South Dakota
Department of Agriculture
**Division of Resource Conservation & Forestry**

# THE BEAUTIFUL BLACK HILLS:
# An Ideal Place for a Bug to Raise a Family

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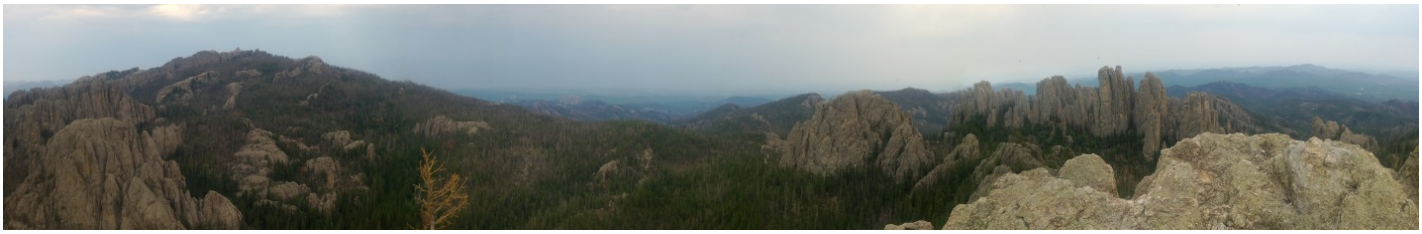

The Black Hills of Southwestern South Dakota grow Ponderosa pine trees like no one's business. Ponderosa pine can be found growing from as far south as Mexico and its range extends as far north as Southern Canada, and throughout most of the West. Many say, however, that nowhere in its range does it grow as vigorously, and abundant as here in the Black Hills. Unfortunately, this abundance of trees can be harmful to forest health when natural occurrences are restricted.

Frequent and small-scale wildfires are a natural and necessary occurrence in a healthy Ponderosa pine stand in the Black Hills. There are methods for mimicking fire to promote a healthy stand, but only to an extent. Another natural occurrence in the Black Hills that helps keep stands from becoming over-stocked are endemic bark beetle infestations.

Mountain pine beetle, the infamous "Black Hills public enemy number one," can be found infesting Ponderosa pine in nearly all of its native range. Originally named the Black Hills Beetle for where it was first discovered in the 1890s, it is currently wreaking havoc throughout the Rocky Mountain region. The news, good or bad, is this isn't the first time, and it won't be the last.

Pine trees reproduce aggressively, and in areas where enough sunlight reaches the forest floor, it will most likely be covered with a carpet of baby trees. Without fire, or some other form of management to reduce the population, most of these trees will continue to grow to maturity. All the while, these trees are competing for sunlight, and the scarce moisture often found in the Black Hills.

Dense stands of mature Ponderosa pine are exactly what the mountain pine beetle needs to spur an epidemic. The micro-climate created in dense stands allows the beetle to effectively fly from one tree to another, without the wind hindering its flight. Similarly, the lack of wind and convective heating from the sun under the canopy of a dense stand allows the beetle's pheromone to attract hundreds of other beetles to that tree. If only a few beetles land on the same tree, they will not be capable of over-coming the trees natural defense of drowning its wounds with sap, or "pitching-out" the beetle. In addition, small trees will not provide the habitat necessary for pine beetles to reproduce in quantities that will start an epidemic.

Stands of sparsely-stocked Ponderosa pine trees can also be attacked by mountain pine beetle, but to a much smaller extent. This has little to do with the vitality of the tree itself, but with the micro-climate of the stand as previously

mentioned. If the pine beetle population has already grown to epidemic levels, however, stands adjacent to the existing population will likely experience infestation and mortality, regardless of stand density.

The Black Hills are currently experiencing a large-scale epidemic, due to unhealthy stand conditions. The mountain pine beetles now kill large swaths of trees, regardless of their condition, as opposed to small pockets of weak trees. This stand-replacement is not fine-tuned surgery. However, all is not lost. As the term 'stand-replacement' implies, new stands of young trees will, and are currently replacing the dead and dying.
As a forester, I perceive the epidemic as a natural occurrence that can be managed and stymied, given the ability and the right tools, but only to an extent. Management is far more practical on a small scale, such as on private lands, where different population reduction and prevention tactics can be used. Complete eradication of the mountain pine beetle is not practical or smart. Bombing the Black Hills with pesticide would do little to kill the beetles, but would rather kill insects beneficial to a properly functioning ecosystem.

It is unfortunate to see so many old, large trees dying, and the landscape will not be the same for a many years. By using both preventative methods to protect stands, and individual trees, and treatment methods proven to reduce current beetle populations, landowners throughout the Black Hills can greatly reduce the impacts on their properties. In many cases, the Forest Service will also work with landowners to help reduce populations around their property boundaries.

Epidemics occur in cycles, and this epidemic will end regardless of our involvement. Believe it or not, it will end before all the trees are dead, and there will still be old, large trees, left unaffected by the current epidemic. Spraying, and coddling every old, large tree in the hills is unnecessary, and impractical. Young trees will replace old trees; it is inevitable. Battles need to be chosen wisely, and fought accordingly.