

# Whitebark Pine and Wilderness



**Can Restoration Work?**

Daniel Reinhart 9-20-13

# Whitebark Pine Ecosystems

## Keystone Upper Subalpine Forests

- § Protects snowpack
- § Delays snowmelt
- § Provides high quality water
- § Covers over 15 % landscape
- § Provides critical habitat
- § Unique plant communities
- § Adds to landscape diversity
- § Provides important habitat and food
- § Forage for Yellowstone Grizzly Bear



# Whitebark Pine Ecosystems

## Regeneration Dynamics



- § Clark's Nutcracker,
- § Sole Seed Dispersal Vector
- § Disperses seeds up to 10 – 20 km
- § Buries 1-5 seeds
- § Whitebark Pine regeneration
- § Create 8,000 20,000 caches/year



# Whitebark Pine Ecosystems

## Abnormally High Rate of Decline

- § Losing Ecosystem from Landscape
- § Necessitates Restoration Measures
- § Must Understand Whitebark Pine Ecology
- § White Pine Blister Rust
- § Mountain Pine Beetle
- § Fire (Exclusion)
- § Climate Change



# Whitebark Pine Decline

## White Pine Blister Rust

- § Exotic Disease from Eurasia
- § Especially Fatal to Whitebark Pine
- § Kills Young & Cone Bearing Trees
- § Natural Rust Resistance
- § Rust Infection: 20% in GYA; 90% in Glacier NP



# Whitebark Pine Decline

## Mountain Pine Beetle



- § Native Species (Disturbance)
- § Natural Disturbance Event: 200-400 Years
- § Typically Attacks Lodgepole Pine
- § Whitebark Pine: 1930's – 2000's
- § Sustained by Current Drought Conditions
- § Kills Large Diameter Cone Bearing Trees



# Whitebark Pine Decline

## Fire



**Fire Exclusion**



**Fire**

# Whitebark Pine Decline

## Climate Change



- § Facilitation of rust spread
- § Increase in mountain pine beetle
- § Increase in fire frequency
- § Forest succession changes
- § Site Condition changes
- § ???



# Whitebark Pine Decline

Listing Decision 2011



- Warranted but precluded
- Candidate Species - LPN=2

Candidate species are plants and animals for which FWS has sufficient information on their biological status and threats to propose them for listing under ESA, but proposed listing regulation is precluded by other higher priority listing activities.

