Surdex's Imagery Helps States Combat Mountain Pine Beetle Epidemic

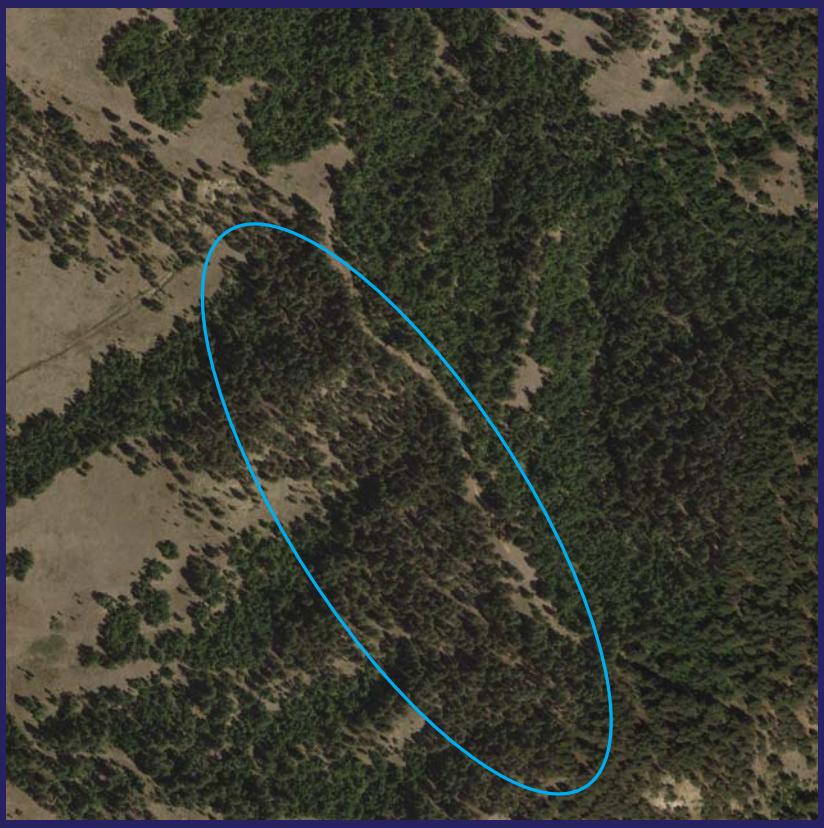
The forest service began conducting aerial surveys in 1996 near the start of the mountain pine beetle epidemic, which killed more than 4 million acres of trees in Wyoming by 2014.

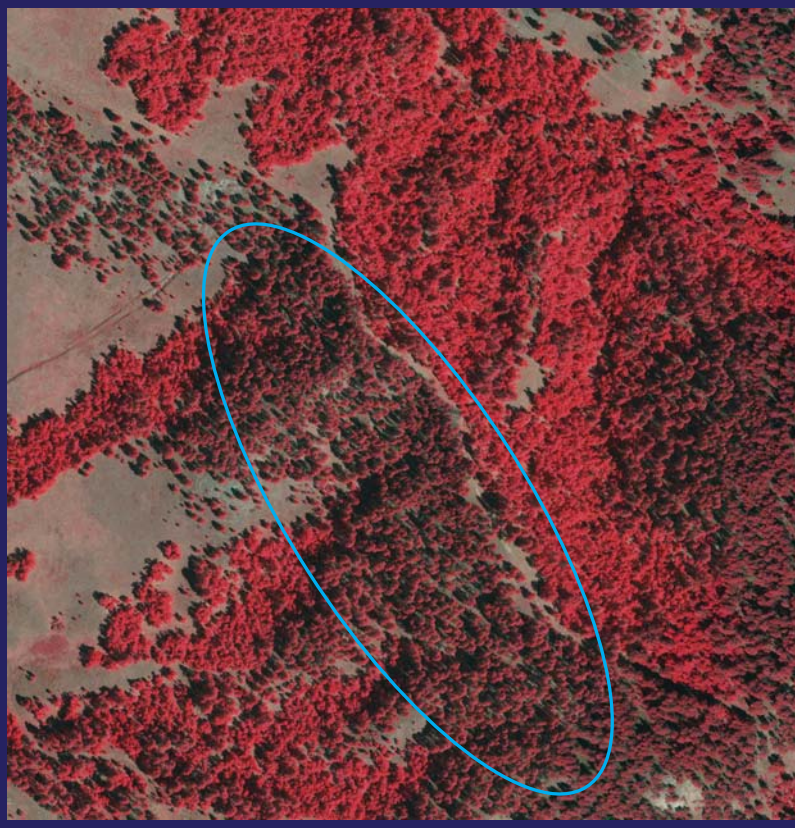
The mountain pine beetle is a native species to the Rocky Mountain region of the United States, but if the population vastly exceeds its normal levels, significant damage to the forests may result. Over the last decade, the mountain pine beetle population in South Dakota and Wyoming grew to the level of infestation. Extensive areas of forest on both public and private lands were being destroyed.

Special Imagery Acquisition and Color Specifications Enable Beetle Tracking

In order to track the spread of the beetles, the South Dakota Department of Agriculture and the Wyoming State Forestry Division formed a partnership to obtain aerial imagery of the affected areas. These entities contracted with Surdex in 2012 to obtain over 3,900 square miles of 4-band imagery. The color infrared (CIR) band was particularly important for tracking vegetation, or lack thereof, and normal colors (RGB) for this project were enhanced to clearly delineate beetle-damaged trees from trees damaged by fires or other sources, and from unaffected trees. The mountainous terrain made it necessary to acquire the imagery during a higher sun angle in comparison to standard projects (minimum 45 degrees rather than 30 degrees) in order to minimize shadows and maximize utility of the imagery.

Natural color (RGB) and color infrared (CIR) imagery showing beetle damage to trees. The circles below show dark areas which indicate beetle damage.





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New Imagery from Surdex Needed as High Beetle Population Persists

Even though the initial imagery was an extremely useful tool for determining areas affected by the pine beetles, the population remained extremely high, and the resulting damage was spreading. Surdex was contracted again in 2013 for approximately 4,600 square miles of imagery and in 2016 for approximately 3,700 square miles to track their movement.

By 2017, the pine beetle's population was starting to return to normal levels due to the efforts of the local foresters as well as specific winter conditions that quickly reduced the population. Crook County Wyoming decided to collect imagery once again to document the final phase of the population boom, and Surdex provided approximately 1,800 square miles of 4-band imagery to the County.

Mountain Pine Beetle Returns to Normal Population Levels

Planning, tracking, conservation efforts and weather patterns have fortunately led to the decline of the mountain pine beetle population back to normal levels.

The Mountain Pine Beetle (*Dendroctonus ponderosae*) which for years devastated forested areas in mountainous parts of the country.