

## 2012 Progress Report for Evaluation Monitoring – US Forest Service

**Title:** Implement Interagency Whitebark Pine Monitoring for the Greater Yellowstone Ecosystem

**Location:** Beaverhead-Deerlodge NF, Bridger-Teton NF, Custer NF, Caribou-Targhee NF, Gallatin NF, Shoshone NF, National Elk Refuge, Red Rock Lake NWR, Grand Teton NP, Yellowstone NP

**Duration:** 2012-2014

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**Project Objectives:** Our primary objectives are to: i) conduct a third visit to transects established in 2004-2007 as part of the Interagency Whitebark Pine Monitoring Protocol (IWPMP) for the Greater Yellowstone Ecosystem (GYE), visits will occur to ¼ of transects each year from 2012-2014; and ii) revisit burned/unburned paired plot surveys conducted in 2009 for two seasons during 2012-2013.

### Progress Report:

This summer marked the beginning of the second revisit to sites established for monitoring the health and status of whitebark pine in the GYE. Field crews successfully revisited a total of 87 interagency whitebark pine monitoring transects. This is half of the original 176 permanent transects as described in the Interagency Whitebark Pine Monitoring Protocol (GYNWPMWG 2011) according to their assigned panel scheduled. Two panels (panels 1 and 3) were visited this year in order to measure mortality of whitebark pine during the mountain pine beetle outbreak. A full survey was completed for transects in panel 1 to measure white pine blister rust infection.

Of the 87 transects surveyed, 3 had been burned by wildland fire in previous years. Upon revisit to 2 of these sites, no trees of any species were encountered. Transect 214-1 was burned in the 2007 Wicked Creek Fire Complex, Montana and consisted of primarily exposed soils with herbaceous vegetation (*Epilobium angustifolium*, *Agoseris glauca*, *Senecio spp.*) covering only a small percentage of the plot ( $\leq 25\%$ ). While navigating to this transect, it was noted that concave areas of predominantly north aspects supported a higher proportion of herbaceous ground cover. There were also several whitebark pine seedlings observed in these areas. The second transect (6009-2) was burned in the more recent 2011 Norton Fire, Dubois, Wyoming. Ground exposure on this transect exceeded 95%. Of the few

forbs that were beginning to emerge, *Arnica cordifolia* and *Epilobium angustifolium* dominated. The third transect (251-2) also located in the 2007 Wicked Creek Fire Complex was not visited due to weather and time constraints. Yet, its close proximity to transect 214-1 ( $\approx 800$  m) would suggest that it too had limited herbaceous ground cover and little if any emergent or regenerating whitebark pine or other species. This transect is scheduled to be revisited in 2014 following the panel rotation.

