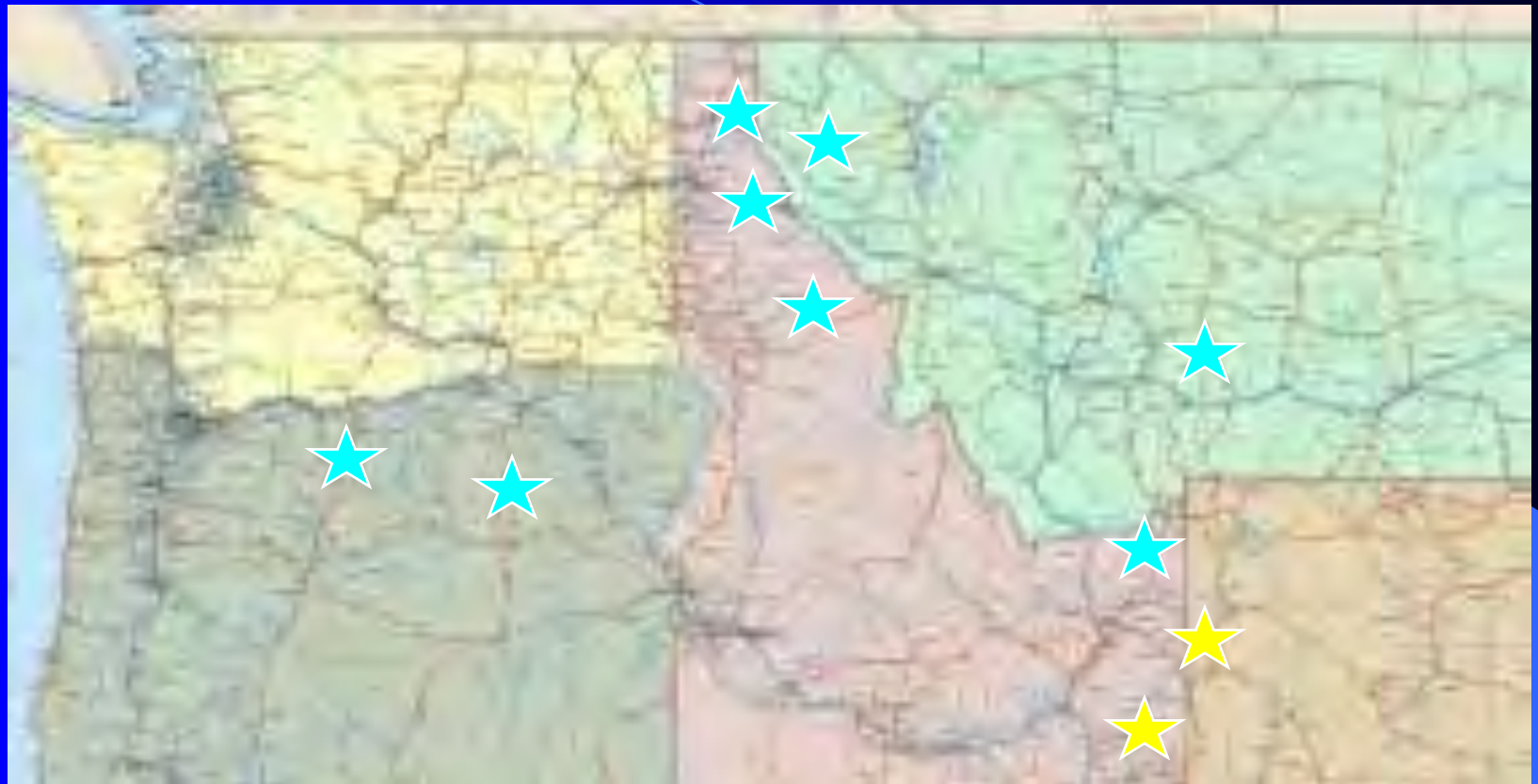
# Site Selections

- CRITERIA;
- Accessible site
- Local seed available
- Local interest (help)





# Eight Seed Trials



2009  
Vinegar Hill – 11/05  
Mt Bachelor – 10/06

2009  
Thompson Mt  
Gold pass  
Fairy Lake  
Ulm Peak

2010  
Big Sky Mt  
Toboggan Ridge

2012  
Targhee  
Sawtelle Peak

# Fairy Lake



Near Bozeman, Mt



# Gold Pass – IPNF – St. Joe NF

## Sidnee Dittman



Near St. Regis, Mt



# Ulm Peak – IPNF

## Coeur d'Alene NF



Near Thompson Falls, Mt



# Thompson Peak – Lolo NF

## Valerie Walker & Crew



Chippy Creek Fire, Near Plains, Mt.



