

**Continental Dialogue on Non-Native Forest Insects & Diseases
Seventh Dialogue Meeting, Boulder, CO., Oct. 5-6, 2-11**

Collaborative Efforts to Protect and Restore High-elevation Five-Needle White Pines

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Organization

The Problem

Losses of Western high-elevation white pines to exotic disease and native pest outbreaks.

- Which pines?
- What do we lose?

A Response

Whitebark Pine Ecosystem Foundation, 501 (c) (3)

Missoula, Montana

- Organizers
- Goals
- Accomplishments
- Collaborative efforts

Whitebark pine (*Pinus albicaulis*)



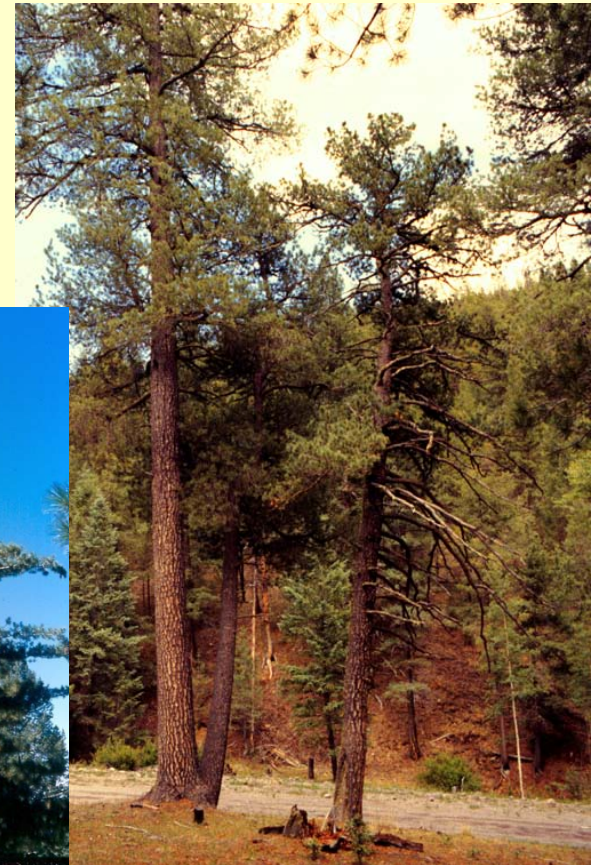
Western ranges and Rocky Mountains, from WY north.

Candidate species for listing under the ESA (July, 2011);

Evaluated as “endangered”; listing proposed under SARA, Canada

Limber pine (*Pinus flexilis*)

Southwest,
Intermountains,
Rocky Mtns.



Southwestern white pine (*Pinus strobiformis*)

Southwestern U.S. and
northern Mexico.





Foxtail pine (*Pinus balfouriana*)

Southern Sierra Nevada and northwestern California.

Rocky Mountain bristlecone pine (*Pinus aristata*)



Colorado south to New Mexico, and northern Arizona.



Great Basin bristlecone pine (*Pinus longaeva*)

Great Basin: eastern California, Nevada, and Utah.

High-elevation Five Needle White Pines

- **Important ecological roles in high-mountain ecosystems (foundation species).**
- **Provide ecosystem services directly and indirectly benefiting humans.**
- **Contribute considerable biodiversity to the western landscape (keystone species).**
- **Enhance the aesthetics of the high-mountain experience.**

Ecosystem Services

“Ecosystems generate a range of goods and services important for human well-being, collectively called ecosystem services.” --Nelson et al. 2009

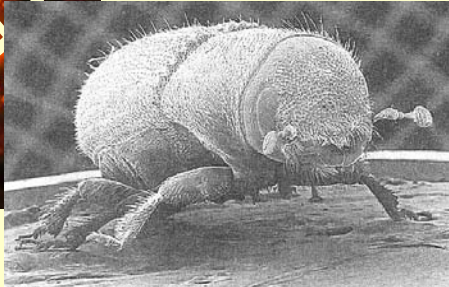
Functional roles and ecosystem services

- Wide spectrum of forest community types; biodiversity.
- Seeds important wildlife food.
- Wildlife habitat.
- Community development after disturbance.
- Serve as nurse trees on harsh sites.
- High elevation hydrology and downstream flow.
- Reduce soil erosion; avalanche control.
- Tree island initiators and components.
- Rapid response to warming or cooling at treeline.