# Whitebark Pine Decline

## Ecological Restoration, the Solution?



# Ecological Restoration, the Solution?

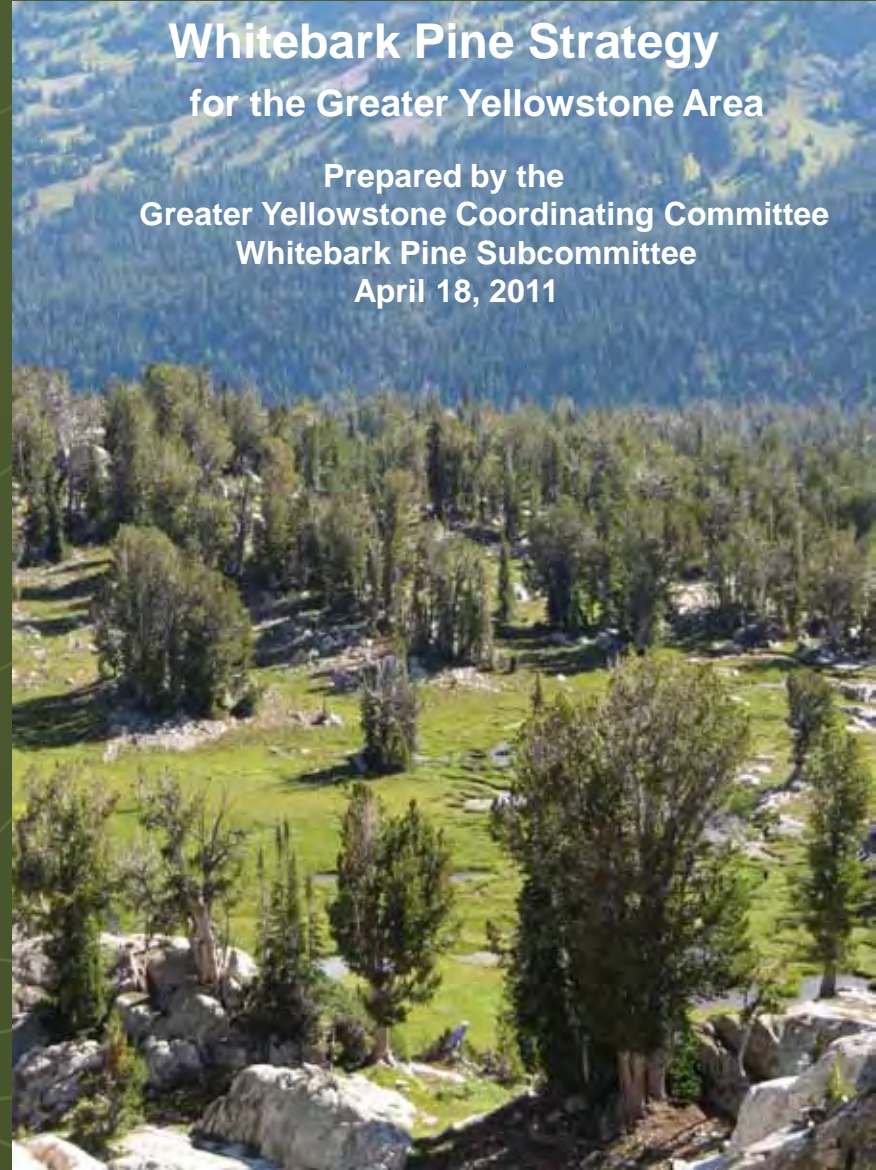


# Whitebark Pine Decline: Ecological Restoration in Wilderness

- The essential concepts of “untrammeled” and “naturalness”
- The management dilemma
- The questions to begin a discussion and work through this dilemma