# Toboggan Ridge - Lochsa Clearwater NF





# Yellowstone Club – Big Sky, MT





Who said that it was going to be  
a picnic in the woods?





# 1-2 Years Later...





# 3 years later...

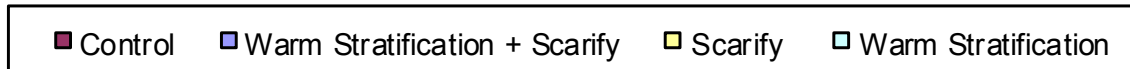
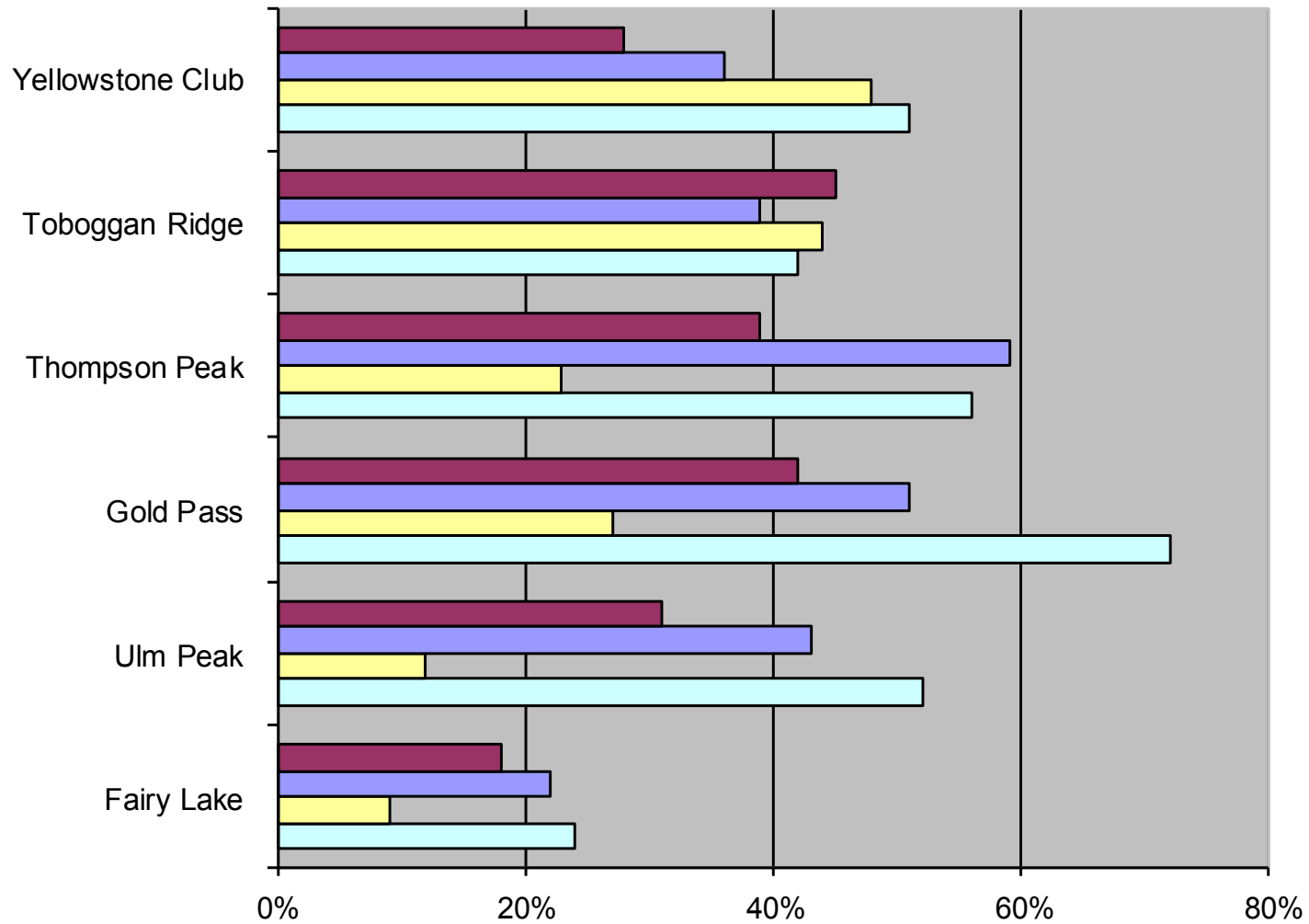




