

Highlights from the 2015 Black Hills Aerial Photography Interpretation Project and Ground Observations of Mountain Pine Beetle Activity in the Black Hills

Newly released analysis of high resolution aerial photography of the Black Hills of South Dakota and northeastern Wyoming reveals that the mountain pine beetle epidemic is slowing overall although photography and ground survey indicate populations remain static or show slight increases in localized areas. Approximately 15,000 acres in South Dakota's Black Hills experienced trees fading from mountain pine beetles' prior year attacks, compared to 16,000 acres in 2014. All of the affected 2015 acres occurred in South Dakota in Custer, Lawrence, Meade and Pennington counties and approximately 1,200 acres with tree mortality were identified in the western Black Hills in northeastern Wyoming.

Analyses of high resolution aerial photography taken since 2010, indicates over 128,000 acres have been affected by the mountain pine beetle epidemic in the past six years. When combined with less precise maps sketched by observers in aircraft from 1996 – 2011, it is estimated that over the last 19 years, 447,000 acres have been affected to varying degrees by mountain pine beetle on the Black Hills National Forest and adjacent lands (Figure 1).

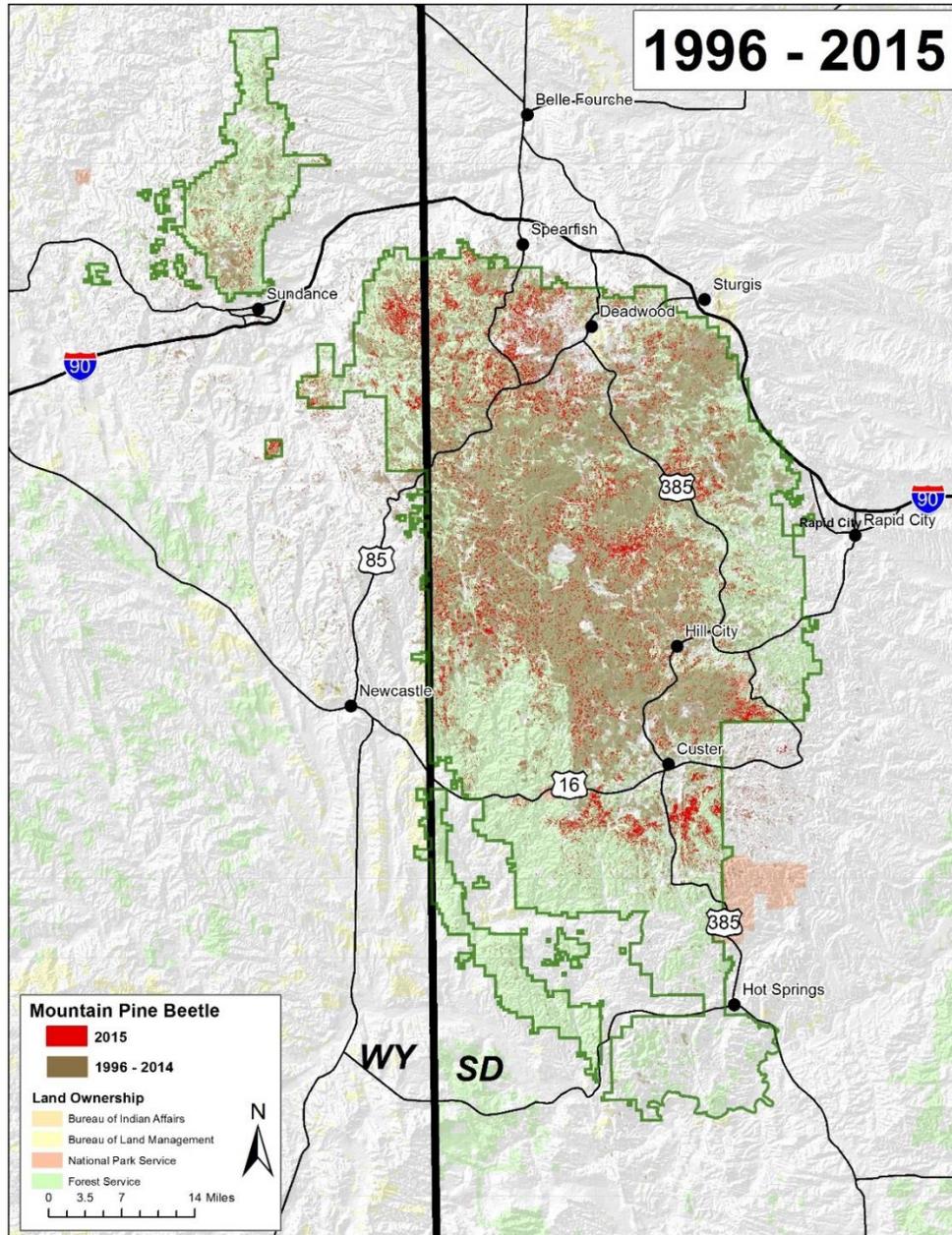


Figure 1. Mountain pine beetle activity on the Black Hills National Forest 1996-2015

Mountain pine beetle brood surveys were conducted at 13 locations by US Forest Service entomologists in July, 2015. Results showed eight sites with decreasing populations, four sites with static populations and one site with increasing population. Numbers of larvae in sampled trees have dropped significantly compared to the early 2000's when the epidemic was rapidly expanding.