Threats to the High Five pines

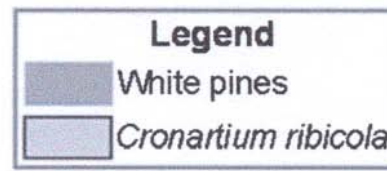


- ***Cronartium ribicola***: white pine blister rust—killing trees, reducing cone production.
- **Mountain pine beetles** (*Dendroctonus ponderosae*).
- **Altered fire regimes**--advancing succession in white pine communities.
- **Climate warming**: sustaining pine beetle outbreaks, producing drought stress and mortality in forest trees, and altering pine distributions.



Western distribution of white pine blister rust

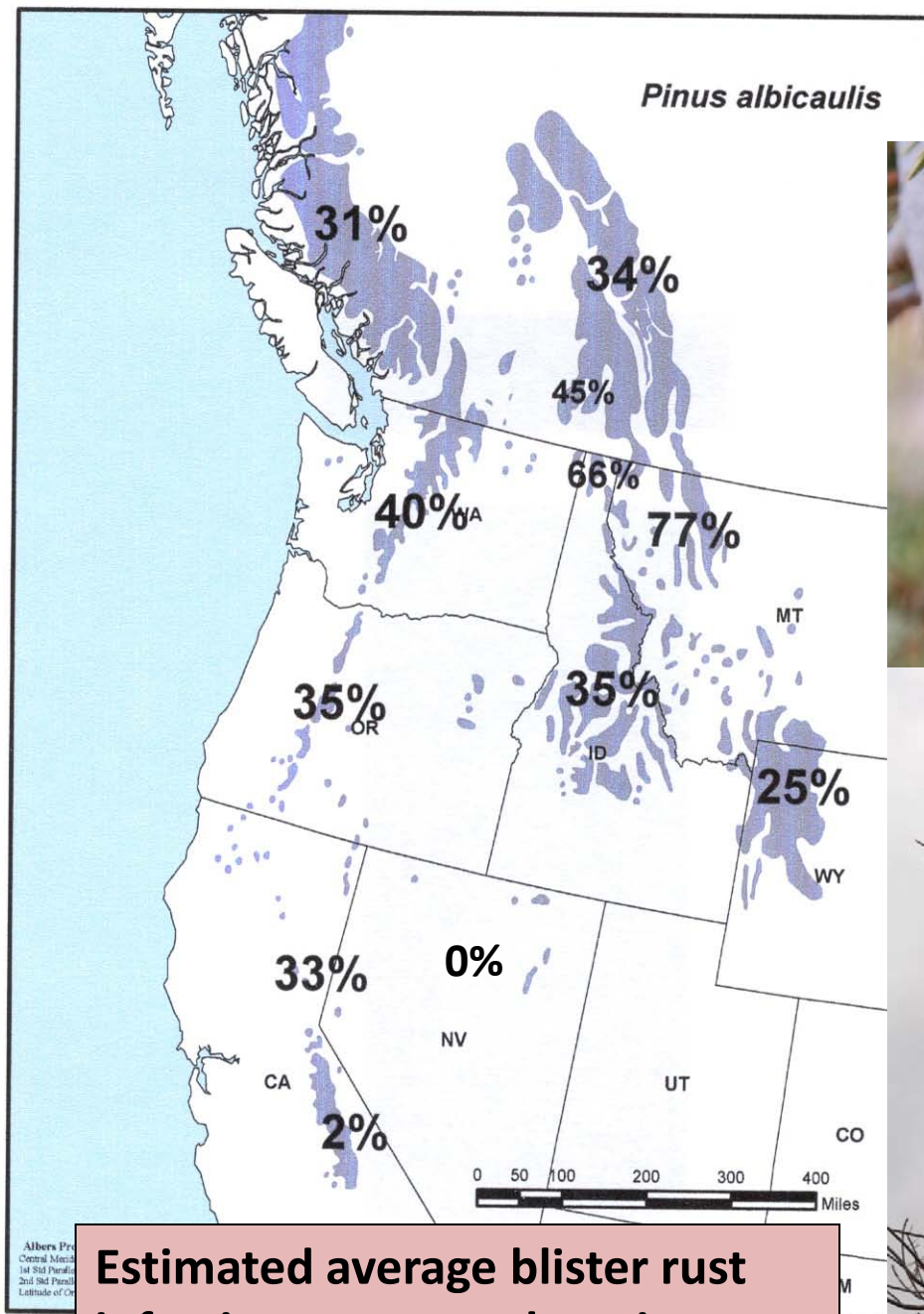
Schwandt et al. 2010



Blister rust facts

- Native to Asia.
- Requires alternate hosts to complete life cycle.
- Accidental introductions to east and west 1890s-1900s.
- Kills trees of all age classes.
- Often damages canopy before killing trees.
- Reduces cone production.