# Digging up ungerminated seed



## Total Germination by Treatment and Site





# Germination Results by Site and Treatment

Site	Warm Stratification	Scarify	Warm Stratification + Scarify	Control	Total Germination
Fairy Lake -09	24%	9%	22%	18%	18%
Ulm Peak -09	52%	12%	43%	31%	34%
Gold Pass -09	72%	27%	51%	42%	48%
Thompson Peak -09	56%	23%	59%	39%	44%
Toboggan Ridge -10	42%	44%	39%	45%	41%
Yellowstone Club -10	51%	48%	36%	28%	42%
Average Germination	50%	27%	42%	34%	38%

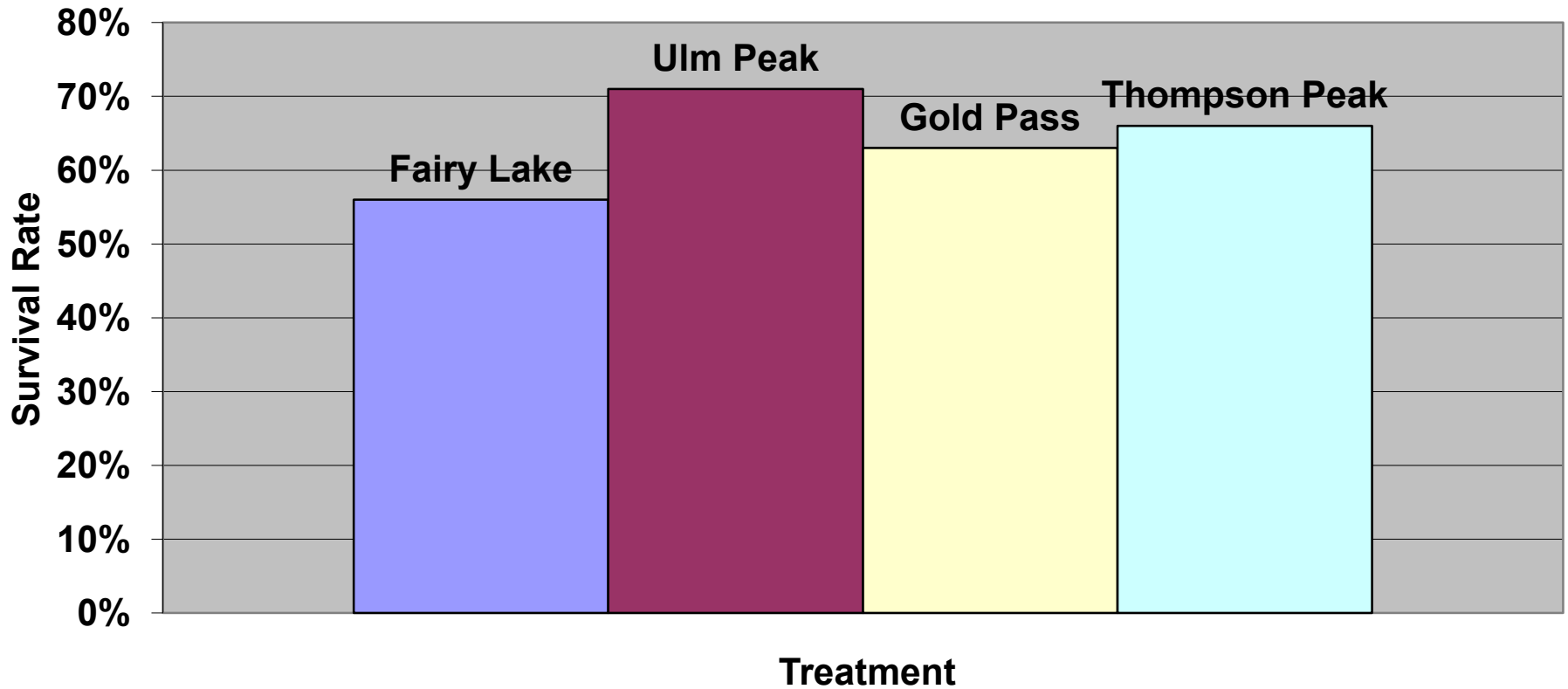
# Percent Germination of Cached Seed by Site & Year

Site	1st Yr	2nd Yr	Total
Fairy Lake	3%	1%	4%
Ulm Peak	0%	22%	22%
Gold Pass	4%	30%	34%
Thompson Peak	59%	7%	66%
Toboggan *	26%	NA	26%
Yellowstone Club *	29%	NA	29%
* cached seed was warm stratified prior to planting			





## 1<sup>st</sup> Year Survival Rate of Germinated Seed by Site







# Questions...?





# FHP Whitebark Pine Restoration Program

## Summary & Highlights

**John Schwandt**  
**(Past) FHP Program Coordinator**



# Whitebark Pine in Peril

## Objectives:

- Compile health assessment of WBP across its range
- Compile restoration strategies for managers
- Describe information needs and challenges to restoration