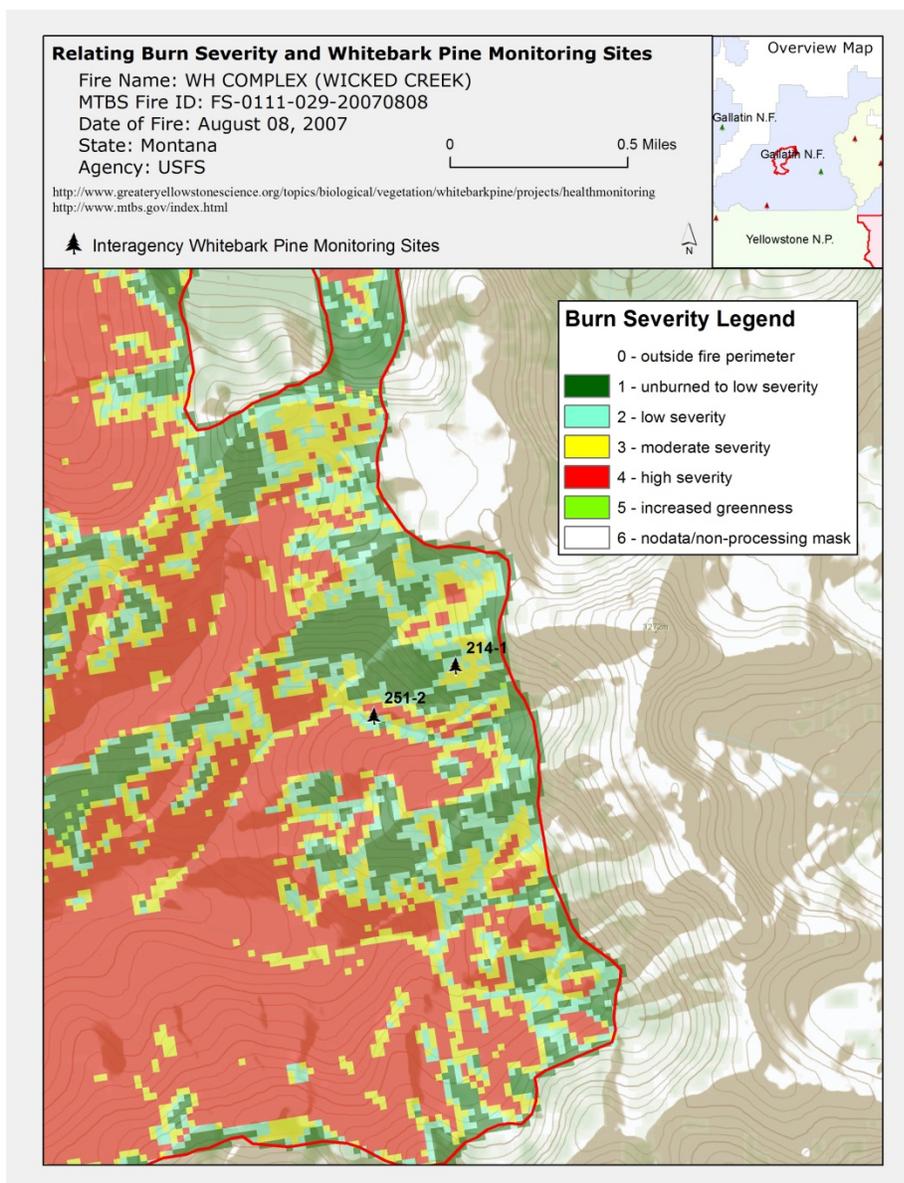
This summer and fall proved to be an active fire season. Several areas in the GYE have been affected by varying intensity fires. The overall consequences of the 2012 fire season on the health and survival of trees on the 176 monitoring transects are yet unknown but a minimum of 4 transects were located either within in mapped fire boundaries or in close proximity to areas that were affected by the Millie Fire in the Gallatin Canyon, Montana. As the Interagency Whitebark Pine Monitoring Program proceeds, we will continue to assess fire effects at a transect level throughout the GYE. This will include using burn severity maps such as the maps developed through the Monitoring Trends in Burn Severity (MTBS) project (<http://www.mtbs.gov/index.html>) or after each fire to better understand potential fire effects on whitebark pine recruitment. See Figure 1 as an example of the monitoring transects 214-1 and 251-2 overlaid on a burn severity map for the Wicked Creek Complex.

In addition as of Oct 1, 2012, the objective to revisit burned/unburned paired plot surveys was completed on 2 of 3 sites. The third site will be completed the week of Oct 1, 2012 and data compilation and analysis will occur during fall 2012. Sites visited include Ann's Fire, Hellroaring Fire, and the Hidden Lake Fire. Data recorded at each site meets the specific monitoring objectives outlined in the project objectives (see data sheets included in email). In addition, this reread of plots are photo and GPS monumented. The sites chosen provide the opportunity to learn about the effect of different disturbance agents, including mountain pine beetle, blister rust, and fire, on whitebark pine regeneration. Initial observations from reread data indicate that information about regeneration dynamics including establishment, survivorship, growth, and disturbance interactions will be available upon data analysis.

The Greater Yellowstone Network completed the 2011 annual report which can be found on the Greater Yellowstone Science Learning Center website (<http://www.greateryellowstonescience.org/subproducts/14/7>) or by contacting the Project Leader. The network is also in the process of completing a step-trend analysis for the data collected between 2004 – 2011. There will be a few presentations and posters related to whitebark pine efforts supported through the Greater Yellowstone Coordinating Committee – whitebark pine subcommittee made at the Greater Yellowstone Biennial Scientific Conference in October 2012. The USFS Forest Health Protection Program will be acknowledged for their support in these efforts.

In summary, we achieved the objectives identified for the 2012 field season and look forward to continuing the project in 2013 when at least one full panel will be visited as part of the long-term monitoring program and an additional 3 sites will be reread as part of the unburned/burned plot surveys.

**Figure 1.** Greater Yellowstone Network long-term interagency whitebark pine monitoring transects 214-1 and 251-2 overlaid on the Wicked Creek Complex burn severity map. Example of how this information can be used in future analysis and understanding of regeneration of whitebark pine post wildland fire.



## References

Greater Yellowstone Network Whitebark Pine Monitoring Working Group. 2011. Interagency Whitebark Pine Monitoring Protocol for the Greater Yellowstone Ecosystem, Version 1.1. Greater Yellowstone Coordinating Committee, Bozeman, MT.