## Whitebark Pine Strategy for the Greater Yellowstone Area

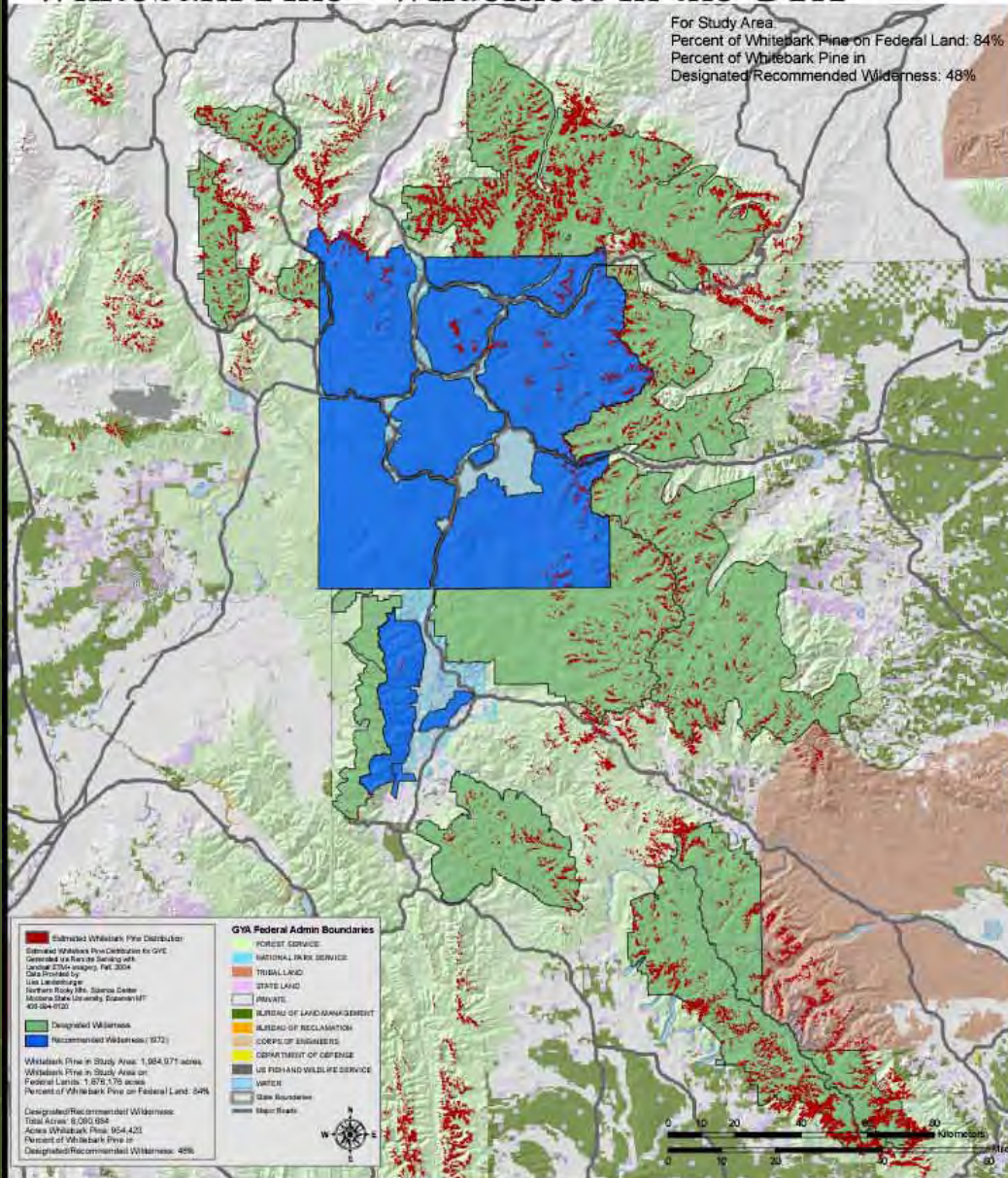
Prepared by the  
Greater Yellowstone Coordinating Committee  
Whitebark Pine Subcommittee  
April 18, 2011





# Whitebark Pine - Wilderness in the GYA

For Study Area:  
Percent of Whitebark Pine on Federal Land: 84%  
Percent of Whitebark Pine in  
Designated/Recommended Wilderness: 48%



## In Greater Yellowstone Area:

94% of WBP occurs on  
Federal land

54% of WBP occurs in  
designated and/or  
recommended  
wilderness



# WILDERNESS ACT OF 1964

## Sec. 2(c) Definition of Wilderness

"A wilderness...is hereby recognized as an area where the earth and its community of life are *untrammelled* by man"

= freedom from modern human control and manipulation

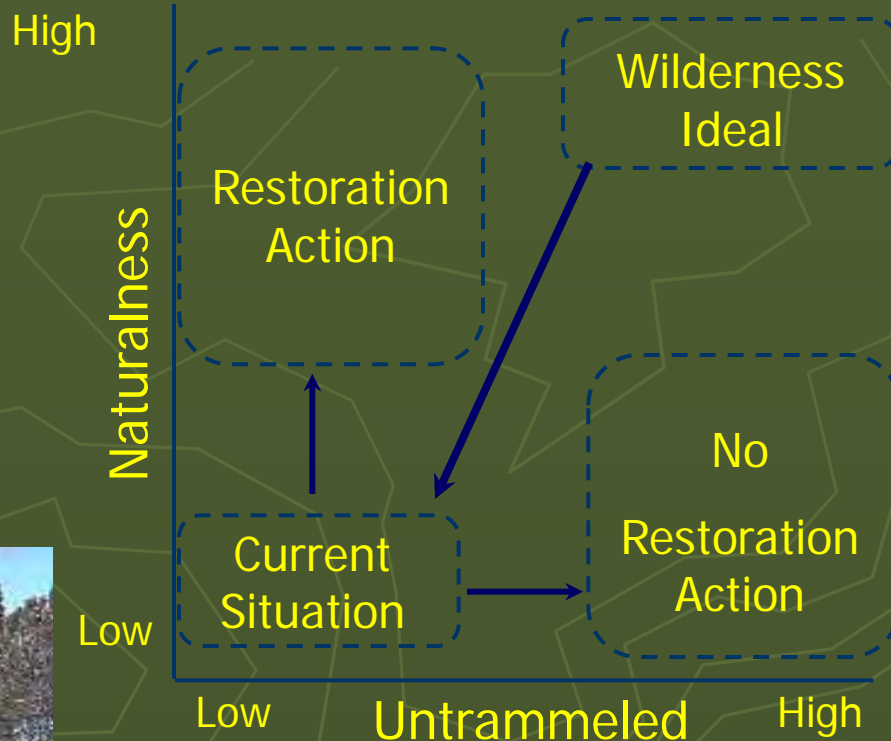
**"untrammelled" has important symbolic value today**