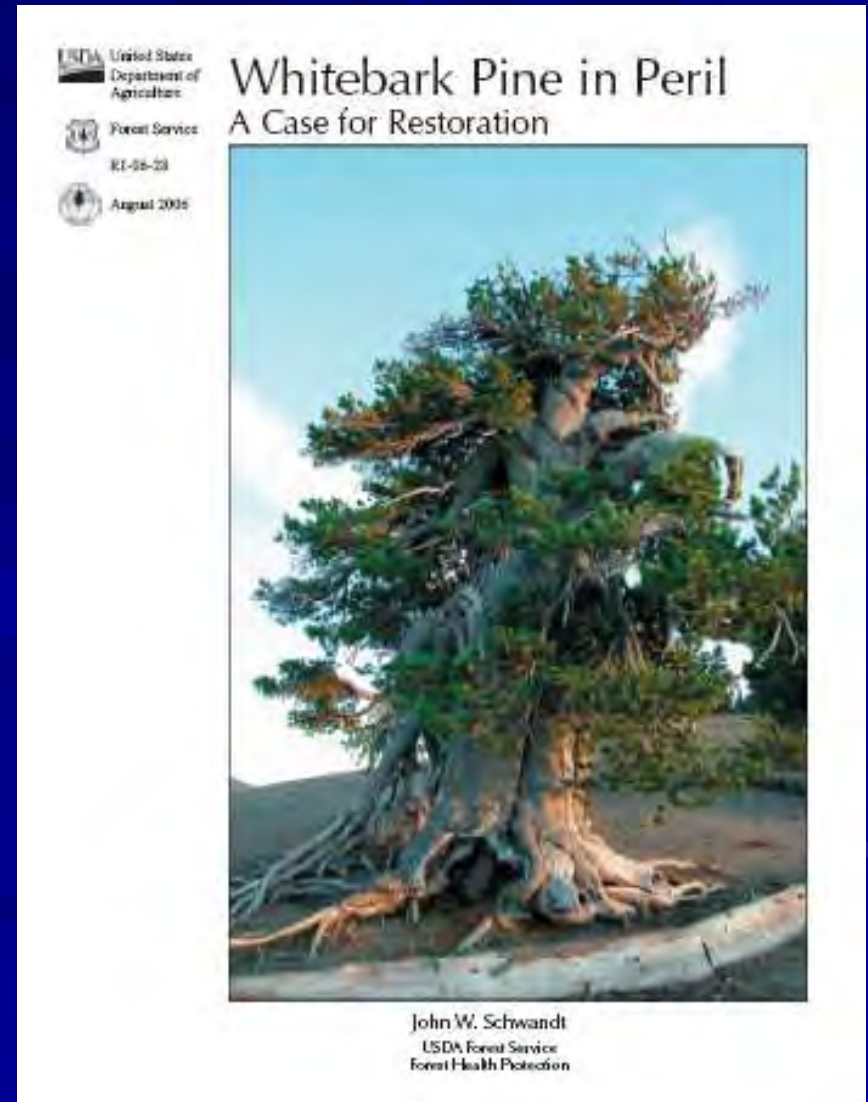


(Anna Schoettle)



# Health Assessment

- WBP is declining throughout its range
- Due to:
  - White pine blister rust
  - Fire
  - Competing vegetation
  - Bark beetle outbreaks
  - Climate



# Blister Rust Infections Levels



Geographic Region - # reports - Reference	Range of Infection	Mean
British Columbia (rangewide) (Campbell & Antos 2000)	0 - 100	50.0 %
British Columbia (rangewide) (Zeglan 2002)	11 - 52.5	38.0 %
Northern Rocky Mountains (U.S., Canada) (Smith et al. 2006)	0-100	43.6%
Selkirk Mountains, northern Idaho-5 stands (Kegley et al. 2004)	57-81	70.0 %
Colville NF, NE Washington -2 reports (Ward et al. 2006)	23-44	41.4%
Greater Yellowstone Ecosystem (GYWPMWG 2005)	0-100	25.0%
Intermountain West (Id, Nev, Wy, Ca) (Smith and Hoffman 2000)	0-100	35.0%
Blue Mountains, NE Oregon (Ward et al. 2006)	0-100	64.0%
Coast Range; Olympic Mtns., Wa - 2 reports (Ward et al. 2006)	4-49	19.0%
Western Cascades; Wa/Or – 6 reports (Ward et al. 2006)	0-100	32.3%
Eastern Cascades; Wa/Or – 13 reports (Ward et al. 2006)	0-90	32.3%
Coastal Mountains, southwest Oregon (Goheen et al. 2002)	0 - 100	52.0 %
Sierra Nevada (southern) (Duriscoe & Duriscoe 2002)	0%	0.0%



