Limber Pine Health Survey in the Rocky Mountains and North Dakota

James T. Blodgett[1], Kelly S. Burns[1], Brian Howell[1], Marcus Jackson[2], William R. Jacobi[3] and Anna W. Schoettle[4]

Limber pines are widely distributed across the Rocky Mountains and are especially important because of their unique cultural and ecological characteristics. Recent surveys have suggested that significant ecological impacts are occurring as a result of white pine blister rust (WPBR) and other damaging agents. Additionally, several new WPBR infestations have been discovered in Colorado and the disease front in northern Colorado is within 6 miles of Rocky Mountain National Park. Past studies have provided critical information on the distribution and intensity of the disease, but we have little information on the long-term changes that will result from this invasive disease.

The purpose of this study is to assess the long-term ecological health of limber pine within WPBR-infested and threatened areas of the Rocky Mountains and to provide baseline information necessary to sustain, protect, and restore limber pine stands in the Rocky Mountains and North Dakota. A total of 83 permanent plots (50 X 200 feet) were established and 119 variables were recorded to characterize sites, trees, regeneration, and understory vegetation. In 2006, 36 plots were installed in northern Colorado and southern Wyoming. In 2007, 29 plots were installed in central and western Wyoming, 16 plots in central Montana, and 2 plots in North Dakota. Plots contained 13 to 197 trees, comprised of 8 to 169 limber pine. The elevation of the plots ranged from 2,881 to 10,243 feet. Very few trees had dwarf mistletoe or mountain pine beetle with an average plot incidences (API) of infected/infested trees of 4% and 3%, respectively. Many trees had twig beetles (API 35%), however damage was minor. WPBR was found in 81% of the plots (API 35%) with higher API of WPBR in the north, except for North Dakota where WPBR was not found. The API of WPBR was 29% in northern Colorado/southern Wyoming, 37% in central/western Wyoming, and 49% in central Montana. Additional periodic surveys are planned to monitor long-term ecological impacts.

Bill Jacobi

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[1]USDA Forest Service, Rocky Mountain Region, Forest Health Management
[2]USDA Forest Service, Northern Region, Forest Health Protection
[3] Forest and Shade Tree Health lab, Dept. of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO.
[4] Research Plant Ecophysiologist, USDA Forest Service, Rocky Mountain Research Station, Fort Collins, CO