"An area of wilderness is further defined...retaining its primeval character and influence...which is protected and managed so as to preserve its *natural conditions*"

= species, patterns, and processes that evolved in the area

**"naturalness" has important ecological value today**

# CORE WILDERNESS VALUES



## Wildness vs. Naturalness

# THE MANAGEMENT CHALLENGE

Restoring whitebark pine may require intensive and broad-scale manipulation


- Taking restoration action compromises the *untrammelled* value of wilderness
- Not taking restoration action may compromise the *naturalness* value of wilderness



**Howard Zahniser:** "Once management undertakes to improve the wilderness... by manipulating natural processes in the wilderness itself, the fragile wilderness quality of the area being managed is in jeopardy."



# U.S.F.S. & N.P.S. MANAGEMENT POLICIES



FOREST SERVICE  
U.S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE MANUAL  
NATIONAL HEADQUARTERS (WO)  
WASHINGTON, DC

**FSM 2300 - RECREATION, WILDERNESS, AND RELATED RESOURCE MANAGEMENT**

**CHAPTER 2320 - WILDERNESS MANAGEMENT**

**Amendment No.:** 2300-2007-1

**Effective Date:** January 22, 2007

**Duration:** This amendment is effective until superseded or removed.

**Approved:** FREDERICK NORDURY, Associate Deputy Chief, NFS      **Date Approved:** 12/26/2006

**2323.6 - Management of Forest Cover**

**2323.61 - Objective**

Manage forest cover to retain the primeval character of the environment and to allow natural ecological processes to operate freely.

**2323.62 - Policy**

1. Permit ecological processes to operate naturally.
2. Recognize both climax and successional biotic communities as natural and desirable.
3. Allow, wherever possible, the natural process of healing in handling disturbed communities. Consider structural or vegetative assistance only as a last resort.
4. Only allow vegetation to be cut or sold when necessary for wilderness purposes or on valid mining claims under specified conditions, or when emergency conditions like fire, insect and disease, or protecting public safety make it necessary.

**2323.63 - Tree Use**

**2323.63a - Administrative Use**

Trees may be cut for use in the construction and maintenance of authorized structures located within the wilderness when it is not reasonably possible to obtain the necessary material from outside the wilderness. Cut trees away from trails or campsites and remove or disguise the evidence of cutting. Meet the visual quality objective of retention.

**2323.64 - Reforestation**

Allow reforestation only if a loss of the wilderness resource, due to human influence, has occurred and there is no reasonable expectation of natural restoration.

## Wilderness Preservation and Management

*All NPS lands will be evaluated for their eligibility for inclusion within the national wilderness preservation system. For those lands that possess wilderness characteristics, no action that would diminish their wilderness eligibility will be taken until after Congress and the President have taken final action. The superintendent of each park containing wilderness will develop and maintain a wilderness management plan or equivalent document. Wilderness considerations will be integrated into all planning documents to guide the preservation, management, and use of the park's wilderness area and ensure that wilderness is unimpaired for future use and enjoyment as wilderness.*

**6.3.7 Natural Resources Management**


The National Park Service recognizes that wilderness is a complex resource with interrelated parts. Without natural processes, especially indigenous and endemic species, a wilderness experience would not be possible. Natural resources are critical, distinguishing elements of the wilderness resource, but they need to be managed within the context of the whole ecosystem. Natural resource management plans will be integrated with ecosystem science, wilderness management plans. Part of a series of independent, complementary projects in wilderness, such as single species management, will increasingly accomplish the overarching goal of wilderness management. Natural resource management in wilderness will include and be guided by a coordinated program of scientific inventory, monitoring, and research.