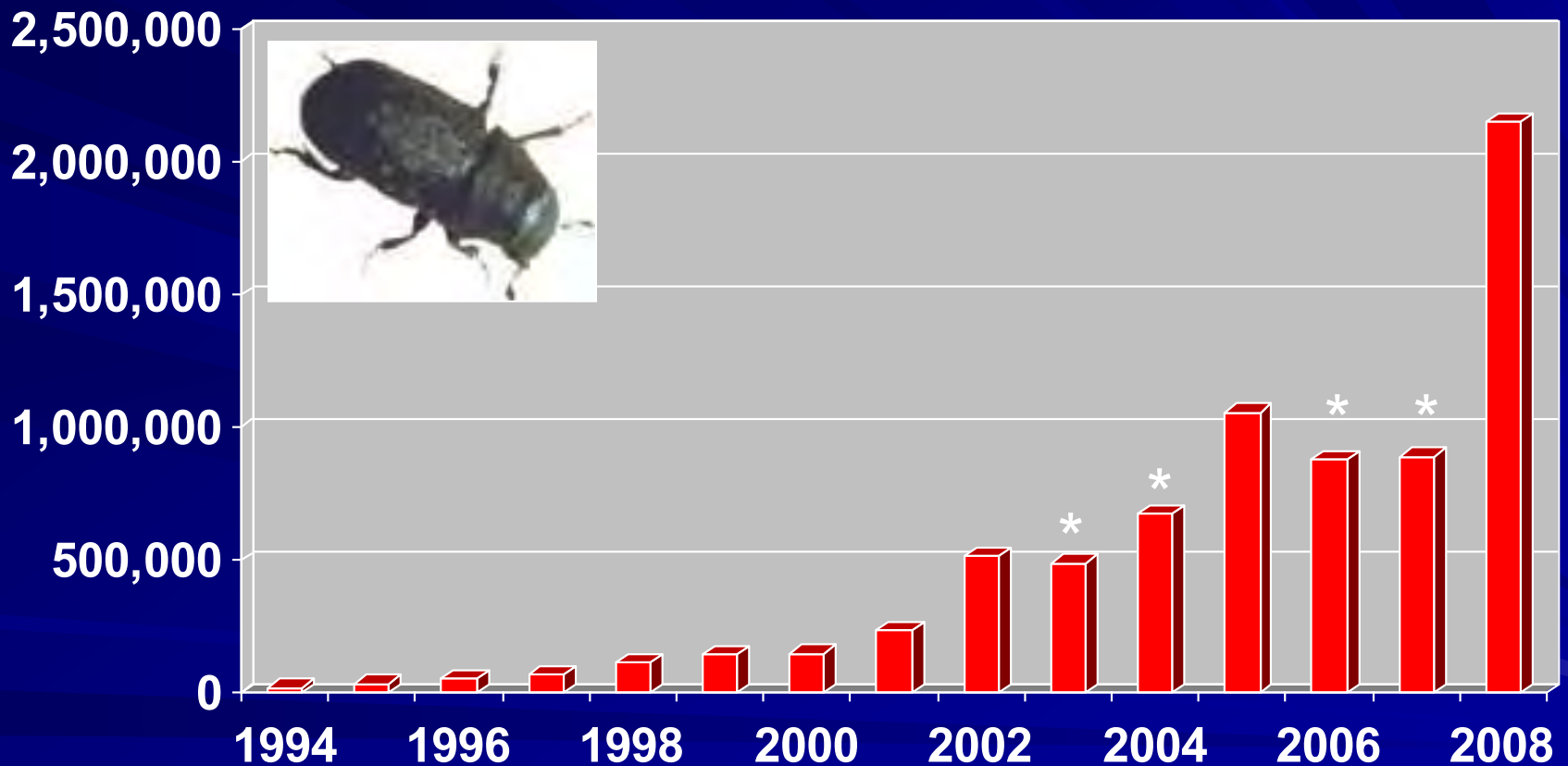
# MPB concerns

- May take out too much of population
- May kill rust resistant trees



# Acres Infested by Mountain Pine Beetle

Northern Region



