

South Dakota Forest Health Highlights 2010

The Forest Resources:

(Executive Summary and photos excerpted from *South Dakota Forest Resources Assessment - 2010* online at <http://sdda.sd.gov/forestry/current-news/assessment.aspx>)



The Forest Resource

Coniferous forests comprise more than three-fourths of the state's forest. These forests are situated in the Black Hills, extending north into Harding County and east to Todd County. The dominant species is ponderosa pine and these pine stands not only contribute to the state's economy but provide valuable wildlife forage and cover. The most serious threats to South Dakota's coniferous forests are insect and fires. Two-thirds of the coniferous forests in the state are on national forest land.

Upland hardwood forests, oaks, ash, aspen and elm, comprise approximately 20 percent of South Dakota forest land and are scattered primarily in the northeast and southeast corners of the state though hardwood stands, principally aspen and oak occur in the Black Hills. In general, upland forests have declining regeneration and face threats of disease, invasive species, and land-use changes. Perhaps the most valuable asset of hardwood forests are the recreational opportunities they provide, including hunting, camping, and wildlife viewing. Approximately two-thirds of the upland hardwood forests are privately owned; the rest are dominantly federally owned.

Bottomland forests make up only 3 percent of the forested land in the state. These forests consist primarily of cottonwood, willow, green ash, and elm. These forests provide tremendous value in improving water quality and flood control. The biggest threat to current riparian forests is the lack of regeneration of cottonwood

trees. Approximately 70 percent of these bottomland forests in South Dakota are privately owned.

Shelterbelts and windbreaks cover about 200,000 acres and while not typically thought of as forested land but serve an important role. Windbreaks protect fields and structures from wind and snow and help prevent soil erosion. They also provide notable habitat for pheasant and other birds. Shelterbelts face similar threats as other forests types though there is a pressing need for renovation. The most common species used as a shelterbelt tree is green ash, and with the looming threat of emerald ash borer, efforts are being taken to expand the diversity of plantings. There is no ownership data for windbreaks, although most are considered to be privately owned.

Urban or community tree lands occupy approximately 103,000 acres in the state. There is a large number of species present within community forests with ash being the most common followed by elm, crabapples, and maple. Community forests provide energy conservation, improved water quality, and aesthetic appeal, among other values. Common threats include diseases, development, and weather events. There are 34 Tree City USA communities in South Dakota along with two Tree Campus USA universities.



Custer & Pennington County South Dakota



Boundary Line between
Custer State Park, Trees Treated
Wilderness, Trees Untreated

Little Devil's Tower
Cathedral Spires
Harney Peak Lookout

Mount Rushmore



Photo looking north September 10, 2009

Special Forest Health Issues and Components of Change

Insect Forest Health Issues:

Mountain pine beetle (*Dendroctonus ponderosae*) The recent mountain pine beetle epidemics in the Black Hills began in the northwest around 1996 near Sturgis, arose around Deerfield Reservoir in about 2000 and continue around Harney and Custer Peaks, among other locales. These episodes were concentrated originally on Federal land and have now spread to private lands, primarily in the central Hills area. Landowners adjacent to Rapid City are also seeing mortality of their pines due to the beetle. Since 1996, South Dakota has had about 396,000 acres with various amounts of beetle-caused mortality. In 2010, approximately 44,000 acres had some level of current beetle-caused mortality.

The northern border of the Sylvan Lake Unit of Custer State Park experienced an epidemic that began shortly after an expanding population of mountain pine beetles was detected in Black Elk Wilderness Area in 2002. By 2010, the Black Elk Wilderness Area bordering Custer State Park had incurred near 100 percent pine mortality. The beetle situation in the Park has been less severe

and pine mortality attributed to mountain pine beetle has declined by near 50 percent due to aggressive management that included thinning and removal of infested trees.

There are some relic stands of limber pine in the Cathedral Spires of Custer State Park and this species is also considered a host for mountain pine beetle. There was concern that the expanding beetle population from the adjacent Wilderness Area might spread into these stands and eliminate the species from the area. The trees are already stressed by white pine blister rust and encroachment by white spruce and the additional stress of beetle attacks, even unsuccessful ones, could result in significant tree mortality. Anti-aggregation pheromone, verbenone, has been used as part of the management of this relic stand of trees. The efforts have been very successful with the loss of less than 1 percent of the trees colonized and killed by mountain pine beetle, despite a high infestation of the beetles in the ponderosa pine in the immediate vicinity.

