

**TITLE : Whitebark Pine Stand Conditions after Mountain Pine Beetle Outbreaks  
INT-EM-08-02**

**LOCATION:** Intermountain West (R1-R4 & R2)

**DURATION:** Year 2 of 2-year project **FUNDING SOURCE:** <Base >

**PROJECT LEADERS:**

John Schwandt; FHP Coeur d'Alene, ID 208-765-7415; [jschwandt@fs.fed.us](mailto:jschwandt@fs.fed.us)

Sandy Kegley; FHP Coeur d'Alene, ID 208-765-7355; [skegley@fs.fed.us](mailto:skegley@fs.fed.us)

**COOPERATORS:** <Names and affiliations>

Dana Perkins, BLM Challis, ID; 208-879-6243; [dana\\_perkins@blm.gov](mailto:dana_perkins@blm.gov)

Ken Gibson, FHP, Missoula, MT, 406 – 329-3278; [kgibson@fs.fed.us](mailto:kgibson@fs.fed.us)

Jim Hoffman, FHP Boise, ID; 208-373-4221; [jthoffman@fs.fed.us](mailto:jthoffman@fs.fed.us)

Dayle Bennett, FHP Boise, ID; 208-373-4227; [ddbennett@fs.fed.us](mailto:ddbennett@fs.fed.us)

Holly Kearns, FHP Coeur d'Alene, ID 208-765-7493; [hkearns@fs.fed.us](mailto:hkearns@fs.fed.us)

Kelly Burns, FHP Lakewood, Co. 303-236-8006, [ksburns@fs.fed.us](mailto:ksburns@fs.fed.us)

Dan Reinhart, Yellowstone NP, Wy. 307-344-2145, [Dan\\_Reinhart@nps.gov](mailto:Dan_Reinhart@nps.gov)

**FHP SPONSOR/CONTACT:**

John Schwandt; FHP Coeur d'Alene, ID 208-765-7415; [jschwandt@fs.fed.us](mailto:jschwandt@fs.fed.us)

**PROJECT OBJECTIVES:** (*Note: the project Objectives, Justification, and Description are the same as in the original proposal. Please refer to it for more details.*)

The primary goal is to obtain information that will be used to make recommendations and set priorities regarding restoration of whitebark pine in the Intermountain West. Specific objectives to meet this goal include:

1. to determine the extent and severity of mountain pine beetle (MPB) impacts in whitebark pine stands following MPB outbreaks identified by aerial detection and other surveys
  - to quantify both dead and remaining live mature whitebark pine
2. to determine blister rust status of remaining mature live whitebark pine
3. to determine health of whitebark pine regeneration in these stands
4. to determine probable stand trajectory by recording health and abundance of other species in mixed stands

**JUSTIFICATION:** (see original proposal for more details)

Whitebark pine has a very large natural range but is in serious jeopardy especially in the Intermountain West. Over the past 10 years, mountain pine beetle outbreaks have decimated many whitebark pine forests throughout the west (Gibson et al. 2008). Although MPB outbreaks have occurred historically in whitebark pine, the additional impacts of white pine blister rust have caused deviations far exceeding expected mortality resulting in local extirpation of some populations and threatened extinction of others.(Schwandt, 2006).

Whitebark pine has a very large range, but populations are small and relatively isolated, so they are not well represented in FIA plots. This project will provide a valuable link between mortality estimates from aerial detection surveys and live trees remaining following MPB outbreaks. This project will also document levels of blister rust in remaining mature whitebark pine and regeneration which are also critical elements in determining future stand trajectory and restoration priorities.

**DESCRIPTION:****a. Background:** (see original proposal for more details)

Aerial detection surveys (Gibson 2004, Gibson et al. 2008) have documented recent increases in MPB activity in the Intermountain West, but coverage has not always been complete or consistent, and surveys only record current mortality, so cumulative mortality is not always known if areas are not flown annually. There have been a few reports documenting MPB mortality in LPP and whitebark pine stands during MPB outbreaks (Kegley et al 2004, Gibson 2004), but these have usually been limited in scope, conducted before the outbreak has run its course, and have not always looked at all species and regeneration. Perkins and Roberts (2001) used dendrochronology to mortality levels in the Sawtooth National Recreation Area during a widespread outbreak that occurred from 1909 to 1940. Recent MPB outbreaks have received a great deal of attention (Gibson 2004, Logan and Powell 2001) and have been prevalent across much of the whitebark pine range – especially in the Intermountain west. However, little information is presented to describe what the stands look like following MPB outbreaks.

This project will investigate this information gap by documenting what is left in various stand types following MPB outbreaks which will help managers understand losses and prioritize restoration efforts. This information will help us better understand and define deviations from expected mortality from a combination of these insect and disease agents and provide information that will assist in developing and prioritizing restoration activities.