\* Not all areas flown in 2003, 2004, 2006, or 2007

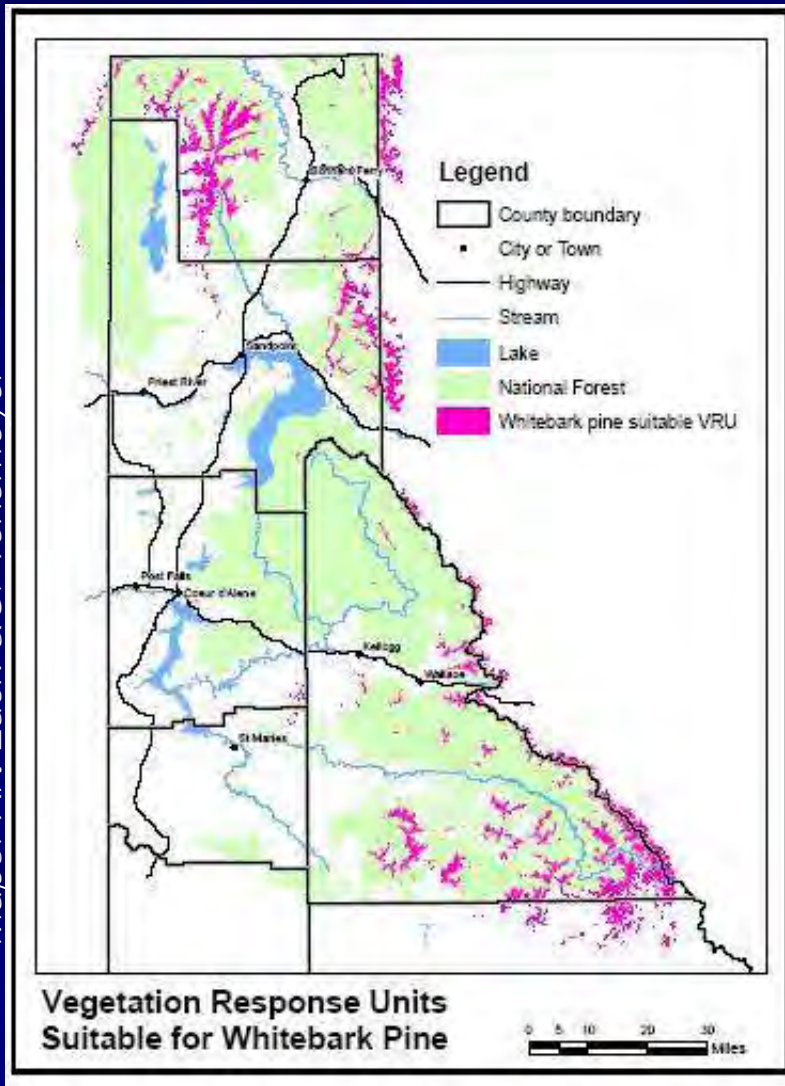


# Whitebark Decline – N. Idaho

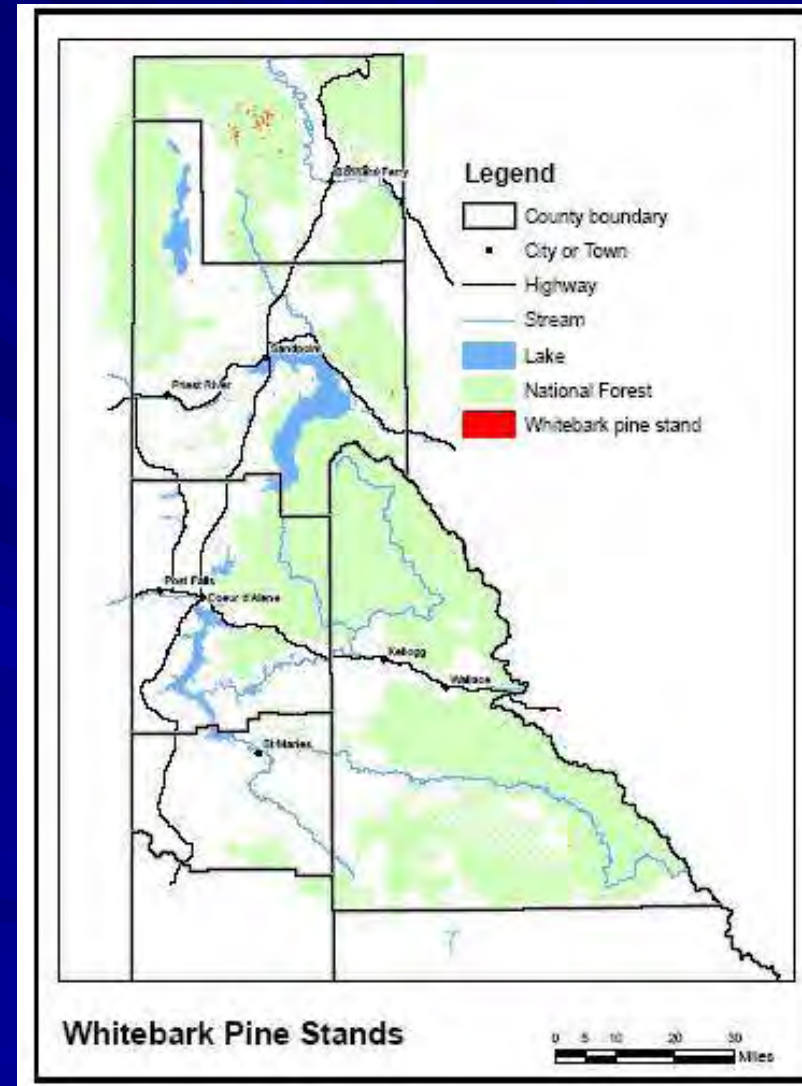
*Probable Historic Habitat – 200,000 Ac*