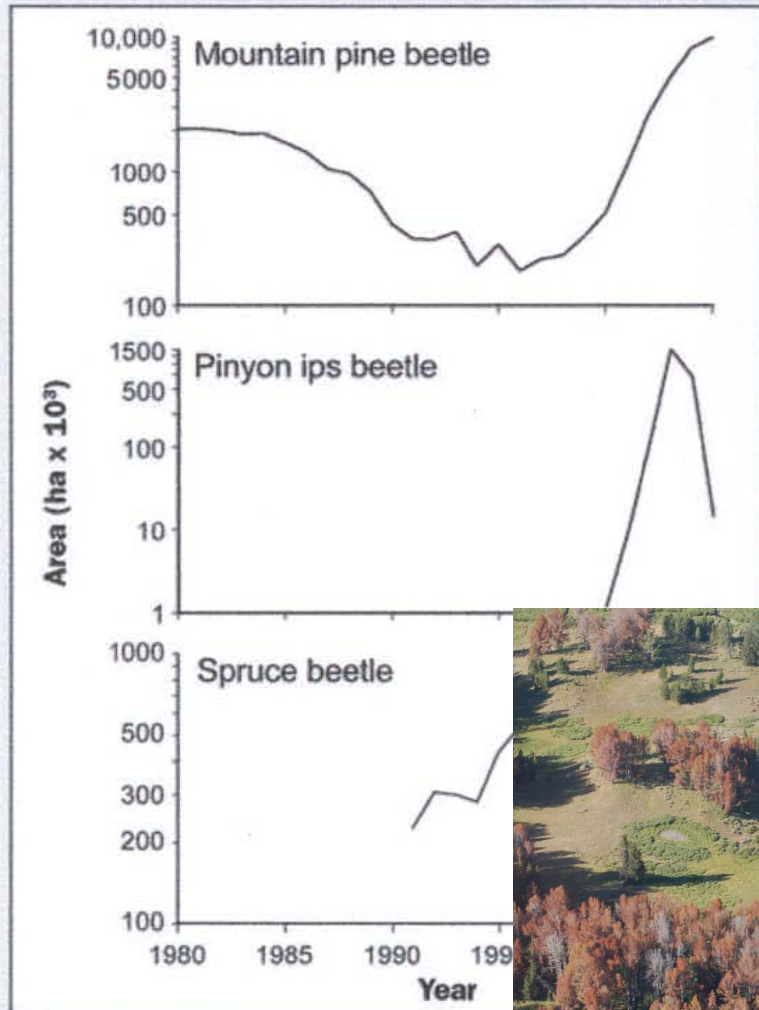
Whitebark pine most impacted of “High Five” pines






