

2015 Annual Progress Report

Whitebark Pine Restoration Program

Pacific Northwest Region

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Caging conelets on a highly isolated population of whitebark pine in the Black Rock Range of Nevada.
Photo: C. Jenson

INTRODUCTION

The Whitebark Pine Restoration Strategy for the Pacific Northwest Region (Aubry et al. 2008) laid out a comprehensive 5-year plan to reach the goal of “a network of viable populations of whitebark pine throughout the Pacific Northwest”. The key actions prescribed included:

- collect seed for gene conservation and rust resistance screening
- assess stand conditions in priority management units
- develop plans for planting seedlings in priority management units
- continue a rust screening program with emphasis on seed zones in grizzly bear areas
- treat for mountain pine beetle in high risk management units
- develop an approach for planting seedlings in designated wilderness areas
- develop an approach to mitigate the predicted impacts of climate change
- develop a monitoring plan to track accomplishments, success of actions, and provide feedback to improve project procedures and outcomes and disseminate information.

2015 was the seventh year of implementation of the restoration strategy.

MAJOR ACCOMPLISHMENTS FOR CY2015

- Approximately 6000 seedlings planted on 2 forests
- Cones collected from 52 individual trees for rust screening including several individuals that performed well in rust screening
- ~60 acres treated with verbenone and several individual select trees treated to protect from beetle attack.



WBP occurrence on
Scott Mountain in the
“Old Cascades” west of
MacKenzie Pass on the
Willamette NF.

Photo: A. Bower

PROGRAM FUNDING

Funding for whitebark pine restoration work came from a variety of National, Regional, and Forest level sources. Funding was provided by the FHP National Whitebark Pine restoration fund, the Region 6 Interagency Special Status/Sensitive Species program, the Region 6 Genetics program, as well as in-kind support from many individuals throughout the region:

- \$6100K from R6 ISSSSP for scion collection for a breeding arboretum on the Wallowa-Whitman NF
- \$2500K from R6 ISSSSP for remeasurement of permanent plots on the Willamette NF
- \$3500K from R6 ISSSSP for surveying WBP occurrence and condition at Miner's Ridge on the Mt. Baker-Snoqualmie NF
- \$3000K from R6 Genetics program for verbenone application at Dixie Butte on the Malheur NF



Many first year conelets on an "A" rust resistant rated select tree on Odell Butte, Deschutes NF
Photo: O. Peavy

CONE COLLECTIONS

Cone crops were generally low in most areas in 2015 but there were some areas with cone crops sufficient enough to warrant collections. The **Deschutes NF** collected 7 trees, 1 of which was a previously tested selection while the remaining 6 were new candidates for rust resistance screening. The **Okanogan-Wenatchee NF** collected cones from 14 trees off the Entiat RD in the Big Hill area, with the seed to be sown for planting in FY 2017. The **Fremont-Winema NF** collected 28 trees from Abert Rim to add to their reforestation seed inventory.

One of the driving forces behind cone collections in the past has been the the Whitebark Pine *ex situ* Gene Conservation Plan for the Pacific Northwest Region. This plan designated 22 collection areas in and around Region 6, with a goal of collecting seed from a minimum of 25 individuals within each collection area. A minimum of 700-800 seeds is needed for gene conservation at both the national and regional level. The Region 6 *ex situ* Whitebark Pine Gene Conservation Plan calls for ~500 to be placed in long-term storage at the ARS National Center for Genetic Resources Preservation in Ft. Collins, CO, and 300 seed will be stored locally at the Dorena Genetic Resources Center. This local storage will provide a backup for gene conservation and will also be a “working” collection that can be available for small research projects. Since 2009 we have met our seed collection goals in 21 of the 22 collection areas (see table 1) and no additional gene conservation collections were made in 2015

Table 1: Gene conservation cone collections

Collection Area	Seed Zone	Conservation Areas	# Seedlots >700 seed available pre-2009	# Seedlots collected 2009	# Seedlots collected 2010	# Seedlots collected 2011	# Seedlots collected 2012	# Seedlots collected 2014	Goal met?	# Trees still needed
Olympic mtns.	1	101	10		16				YES	
Okanagan NF	2E	202, 203, 204, 205	2	16	10				YES	
Wenatchee NF	2W	206, 207	12		26				YES	
Wenatchee NF	2W	208	2		23				YES	
Bonaparte mtn.	3	301		19		30			YES	
Kettle Crest	3	302		17		54			YES	
Selkirk mtns.	3	303	1		6	53			YES	
Mt. Rainier-Mt. Adams	4	401, 402, 404, 405	24		4				YES	
Mt. Hood	5	501	18	7	7				YES	
Central OR Cascades	5	502, 503, 504	25	26	7	29	12		YES	
Newberry Crater	5	505	4	26	10	3	16		YES	
Wallowa mtns.	6	601		25		16			YES	
Umatilla NF	6	602, 603	49	5		6		9	YES	
Malheur NF	6	604	7	28		10			YES	
Seven Devils Hills	6	605				14		11	YES	
Central OR Cascades	7	701		23					NO	4
S. OR Cascades	7	703	7	20	11				YES	
Mt. Ashland	7	704							*	
Yamsay Mtn.	8	801		11	8				NO	7
Fremont NF	8	802		20	18	16	19	39	YES	
N. Warner mtns.	8	803		24		7			YES	
S. Warner mtns.	8	804					52		YES	
Pine Forest range NV	8	805					26		YES	
TOTAL				267	146	238	125	59	835	
* Very small population - only 2 mature trees									Total	