The principle of noninterference will be applied to wilderness management, and each wilderness area's condition will be reported and assessed against its own unimpaired standard. Natural processes will be allowed, insofar as possible, to shape and control wilderness ecosystems. Management should seek to sustain the natural distribution, numbers, population, composition, and distribution of indigenous species. Management interventions should only be undertaken to the extent necessary to correct past mistakes, the impacts of human use, and influences originating outside of wilderness boundaries.

Management activities, including the restoration of extirpated native species, the alteration of natural fire regimes, the control of invasive alien species, the management of ecological spirals, and the protection of air and water quality, should be attempted only when the knowledge and tools exist to accomplish clearly articulated goals.

*See Chapter 6: Natural Resource Management, Director's Order #77 series on natural resources management.*

83  
WILDERNESS PRESERVATION AND MANAGEMENT 83

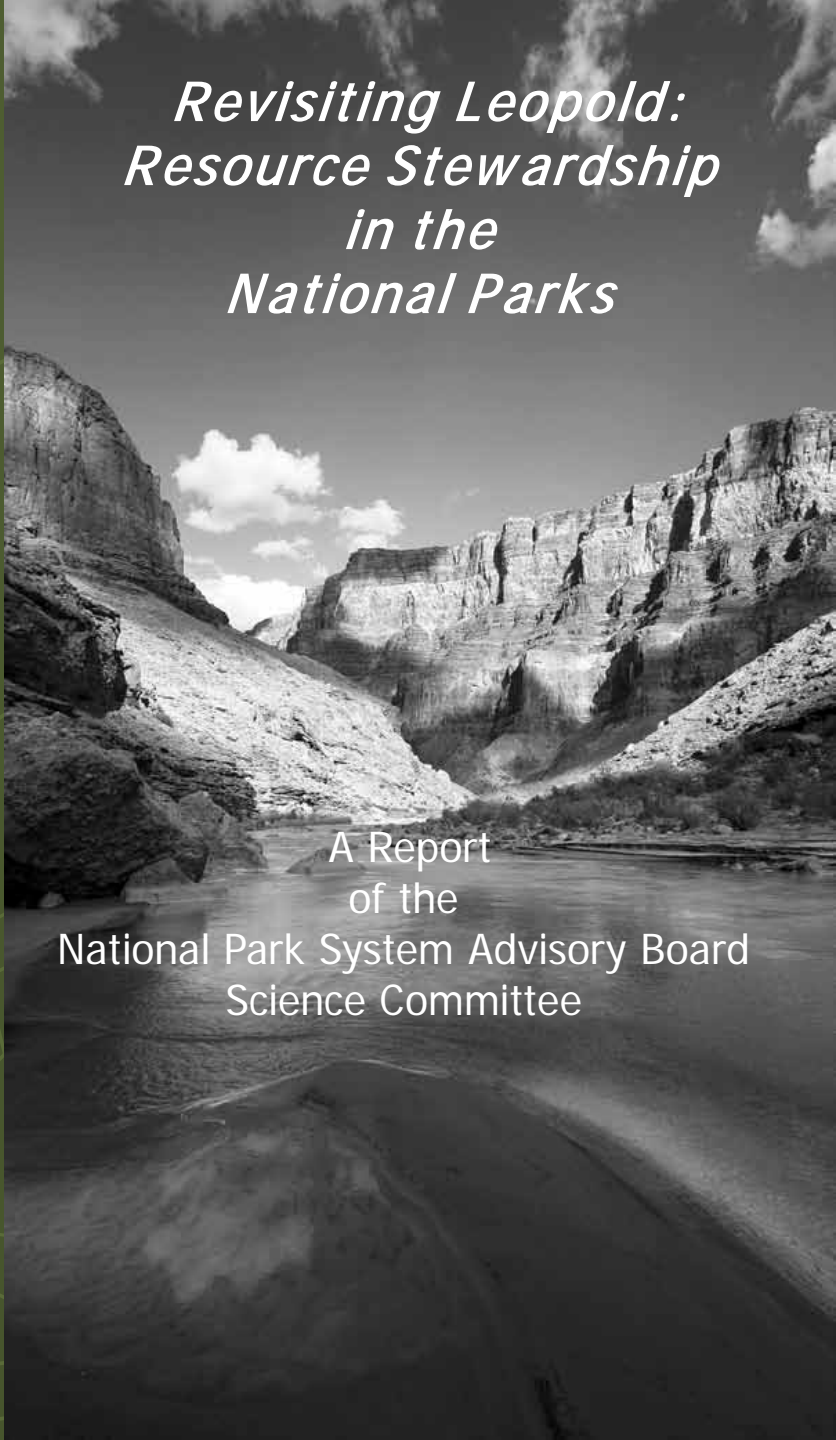


A wilderness is an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.

- (2323.52) Allow ecological processes operate naturally
- Allow wherever possible, natural processes of healing disturbed lands
- (2323.54) Allow reforestation only if loss due to human influence and no expectation of natural regeneration
- Natural processes allowed to shape ecosystems
- (6.3.7) Management intervention only to extent necessary to correct past mistakes and impacts of human use
- Restoration of native species, control of invasive species when knowledge and tools exist to accomplish articulate goals

**“Resource stewardship within the National Park System of the future must be accomplished while addressing development pressures, pollution impacts, climate change, terrestrial and marine biodiversity loss, habitat fragmentation.”**

**“Because ecological and cultural systems are complex, continuously changing and not fully understood, NPS managers will need to embrace more fully *the precautionary principle that requires that stewardship decisions reflect science-informed prudence and restraint.*”**



*Revisiting Leopold:  