**b. Methods:** (see original proposal for more details)

Areas in the Intermountain West where recent MPB outbreaks have occurred were sampled using variable radius plots for large trees and fixed radius plots for regeneration. Data collected included: tree species, size (DBH), condition (mortality causes, and blister rust levels (for live trees)

**c. Products:** (see original proposal for more details)

A report summarizing results for each area sampled that will describe current whitebark pine condition following MPB outbreaks as well as condition of other species sampled. It may also be possible to compare results to ADS information if available. Data will be entered into the WLIS database and compared with prior survey data to document trends over time. Results will be used to make recommendations regarding relevant restoration activities and priorities for restoration.

Preliminary results comparing the current outbreak with that of the 1930's will be presented at the National Society of American Society meeting in November, 2008.

**d. Schedule of Remaining Activities:** <Listing of major activities & timelines>.

**Winter 08** – analyze data collected in summer 08, prepare preliminary report; identify areas to be sampled in summer 09; refine field protocols

**Summer 09** – hire field crew; sample areas selected

**Winter 09** –analyze data and final report

**e. Progress/Accomplishments:** <Brief description of progress/accomplishments for multi-year projects.>

**2008** - 2-person crew was hired and surveyed 26 stands in nine general areas in Idaho, Montana, and Wyoming (Table 1). In these areas, 404 plots and 5152 mature whitebark pine trees were examined. In addition, status of whitebark pine regeneration was documented in each stand. Data are currently being entered into a data base for summary and analysis.

**2009 Plans** – fewer surveys are planned so field crew will not be needed as long which will provide some salary and travel savings

**Table 1. Forests and areas surveyed for “Whitebark Pine Stand Conditions after Mountain Pine Beetle Outbreaks” project in 2008.**

Forest or Area	Stand	# of Plots	# of WBP	
Idaho Panhandle NF	Russell Ridge	16	111	
	Pyramid Lake	13	100	
Lolo NF	Morell Peak	31	248	
	Morell Ridge (MRLD)	13	121	
Lewis & Clark NF	Kings Hill	22	222	
	Kings Ridge	21	181	
Helena NF	Edith Peak	25	224	
	Edith Lake	10	248	
Sawtooth National Recreation Area	Railroad Ridge (RRB)	14	299	
	Railroad Ridge (NRR)	20	216	
	Titus Lake Peak (TLK)	16	265	
	Anderson Creek (ABK)	13	186	
	Galena Summit (AVL)	12	204	
	Galena Summit-North (CRS)	12	215	
	Silver Peak (SIL)	8	103	
	Anderson Peak (AND)	9	244	
	Salmon-Challis NF	Twin Peaks (TWP)	8	89
	Salmon-Challis NF	Assout Basin (ASO)	11	25
Assout Basin (ASOII)		18	146	
Big Hill (BGH)		24	344	
Beaverhead/Deerlodge NF	Clover Meadows (CLM)	14	217	
Targhee NF	Sawtell Peak (STP)	16	265	
	Sawtell Meadow (STM)	14	243	
Yellowstone National Park	Mt. Washburn (MTW)	9	204	
	Craig's Pass (CRP)	21	222	
	Dunraven Pass (DRP)	14	210	
<b>Total</b>		<b>404</b>	<b>5152</b>	

**COSTS: < Budget estimates for each year of project.> Actual 2008 and Requested 2009**

Item	Received 08 Funding	\$ Spent in 08	Requested funding in 09	Other-Source 08/ 09 Funding	Description /Source for other funds
08 Salary - 130 days	\$28,000	\$21,000	-	\$4,000 / 4,000	4 weeks -FHP personnel to select sites, train, and guide field crew
09 Salary – 100 days	-	-	\$21,000		
Travel -100 days crew	\$20,000	\$7,000	\$15,000	\$1,000 / 1,000	Some FHP travel from base funds
20 days FHP	\$ 2,000	\$2,500	\$ 2,500		
Other –crew vehicle	\$ 2,000	\$2,500	\$ 2,500	\$1,500 / 1,500	FHP vehicle for FHP personnel
Contracting					
Equipment					
Supplies				\$ 500 / \$500	Field supplies donated by FHP
Other (specify)					
<b>Totals</b>	<b>\$52,000</b>	<b>\$33,000*</b>	<b>\$41,000</b>	<b>\$7,000 / 7,000</b>	

\*Differences between funding received and spent were due to: Crew was hired at a salary lower than expected; Travel caps limited dollars available for travel and crew camped or stayed in trailers or work stations to save dollars. Dollars not spent were subject to fire transfer.

**Additional Literature cited:** (see original proposal for full list)

Gibson, K.; Skov, K; Kegley, S; Jorgensen, C; Smith, S; and Witcosky, W. 2008. Mountain pine beetle impacts in high-elevation five-needle pines: current trends and challenges. USDA Forest Service report *in Press*.