SURVEYS

Prior to cone collections, cone surveys were conducted on sites as needed. In addition to cone surveys, an effort was started in 2014 and funded by the Interagency Special Status Sensitive Species Program (ISSSSP) to revisit all of the trees that had scored well in rust resistance testing at the Dorena Genetic Resources Center. 92 Trees from 35 different locations were targeted for assessment. Assessments were made on a number of trees, with some alive and healthy, some alive but being attacked by mountain pine beetle, and some unable to be relocated because they were not tagged.

A site survey was done in the Aldrich Mountains on the **Malheur NF** in central Oregon. No existing occurrences of WBP had previously been noted from this area but it was mapped as possible habitat. No WBP was observed on Aldrich Mountain (~7000') but it was observed on north aspects of Fields Peak at and above ~7000'. Further surveys are needed to determine the extent of this population. A site survey was also done on Scott Mountain in the "Old Cascades" west of MacKenzie Pass on the **Willamette NF**. A small stand of WBP was found at the summit of the volcanic butte at ~6000'.

The Region has over 200 permanent Whitebark pine plots throughout Oregon and Washington managed by the local forest or Forest Health Protection staffs. In 2015, 10 plots were remeasured in the Pasayten Wilderness, **Okanogan-Wenatchee NF**, Methow Valley Ranger District 6-year post installation.

In October, an assessment visit was made to a highly isolated stand of whitebark pine in the Black Rock Range in northwestern Nevada. This relict population is on BLM land and was reported to consist of only ~12 individuals and is more than 30 air miles from the nearest whitebark pine population. The population was found on a steep north-facing cirque in a rugged boulder field. ~12-15 individuals were observed of all age classes from young seedlings to a very large prostrate individual. 1st year conelets were observed on several trees and cages were installed on these conelets with the intent of collecting cones from this highly isolated population for genetic conservation purposes in 2016. (See cover photo)



WBP observed on north aspect of Fields Peak on the Malheur NF. Photo: A. Bower

PLANTINGS

Several planting projects were completed in 2015. On the **Okanogan-Wenatchee NF**, over 5000 trees were planted over approximately 25 acres in the Junior Point and Crescent Hill area which was within the burned area from Pot Peak 2004.

On the **Deschutes NF**, approximately 400 seedlings from the Dorena Genetic Resources Center were planted in a white pine blister rust resistance field trial (the 6th for the Deschutes NF) and an additional 500 seedlings were planted for restoration.



Just-planted seedling
on the Deschutes NF.

Photo: M. Horning

VERBENONE TREATMENT

Forest Health Protection staff put up Verbenone pouches on 13 select trees on the **Deschutes NF** that are being screened for resistance to blister rust (all with A rating thus far) and on 100 legacy whitebark pines at Crater Lake NP with Botanist Jen Beck.

The **Umatilla NF** conducted a NEPA analysis and had a Categorical Exclusion signed to apply SPLAT verbenone at Dixie Butte. The Decision Memo was signed on July 8 and 40 tubes of SPLAT verbenone were purchased and applied to individual WBP trees.

SPLAT verbenone was also applied on ~50 acres on the **Wallowa-Whitman NF** at the Anthony Lakes ski area, where a thinning treatment and verbenone application was done in 2014.

Malheur NF staff collaborated with PNW Research station entomologists in a test of verbenone treatments in the Strawberry Mountains. Treatments included 6 acres with SPLAT Verbenone at the rate of 618 grams active ingredient/hectare, 6 acres with verbenone pouch at the rate of 692 grams active ingredient/hectare, and had 6 acres of untreated. This test will be monitored in the future to compare the effectiveness of these 2 verbenone application methods.

OTHER WORK

Interpretive signs for a new Whitebark Pine Discovery Trail is under development for installation at Newberry Volcanic National Monument. This is being developed by Chris Jensen on the **Deschutes NF** with funding provided by the FHP Whitebark Pine restoration fund.

FHP Service Center staff provided technical assistance to Crater Lake NP on dwarf mistletoe species identification and biology on whitebark pine in the Park and presented information on dwarf mistletoe species on whitebark pine in the Park, in central OR and northern CA at the Whitebark Pine Ecosystem Foundation Meeting Field Trip to the Park.

FHP Service Center staff also completed a survey on incidence and severity of dwarf mistletoe on whitebark pine across roughly 1,000 acres in the Newberry National Volcanic Monument establishing fixed-radius plots in stands with post-mountain pine beetle mortality. Mapped additional locations where dwarf mistletoe is damaging on whitebark pine on the **Deschutes NF**.

In March, the **Malheur NF** held an informal Whitebark Pine Strategy meeting to discuss a strategy for the forest for whitebark pine inventory, restoration and reduction of effects from bark beetles. Discussions included what work has already been doing in this arena and about potential activities for the upcoming summer, and beyond. Notes from this meeting are available.