2010 Annual Progress Report

Whitebark Pine Restoration Program

Pacific Northwest Region

April, 2011

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Photo: J. Cannon

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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.

Photo: B. Coville

MAJOR ACCOMPLISHMENTS FOR FY2010

- Single tree collection of cones from 169 trees from 21 locations for gene conservation and rust resistance screening
- Gene conservation target of 25 trees per collection are expected to be met in 12 of 19 areas (pending results of seed extraction)
- $50K carried over in WCF account for future gene conservation cone collections
- Over 30 bushels of bulked cones for restoration were collected yielding 52 lbs. of seed
- Stand condition and WBP presence surveys done on over 30 locations, including the identification of several new populations
- 800 verbenone pouches put out on multiple sites on the Fremont-Winema NF in areas of heavy mountain pine beetle infestation
- Meeting of the Pacific Coast Whitebark Pine Working Group

PROGRAM FUNDING

2010 was the second year of implementation of the restoration strategy and it was another very successful year due in large part to the generous funding from Forest Health Protection. FHP provided a total of $182K from several sources to carry on this important work. The breakdown of funding received is as follows:

- $37K from R6 FHP for base funding (salary and travel) for Oregon and Washington whitebark pine coordinators
- $30K from R6 FHP prevention/suppression/restoration funds for reforestation cone collection and verbenone treatment on the Fremont-Winema NF
- $16K from the FHP Whitebark Pine restoration program (administered by John Schwandt) for operational cone collections for reforestation
- $99K from W.O. FHP for gene conservation including $79K for gene conservation cone collections and $20K for stand condition surveys

CONE COLLECTIONS

2010 proved to be another successful year with great progress made towards meeting our goals for whitebark pine **gene conservation cone collections** in Region 6. Cone crops were abundant in several areas that did not have good cone crops in 2009. Overall, single-tree collections were made from 169 trees in 21 separate locations. W.O. Forest Health Protection gene conservation funds paid for the collection of 109 of these trees, with the collection from the remainder being funded from other sources (FHP WBP restoration funds, forest base funding, etc.), indicating that the gene conservation funds are being well leveraged.

Seed extraction at the Dorena Genetic Resources Center is currently under way; seed yields are forthcoming.

Photo: C. Jensen

The Whitebark Pine *ex situ* Gene Conservation Plan for the Pacific Northwest Region designated 19 collection areas in Oregon and Washington, 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 Geneplasm 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. Prior to 2010, the collection target had been met in 5 of the 19 collection areas (see table 1). Pending the final results of seed extraction from the 2010 cone collections, we expect the target to be met in 12 of the 19 collection areas (see table 1). All trees with >700 seed available will be submitted to the NCGP for *ex situ* gene conservation.

$50K has been carried over in the WCF fund for future cone collections. The highest priority is seed zone 3 (NE Washington) (figure 2). This area has consistently had relatively small cone crops but a number of good collection areas are known and visited each year to assess cone crops. The other area that is a high priority is seed zone 8 (Fremont-Winema NF) (figure 3) because of the severe loss of WBP from mountain pine beetles. Cones from this area have been and will continue to be collected for both gene conservation and future reforestation efforts.

Restoration cone collections were also made in two areas with a critical need for seed for future reforestation: the Fremont-Winema NF, which is experiencing an epidemic level outbreak of mountain pine beetle that is killing thousands of acres of lodgepole and whitebark pine; and the Okanagan-Wenatchee NF which has lost several large areas of whitebark stands and associated habitat to wildfires. In total, approximately 7 bushes of cones, yielding 16.7 lbs of seed was collected on the Fremont-Winema NF, and 21 bushels of cones, yielding almost 32 lbs of seed was collected on the Okanagan-Wentachee NF. In addition, we were able to take advantage of a good cone crop on Mt. Adams on the Gifford Pinchot NF and collected 2 bushels of cones which yielded 3.3 lbs of seed.

SITE SURVEYS

In 2010, surveys to assess stand health and condition as well as the presence of whitebark pine were performed on over 30 sites (see table 2). Often condition surveys were done at the time of cone collection. Suspected but previously undocumented WBP stands were visited in several locations. Presence of whitebark pine was confirmed on Pine Mountain on the Deschutes NF, Blue Mountain and Cougar Peak on the Fremont-Winema NF, and the Mountain Lakes wilderness on the Fremont-Winema NF. The absence of whitebark pine was confirmed on Pothole and Lookout Buttes, Scout Mountain, and Swan Lake Point, all of which are on the Fremont-Winema NF. In addition, a partnership was established with the Colville Indian Reservation and presence of WBP was confirmed on Moses Mountain on their reservation. They have an interest in establishing permanent monitoring plots and collecting cones from this population. These observations allow us to continually expand and refine the distribution map in Region 6 (see figure 1)