*Current Distribution – 2,000 Ac*

Maps: Art Zack & G. Tensmeyer



*(all ownerships)*



*(FS only)*

# National FHP Whitebark Pine Restoration Program

- 2007 – WO – FHP provided \$200,000 seed money for restoration projects
- Needed to develop a method to distribute the funds





# Technical Committee

- Interdisciplinary team from many Regions/ agencies
- To develop a process to:
  - solicit proposals
  - define criteria for proposal evaluations
  - rate proposals
  - make funding recommendations
- 6 Types of Projects Funded



# Assessing Health

## -Survey and Monitoring





# Harnessing Natural Resistance

- Rust Screening
- Plus tree selection & cone collections





# Conserving Genetic Diversity

- Operational cone collections
- Gene conservation collections





# Silvicultural Treatments



# Outreach/Education

- Educational materials
- Interpretative signs





# Special Projects

- Provide information on issues related to PIAL restoration
  - Nursery Practices
  - Direct Seeding
  - Nutcrackers
  - Mycorrhizae



Liverwort control

Direct Seeding

Nutcracker Monitoring

<b>Non-Federal Funding Sources</b>	<b>Parks and Recreation Areas</b>
<b>Private and Non-Profit Groups</b>	Akamina-Kishenina Provincial Park (BC)
Arbor Day Foundation	BC Parks and Protected Areas (Canada)
Global Forest Science	Crater Lake National Park
Montana Natural History Center	Glacier National Park
Montana Department of Natural Resources	Grant Teton National Park
Mt. Batchelor Ski and Summer Resort	Mount Rainier National Park
Mule Deer Foundation	North Cascades National Park
New World Mine Restoration	Sawtooth National Recreation Area
Remote Sensing Applications Center	Waterton Lakes National Park (Canada)
RLK & Co Timberline Lodge and Resort	Yellowstone National Park
Seattle City Light	.
Whitebark Pine Ecosystem Foundation	<b>Native American Tribes</b>
.	Blackfoot Tribe
<b>Universities and Colleges</b>	Confederated Tribes of Warm Springs (Or)
Colorado State University	Flathead Indian Reservation (Mt)
Grove City College (Bend, Or)	Wind River Indian Reservation (Wy)
Montana State University	.
Oregon State University	<b>Over 25 National Forests in Regions 1,2,4,5,6</b>
University of Colorado	<b>Other Federal Cooperators</b>
University of Idaho	Bureau of Land Management (BLM)
University of Montana	Dorena Genetic Resource Center (Or)
Utah State University	Greater Yellowstone Coordinating Committee
<b>State Agencies</b>	Pacific Northwest Research Station (PNW)
Idaho Fish and Game Department	RMRS Fire Research Laboratory
Montana Department of Natural Resources	USFS Coeur d'Alene Nursery
Washington Dept of Fish and Wildlife	US Geologic Survey



# Restoration Program Summary

- 326 projects received requesting over \$7 million
- 177 projects supported through the Forest Health Protection Whitebark Pine Restoration Program since 2007
- FHP has provided over \$2.1 million to date that was matched with more than \$2.9 million
- Cumulative value of funded projects is greater than \$5 million

	2007	2008	2009	2010	2011	2012	Totals
<b># Proposals Rec'd</b>	56	62	60	39	50	59	<b>326</b>
<b>Total \$ Requested</b>	1,005,700	2,200,000	960,000	688,450	1,153,619	1,293,987	<b>7,301,756</b>
<b># Projects Funded</b>	24	26	32	28	33	34	<b>177</b>
<b>\$ FHP Funds</b>	267,400	398,900	517,000	300,200	406,942	275,000	<b>2,165,442</b>
<b>\$ Match</b>	291,700	433,900	380,000	491,850	665,251	613,798	<b>2,876,499</b>
<b>Total each year</b>	<b>559,100</b>	<b>832,800</b>	<b>897,000</b>	<b>792,050</b>	<b>1,072,193</b>	<b>888,798</b>	<b>5,041,941</b>