Pine engraver beetle (*Ips pini*) Pine engraver beetle populations were very low during the past several years are beginning to increase and are causing some ponderosa pine mortality in the Black Hills. Pine engraver beetles are typically found in dead and dying trees, as well as slash piles. The population had increased in the early 2000s due to an increase in susceptible host material as a result of wildfires and weather events, such as hail and snow-breakage that has resulted in a tremendous build up of dead, weakened and damaged tree material. The population is increasing again perhaps due to the increase in trees killed by the mountain pine beetle.

Locust borer (*Megacyllene robiniae*) This insect is becoming more commonly reported, perhaps due to the increased popularity of its host, black locust that being planted as a substitute for ash. The insect typically attacks young locust trees with the colonization resulting in the tree snapping off along the lower trunk. Some community plantings have experienced near 100 percent mortality of their black locust within the past several years.

Redheaded ash borer (*Neoclytus acuminatus*) Most likely due to the heighten awareness of emerald ash borer; the redheaded ash borer has been more commonly reported than previous years. The borer typically is associated with dead or dying trees and is not consider a primary stress agent.

Grasshoppers (*Melanoplus* spp.) The high grasshopper populations in the western part of the state are also having an impact on trees and shrubs. Seedling trees, particularly trees that were just planted in the spring of 2010, were killed by the mid-season defoliation by hoppers. The injury was primarily on newly planted shelterbelts in western South Dakota.

Ash leaf curl aphid [*Prociphilus fraxinifolii* syn *Meliarhizophagus fraxinifolii*] The ash leaf curl aphid, also known as the woolly ash aphid, was reported through the state in 2010. The symptoms of an infestation are curled leaves forming rosettes at the ends of ash shoots; particularly the rapid growing terminal shoots. The injury is usually cosmetic and does not affect the tree's health.

Oak lace bug (*Corythucha arcuata*) This insect caused significant defoliation of bur oaks in the northeastern part of the state in 2010. Many oaks had bronzing leaves from the small stipples on the leaf surface. Some trees were defoliated.

Disease Forest Health Issues:

Western gall rust (*Endocronartium harknessii*) This disease occurs primarily in the Black Hills and is a contributing factor to the death of small ponderosa pine trees. The disease also can be found on the limbs of larger trees but generally is not a severe problem.

White pine blister rust (*Cronartium ribicola*) This disease was discovered in some of the relic stands of limber pine in the Cathedral Spires area of Custer State Park back in the early 2000s. The canker is now present in the stems of some of these trees and mortality has occurred in recent years.

1000 Cankers Disease (*Geosmithia morbida*) The recent concern regarding the thousand canker disease has increased our awareness of walnut and giving any dying walnut a closer look. The 1000 cankers disease and its vector, the walnut twig beetle (*Pityophthorus juglandis*), are responsible for the loss of black walnuts throughout the West. An examination of several declining walnut in the southeastern part of our state did not reveal any signs of either the canker or the beetle. A yellow sticky trap survey throughout the state did not collect a single walnut twig beetle

Dothistroma needle blight (*Dothistroma septospora*) This disease was been reported in ponderosa pine shelterbelts throughout much of the state in 2010. The symptoms generally occurred in the fall of 2009 and by the spring of 2010 infected trees were found that significant needle loss.

Diplodia tip blight [*Diplodia pinea* syn. *Sphaeropsis pinea*] The disease is commonly reported throughout the state on Austrian and ponderosa pines in shelterbelts and community plantings. While the disease typically results in stunted and dying shoot tips, it has more recently been associated with branch dieback in infected trees. The disease also appeared on ponderosa pine trees along the highway between Hill City and Rapid City.

Bacterial blight (*Pseudomonas syringae*) Bacterial blight was reported on Japanese lilac trees in community plantings and lilacs in shelterbelts throughout eastern South Dakota. The initial symptoms of the disease included brown to black, water-soaked spots on the leaves that result in misshapen leaves. The terminals on the shoots also turn a black, droop over and die symptoms that mimic fireblight.

Pine wilt nematode (*Bursaphelenchus xylophilus*) Rapidly declining Austrian and Scotch pine in the southwestern portion of the state have been found colonized by this nematode. Many shelterbelt and community plantings of these species have disappear during the past decade due to pine wilt disease. Now the disease is appearing in Mugo pines in this same region of the state.

Forest Health Conditions with Other Damaging Agents:

Flooding There was significant summer flooding in southeaster South Dakota during 2010. Colorado blue spruce, one of the most planted evergreens, has been

seriously affected by the flooding. Blue spruces that were planted in soils that have stayed wet into the summer exhibited red or yellow needles with many of these needles shed by late summer.

For Forest Health Assistance and further information on Forest Health in South Dakota, please refer to the contacts and websites listed below.



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**USDA Forest Service - Rocky Mountain Region,
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