VERBENONE TREATMENTS

Treatment with verbenone to protect trees from mountain pine beetle on the Fremont-Winema NF was started in 2009 to control an epidemic level infestation. In 2010, 800 pouches were put out on 8 sites in an effort to try to protect large, mature trees of cone-bearing age from beetle mass attack. These sites will be revisited in 2011 in partnership with local FHP staff to develop a protocol to monitor the effectiveness of last year's treatment. A report on this program is forthcoming. Verbenone pouches were also put out on 3 sites on the Deschutes NF continuing treatments in previous years.

OTHER ACTIVITIES

In April 2010 the Pacific Coast WBP Working Group met in Sandy, Oregon to discuss previous year's accomplishments and to plan workloads for the 2010 field season. 15 people from throughout the region attended this meeting, including geneticists, FHP staff, Dorena staff, silviculturalists, botanists, reforestation technicians, and a representative from the Yakima Indian Reservation. Some key discussions included standardization of permanent monitoring plot establishment and data collection, development of a regional database to house survey and monitoring data, and geospatial information needs.

Table 1. Gene conservation cone collection progress for CY2009 and 2010

Collection Area	Seed Zone	Conservation Areas	# Seedlots >700 seed available pre-2009	Goal met?	# Seedlots collected 2009	# Seedlots >700 seed available	Goal met?	# Seedlots collected 2010	# Seedlots >700 seed available	Goal met?	# Trees still needed***
Olympic mtns.	1	101	10	NO	0	10	NO	20	>25	YES	-
Okanagan NF	2E	202, 203, 204, 205	0	NO	16	13	NO	26	>25	YES	-
Wenatchee NF	2W	206, 207	12	NO	0	12	NO	27	>25	YES	-
Wenatchee NF	2W	208	1	NO	0	1	NO	24	25	YES	-
Bonaparte mtn.	3	301	0	NO	19	19	NO	0	19	NO	6
Kettle Crest	3	302	0	NO	17	14	NO	0	14	NO	9
Selkirk mtns.	3	303	1	NO	0	1	NO	7	8	NO	17
Mt. Rainier-Mt. Adams	4	401, 402, 404, 405	24	NO	0	24	NO	4	>25	YES	-
Mt. Hood	5	501	18	NO	7	25	YES	8	>25	YES	-
Central OR Cascades	5	502, 503, 504	25	YES	26	49	YES	9	>25	YES	-
Newberry Crater	5	505	4	NO	26	26	YES	11	>25	YES	-
Wallowa mtns.	6	601	0	NO	25	21	NO**	0	21	NO	4
Umatilla NF	6	602, 603	49	YES	5	51	YES		>25	YES	-
Malheur NF	6	604	7	NO	28	27	YES	0	27	YES	-
Central OR Cascades	7	701	0	NO	23	16	NO**	0	16	NO	9
Southern OR Cascades	7	703	7	NO	20	19	NO	22	>25	YES	-
Mt. Ashland	7	704								*	-
Yamsay Mtn.	8	801	0	NO	11	9	NO	14	23	NO	2
Fremont NF	8	802	0	NO	19	19	NO	18	>25	YES	-
Warner mtns.	8	803	0	NO	24	21	NO**	0	21	NO	4