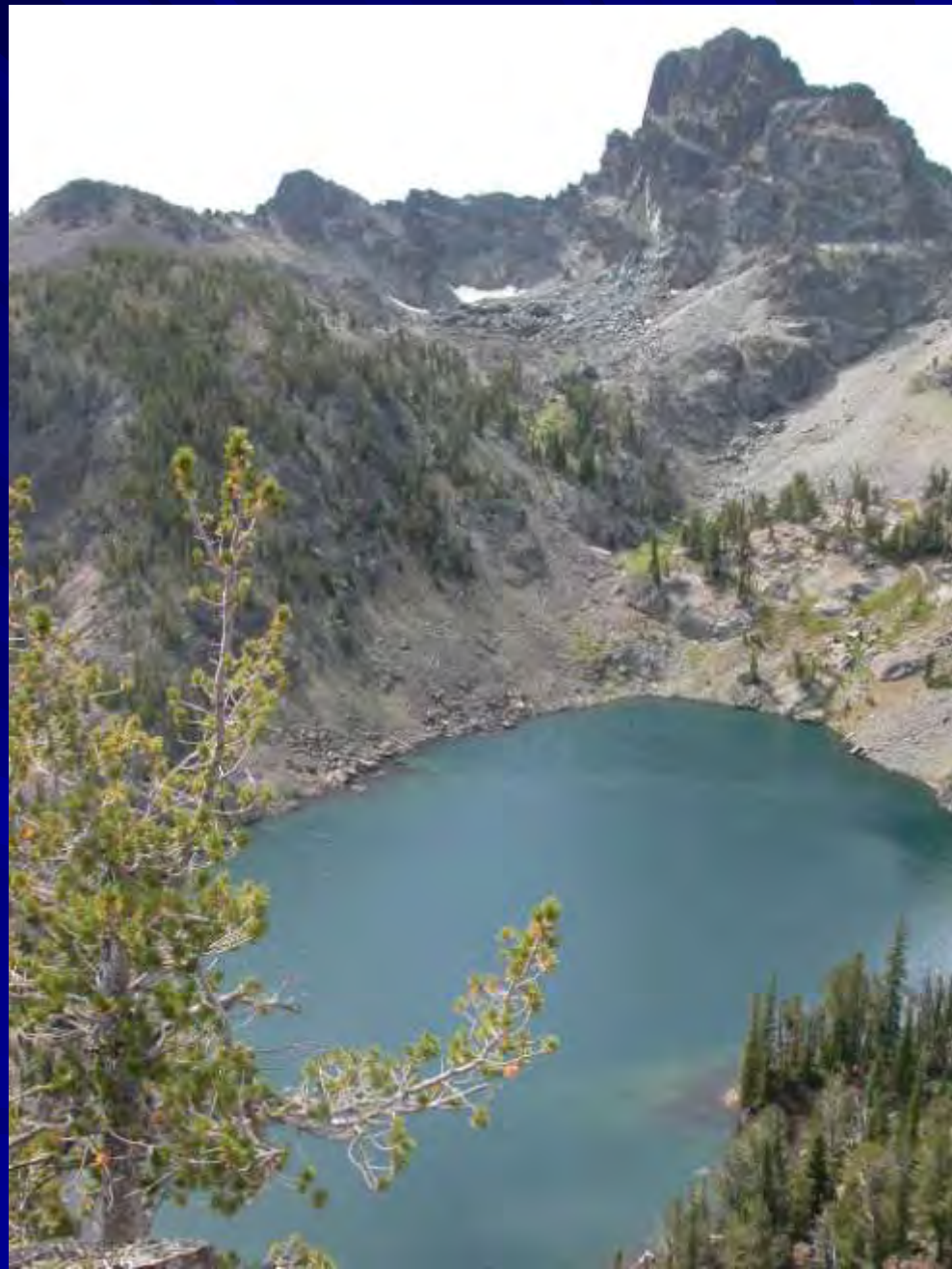
# Future

New coordinator for FHP program

Cda FHP will no longer be **directly** involved in WPB projects

But I expect:

- Continued WO support for WBP restoration
  - **RFP process to continue**
- active restoration efforts to increase (w/ WBEF etc.)
- wide distribution provides broad basis for cooperation
- seed orchards and resistant stock to provide enhanced survival





# Thanks to all of you have taken on this challenge

- You have been a great inspiration to me and I only hope that I have been able to help in some small way.