Estimated average blister rust infection across each region

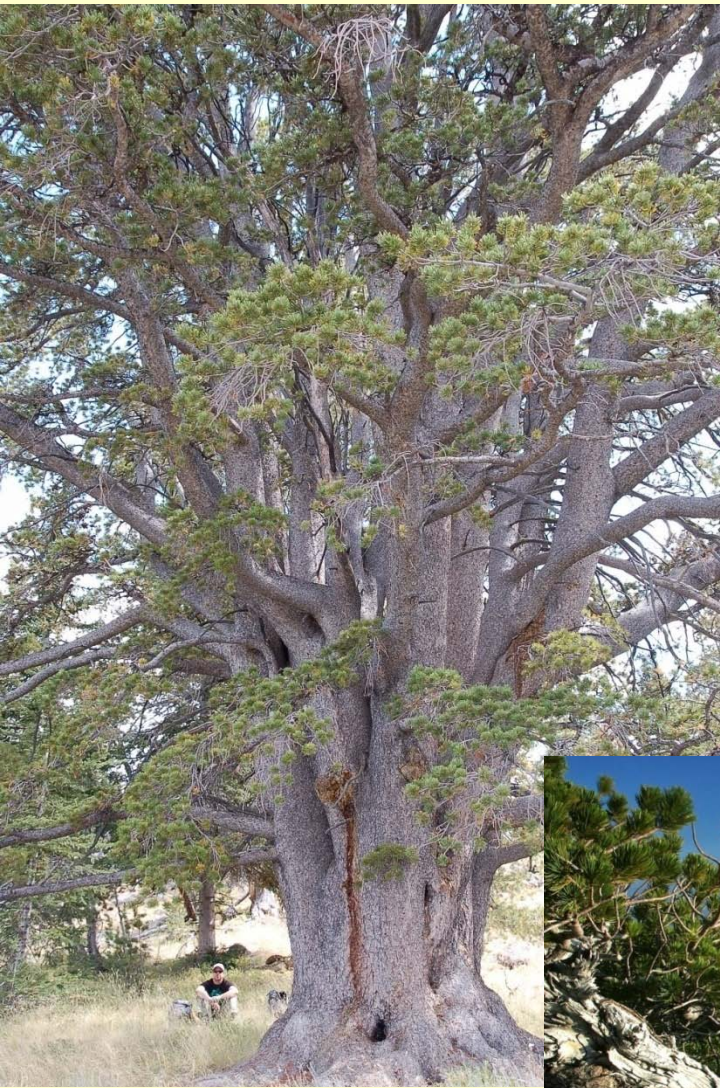


b



-  Spruce beetle
-  Mountain pine beetle
-  Pinyon ips beetle





Whitebark Pine



Photo: Rob Mutch





Whitebark Pine Ecosystem Foundation

Missoula, MT

Whitebark Pine Ecosystem Foundation—Canada

www.whitebarkfound.org

Mission:

501 (c)(3) science-based organization dedicated to promoting the conservation of whitebark pine ecosystems, and, more recently, other western high-elevation five-needle white pine ecosystems. Accomplished through:

- Education—value of these ecosystems and scale of threats
- Restoration and management—sound practices
- Research and development—pertaining to conservation

Information clearinghouse and communication medium:

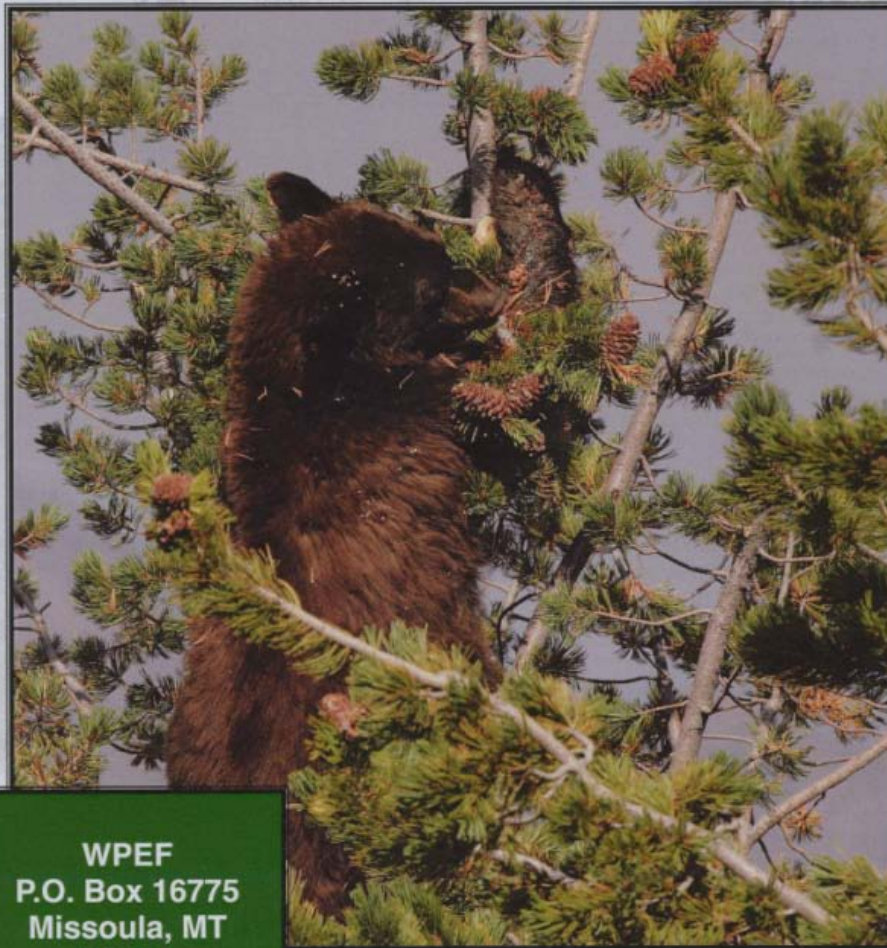
Nutcracker Notes twice a year.