* Very small population - only 2 mature trees

** Goal met in cone collection but additional trees needed due to low seed yields

*** Subject to seed extraction from 2010 collections

Table 2: 2010 whitebark pine survey locations

Forest	Conservation Area*	Mgmt. Unit	Site Name	Survey Type
Olympic	101	1	Marmot Pass	Condition
Olympic	101	2	Goat Lake	Condition
Okanogan-Wenatchee	203	7	Horseshoe - Sunny Camp	Condition
Okanogan-Wenatchee	203	7	Horseshoe - Cougar Camp	Condition
Okanogan-Wenatchee	203	7	Horseshoe - Midway Camp	Condition
Okanogan-Wenatchee	204	1	Thunder Mt. West	Condition
Okanogan-Wenatchee	204	1	Thunder Mt. East	Condition
Okanogan-Wenatchee	204	3	Mt. McCay	Condition
Okanogan-Wenatchee	204	3	South 20 Mile	Condition
Okanogan-Wenatchee	204	3	Clark Peak	Condition
Okanogan-Wenatchee	204	3	Three Buttes	Condition
Okanogan-Wenatchee	205	5	N. Navarre	Condition
Okanogan-Wenatchee	206	5	Duncan Hill	Condition
Okanogan-Wenatchee	206	5	Big Hill	Condition
Okanogan-Wenatchee	206	6	Story Mt.	Condition
Okanogan-Wenatchee	206	7	Devils Backbone	Condition
Okanogan-Wenatchee	207	4	Bear Creek Basin	Condition
Okanogan-Wenatchee	207	4	Lake Ann/Esmeralda	Condition
Okanogan-Wenatchee	208	1	Mt Lillian	Condition
Colville Indian Reservation	300		Moses Mt.	Presence/condition
Okanogan-Wenatchee	401	1	Quartz Mt.	Condition
Okanogan-Wenatchee	401	1	Manastash	Condition
Okanogan-Wenatchee	401	1	Shoestring	Condition
Deschutes	500		Pine Mountain	Presence
Deschutes	504	5	Hamner Butte	Condition
Deschutes	504	5	Maklaks Mtn.	Presence
Winema	701	6	Pothole & Lookout Buttes/Scout hill	Presence
Winema	703	1	Pelican Butte	Condition
Winema	703		Mountain Lakes Wilderness	Condition
Fremont	801	2	Yamsay Mtn.	Condition
Fremont	802	4	Blue Mtn.	Presence

*see figures 2 and 3

Figure 1. Revised distribution map of whitebark pine in Washington and Oregon.

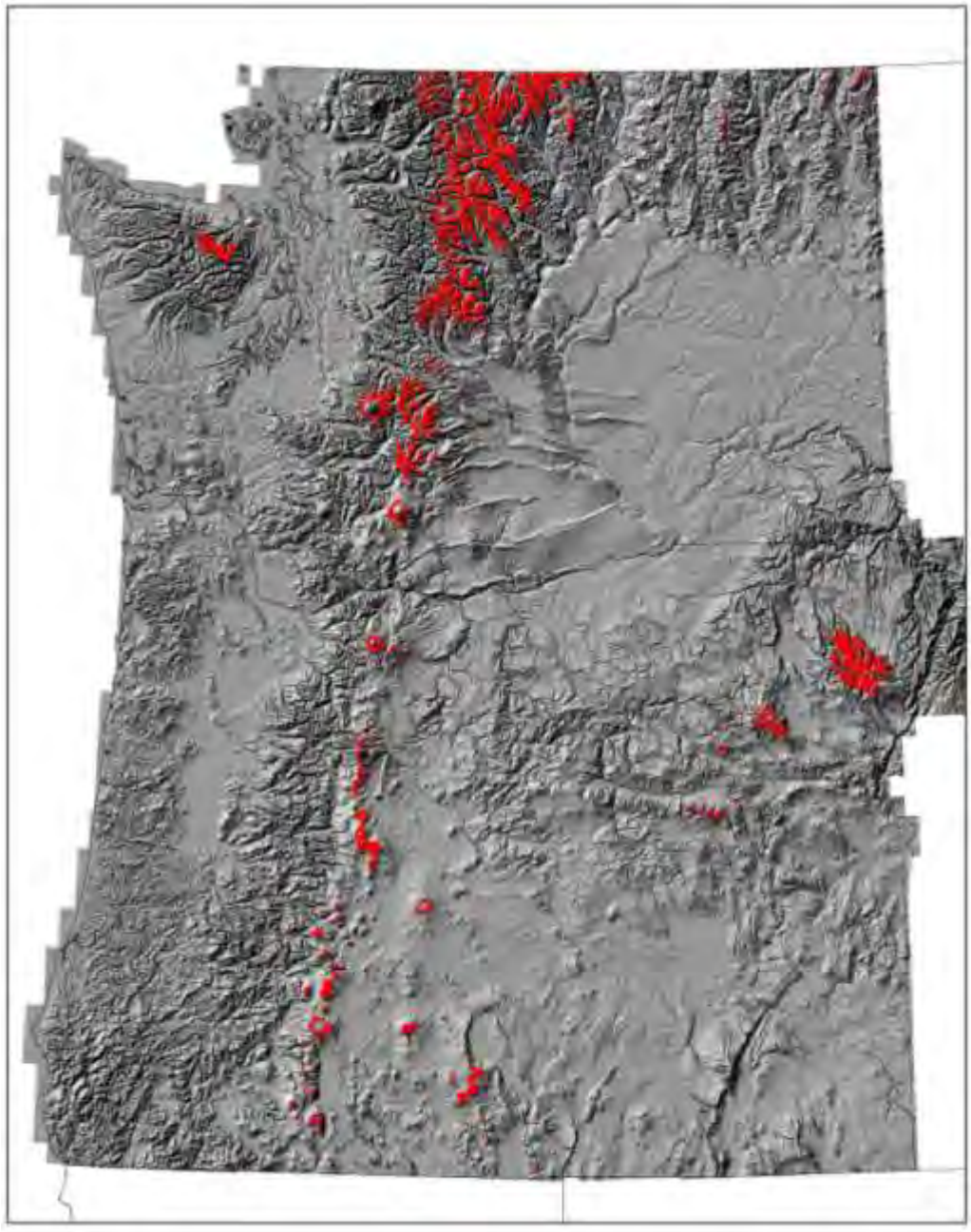

Figure 2: Washington seed zones and conservation areas. (from Aubry et. Al 2008)