Resource Stewardship  
in the  
National Parks*

A Report  
of the  
National Park System Advisory Board  
Science Committee

# *THE PROBLEM AND CHALLENGE:*

*DECIDING WHETHER TO TAKE RESTORATION  
ACTIONS IN WILDERNESS IS COMPLEX*



# *A FRAMEWORK FOR MAKING WILDERNESS RESTORATION DECISIONS*

1. Is there a loss of naturalness in whitebark pine?
2. Should we consider taking whitebark pine restoration actions in wilderness?
3. Develop a range of desired future conditions and actions needed to restore whitebark pine in wilderness
4. Evaluate the benefits and impacts of each DFC and its associated actions

# Wilderness Considerations in Whitebark Pine Restoration

## ▶ Definition of Wilderness—

§ A wilderness, **in contrast** with those areas where man and his works dominate the landscape, is here by recognized as:

- ▶ An area where the earth and its community of life are **untrammelled** by man
- ▶ Undeveloped Federal land retaining its primeval character and influence
- ▶ Generally appears to have been affected primarily by the forces of nature
  - ▶ The 1964 Wilderness Act P.L. 88-577

# Wilderness Considerations in Whitebark Pine Restoration

- ▶ **Management Objectives**
- ▶ **Encourage Natural Processes & Wildland Fire Use**
- ▶ Implement non-manipulative restoration first
  - § Monitoring
  - § Caging and collecting cones
- ▶ Restore WBP (e.g., plant, thin) near Wilderness boundaries
- ▶ Address whether manipulative projects such as planting, thinning or prescribed fire would be acceptable in wilderness
  - § NEPA, including Public Scoping
  - § **Minimum Requirement Analysis**
  - § Assess the effects to Wilderness character
- ▶ **Involve your Wilderness Manager**



# What does it matter? Where should we go?

- Native/nonnative species landscape is not static!
- Invasion/extinction are ongoing.
- Restoration of populations increases long-term survivability.
- Climate Change brings more Uncertainty!
- Federal policies tells us to restore to Natural conditions when damaged or compromised by past human activities.
- Native Communities belong in Wilderness!