Issue No. 12: Spring/Summer 2007

Nutcracker Notes

Whitebark Pine Ecosystem Foundation



WPEF
P.O. Box 16775
Missoula, MT
59808

Black bear harvesting whitebark pine cones, Yellowstone National Park. Robert J. Weselmann photo [www.robertweselmann.com]

Events leading to WPEF

- **1985-6: Dr. Stephen Arno, 'Whitebark Pine Research Team'.**
- **Team newsletter *Nutcracker Notes* generated a following.**
- **1989: First symposium: Montana State University.**
- **1998: Second symposium: "Restoring whitebark pine ecosystems", Missoula, MT. "What next?" NGO!**
- **2001, Formation of WPEF, publication of Tomback, Arno, Keane (eds). 2001. *Whitebark Pine Communities: ecology and restoration*, Island Press. Regional attention.**
- **2010, MOU with WPEF—Canada, under WPEF.**
- **Sept., 2011, 10th Anniversary Celebration, Buffalo Bill Historical Center, Cody, WY**

First official “Steering Committee” meeting of the WPEF:

February 7, 2001

Founding officers:

Director—Diana Tomback

Vice Director—Kate Kendall

Secretary—Helen Smith

Treasurer—Bob Keane

Editor—Steve Arno

Committee members—Dana Perkins, Bryan
Donner, Ward McCaughey

**First annual field conference : September 21, 2001:
Field trip to Beaver Ridge Lookout, Idaho**



Initial Organizational Structure

- **Director Tomback (university); Board of Directors: USDA FS, USGS, BLM**
- **Grass-roots membership: overhead paid by annual dues**
- **Members in every state and province with whitebark pine**
- **Volunteer director; working board; no staff**
- **Previous “research team” collaborations enabled transition of support from various agencies to WPEF**
- **By-laws established, elected officers and BOD: Director, Assoc. Director, WPEF-Canada Director, Secretary, Treasurer, Membership and Outreach Director, Publications Editor, 7 BOD members, Standing Committee chairs**
- **BOD meetings twice a year.**

Selected Accomplishments

- *Nutcracker Notes* published twice a year with rangewide contributions.
- 10 annual Whitebark Pine Science and Management meetings in different parts of whitebark pine's range.
- Held workshop: *Monitoring Whitebark Pine for Blister Rust*, West Yellowstone, MT. Multiple agency sponsors.
- Participated in various workshops and gatherings across the range of whitebark pine.
- Raised restoration funding for competitive grants for small projects.
- Developed ski area partnerships in Oregon, Wyoming, and Montana.
- Worked with FHP on organization of Whitebark Pine Restoration fund; provided some funding.
- June, 2010, *High-five Symposium: The Future of High-Elevation Five-Needle White Pines in Western North America*. Highly successful with 230 attendees and proceedings,

Collaborative Efforts, past and present

- **Agency partners, including USFS, NPS, and BLM.**
- **NGOs: Natural Resources Defense Council, Crater Lake Institute, The National Arbor Day Foundation.**
- **Many collaborations and partnerships with Region 1 of the USFS; a formal agreement in progress.**
- **Serve as advisors to American Forests for restoration campaign for the High Five pines.**
- **Given federal funding outlook, collaborations with NGOs and private sector may be our main hope for restoration support.**

Growing pains

Now searching for new organizational models—the volunteer director and working BOD are overwhelmed.

- **Facilitated planning session helped determine direction.**
- **Need to take “The Leap”—the transition to an organization with a more formal administrative structure and paid staff.**
- **The by-laws structure and BOD composition will need to change.**
- **Need two boards: citizen-operated BOD and a scientific advisory board.**



Alberta Whitebark Pine Recovery Team

Work to do; pressure is on

So—what started as a volunteer organization has morphed into an organization that with an important role in conserving these high elevation ecosystems. There are many challenges ahead....

We have to make progress—too much is at stake. Time is short.