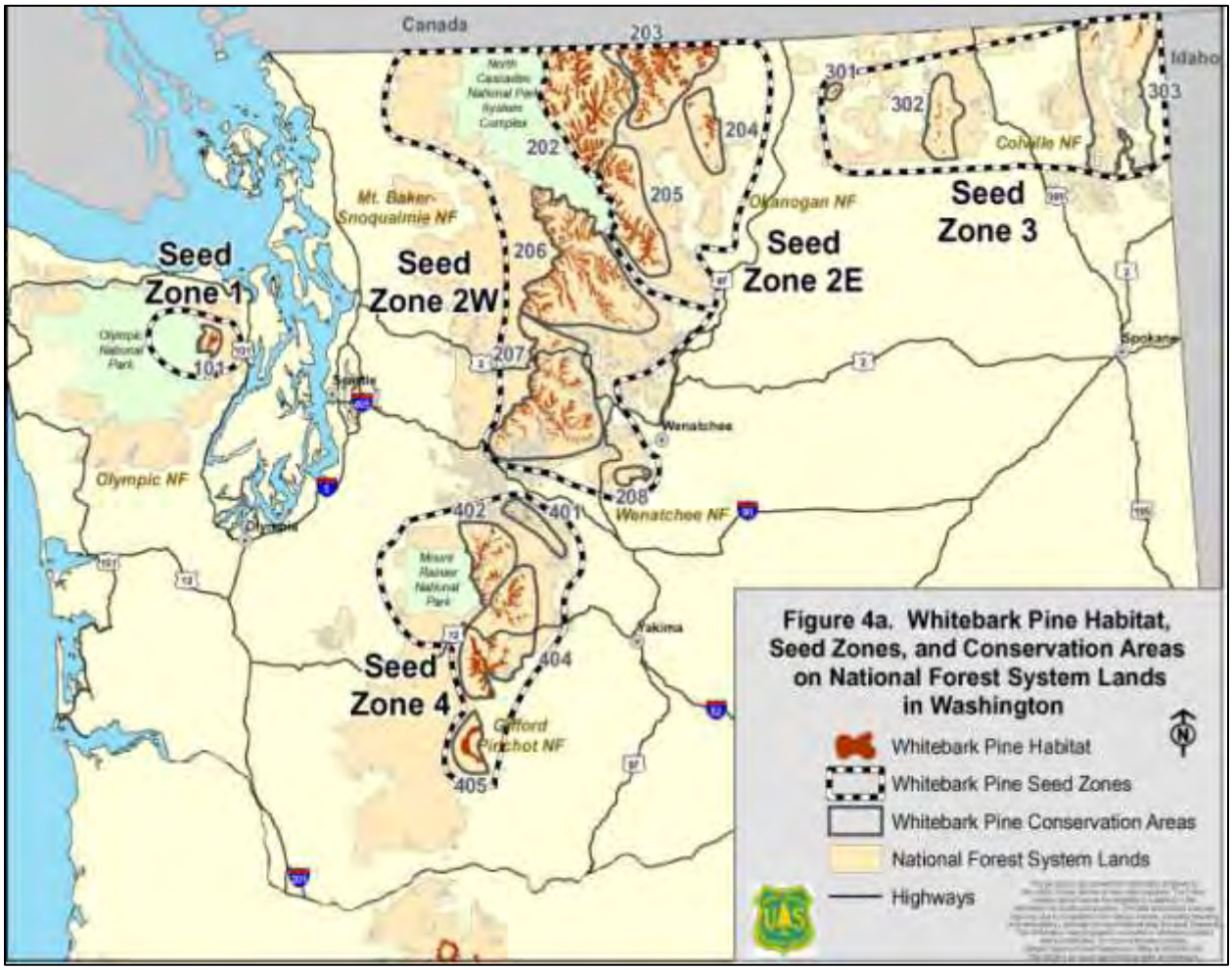

Figure 3. Oregon seed zones and conservation areas. (from Aubry et al. 2008)