US Forest Service entomologists also conducted extensive ground surveys of new and prior year infested trees after the 2015 beetle flight period. Results indicate that overall beetle populations are declining rapidly, but there are still areas with above average beetle activity. Beetle activity was classified for each survey line as low, moderate or high, with low being less than 3 trees per acre, moderate as 3-9 trees per acre and high being 10 or more trees per acre (Figure 2). Based on these categories, 82% of areas are low, 13% moderate and 5% high. Notable areas of high activity were found west of Lead in the north and west of Hill City and southeast of Custer in the south.

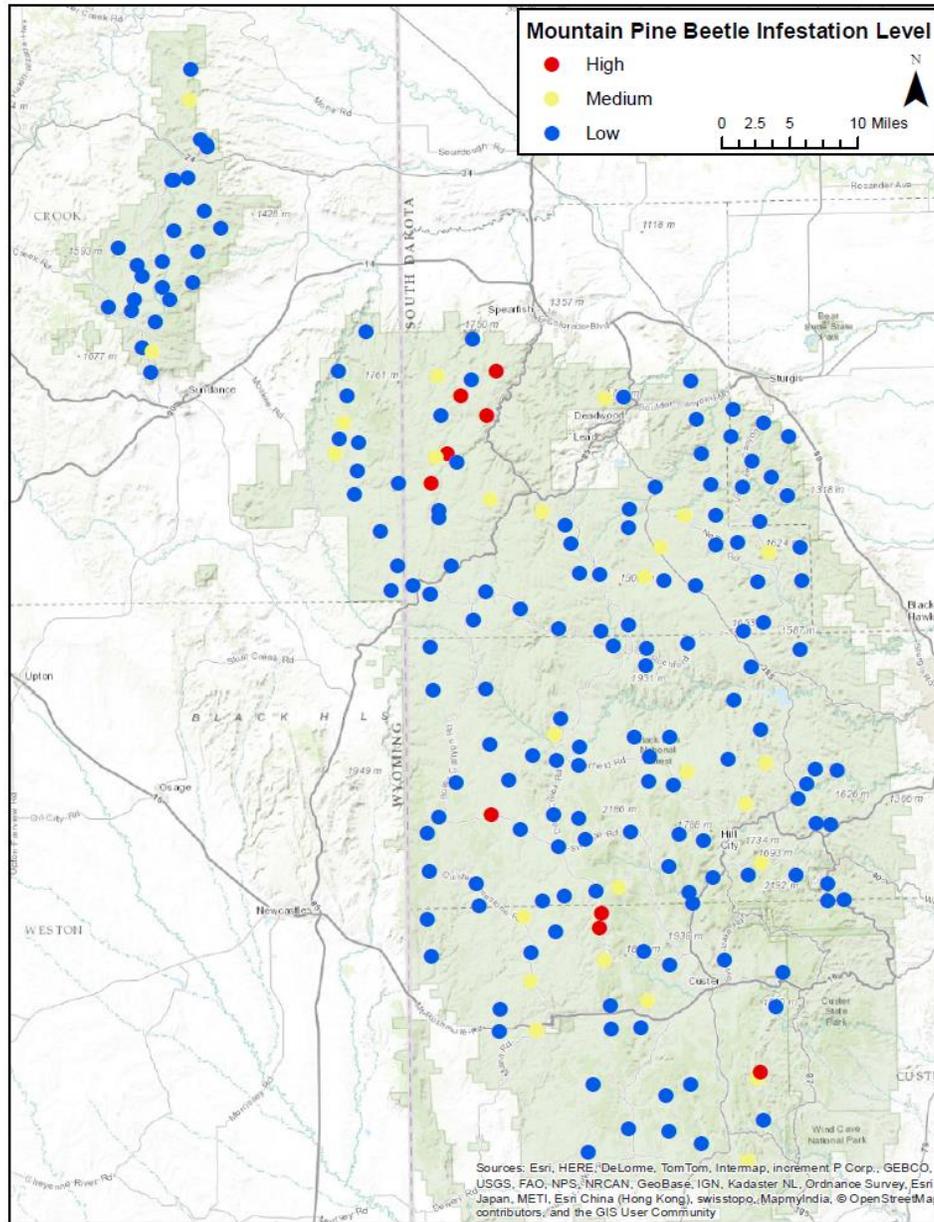


Figure 2. 2015 mountain pine beetle sample points and associated beetle infestation level (low, medium and high) in the Black Hills National Forest. (USFS Forest Health Protection, Rapid City Service Center).

Although both aerial photo analysis and ground surveys show overall mountain pine beetle populations declining from prior years, there are areas in the Black Hills that continue to be at high risk for mountain pine beetle expansion, especially in the west central part of the Hills near the South Dakota/Wyoming state line, the northwest corner of the Hills and southeast of Custer.

Active forest management, such as thinning, combined with sanitation has had a positive effect on the mountain pine beetle epidemic and helps to ensure that the forest is more resilient into the future. Forest managers report that non-commercial treatment of infested trees, timber harvest and commercial thinning are making a difference (Figures 3, 4 and 5).



Figure 3. Mountain pine beetle caused tree mortality surrounding Minnex timber sale. Photo: Ken Marchand



Figure 4. Treated stand in Redfern Timber Sale adjacent to mountain pine beetle impacted stands (see Figure 5). Photo: Blaine Cook



Figure 5. Untreated stand adjacent to the Redfern Timber Sale (Figure 5). Photo: Blaine Cook