November 15, 2012

Re: Harney Peak Limber Pine - 2012; RCSC-02-13

To: Forest Supervisor Black Hills

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This is an update[1] regarding the known limber pines (*Pinus flexilis* James) on and near Harney Peak in the Black Hills National Forest of South Dakota. On August 24, 2012 Cheryl Mayer (Black Hills National Forest Botany Technician) and I examined the trees on and 0.3 miles east of Harney Peak. Cheryl Mayer visited the limber pine 0.8 miles northeast of Harney Peak on September 20, 2012. The objectives were to assess changes in the limber pine condition, check cone numbers and maturity, and collect cones.

Cheryl Mayer and Daryl Stisser designed a cone-detaching tool to remove cones high in a tree. This consisted of a telescoping painting pole with seven 3 ft. sections and an attached ice scraper with a notch cut in the middle (**Fig. 1**). The pole reach is approximately 20 ft. fully extended plus the reach of the operator. The ice scraper notch is placed between the cone and branch and twisted to detach a cone.

Observations and Changes Since the 2011 Report

Three live trees: Tree #03 was measured as 13.7 in. DBH (estimated in 2011). This tree has three potential white pine blister rust (WPBR) (*Cronartium ribicola*) branch cankers, though symptoms were not clear and the branches were high in the crown.

[1] Blodgett, J. T. 2011. Harney Peak Limber Pine, 2011. USDA For. Serv., Rocky Mountain Region, For. Health Mgt., Rpt. RCSC-01-12.

All 2012 cones were already opened. There were 15 cones on tree #03, 8 cones on tree #02, and 1 cone on tree #01. On June 29, Cheryl noted 20-25 green cones on #03 and 20 green cones on #02. Some cones likely were removed by animals. No 1-year cones were observed. Cones from tree #03 were easily removed with the cone-detaching tool. The few seeds in these cones were not viable. Even with the tool cones could not be reached on tree #02.

There was no evidence of mountain pine beetle (MPB) (*Dendroctonus ponderosae*) or *Ips* spp. in the limber pine trees. MPB is still killing ponderosa pine in the area.

Seven saplings: There was little change in sapling health. No mature or 1-year cones were observed.

Nine seedlings: Only 4 of the seedlings (#s 02, 03, 04, and 09) were examined, two of which were healthy. Seedling #02 had symptoms of drought stress, which was also observed in 2011. Seedling #09 had two WPBR cankers, one on each major stem. Although no sporulation was evident, branch swelling, resin, and dead bark tissues were observed. Dead tissues were observed both above and below the swollen, resinous branches (Fig. 2).

Management recommendations update: Recommendations were provided in the 2009 and 2011 reports. Verbenone pouches were used as a preventive treatment for MPB in 2012 (Trees #2 and 3), some branch pruning to control WPBR spread was applied, and seeds were collected in 2009 and 2011.

Fig. 1. Cone tool.

Fig. 2. Seedling #09 with two main stems (left), canker in one stem with dead bark above and below infected branch and live bark below infected branch (center), and canker on the other stem with dead bark above the infected branch (right). Dead bark is brown when cut and live bark is green.