

2009 Kansas Forest Health Highlights

The Forest Resource

Kansas is one of the Great Plains states with vast areas of plains and prairie lands. However it also supports forests on about 4% of the land which are mostly privately owned (95%). Estimates of these forests indicate that about 5% is pine and red cedar, and over 30% are elms, cottonwoods, and ash trees. Over 50% of Kansas forests are oaks and other hardwoods mostly located in central and eastern areas of the state. "Because forest lands only cover a small portion of the land base, they are considered critical components of the natural resource of Kansas." (Moser et al., 2008)

A recent report from Northern Area Forest Inventory and Analysis summarizes the condition of the state's forests (Moser et al., 2008)

- 1) Kansas forests are increasing in density in certain locations. The number of trees per acre has increased by 106 percent since 1965.
- 2) Since 1965, oak growing-stock volume has increased by 231 percent, hickories by 224 percent, and maples by 231 percent. Eastern red cedar volume has increased by 23,000 percent, which presents an opportunity for forest products but also concerns about woody encroachment into grasslands and changing wildlife habitat.
- 3) Cull trees (rough, short log, and rotten) constitute 46 percent of all of the live-tree volume in Kansas' timberland.
- 4) While cottonwood growing-stock volume has increased by nearly 50 percent since 1981, cottonwood regeneration has declined dramatically over the same period.
- 5) Since the emerald ash borer (EAB), an Asian wood-boring insect, was identified in Detroit, Michigan, in 2002, more than 50 million ash trees are estimated to have been killed by the insect. Natural spread is about 0.5 mile each year. However, human activity such as transporting firewood has increased the area infected and some experts believe it is only a matter of time before EAB arrives in Kansas.
- 6) There are similar concerns about a potentially devastating new problem on black walnuts called "thousand cankers disease" that is currently killing black walnuts planted in western states and in 2010 was found killing trees in Tennessee. The disease is spread by a tiny insect native to the southwestern United States called the walnut twig beetle. Thousand cankers disease could pose a serious threat to valuable black walnuts growing in Kansas.

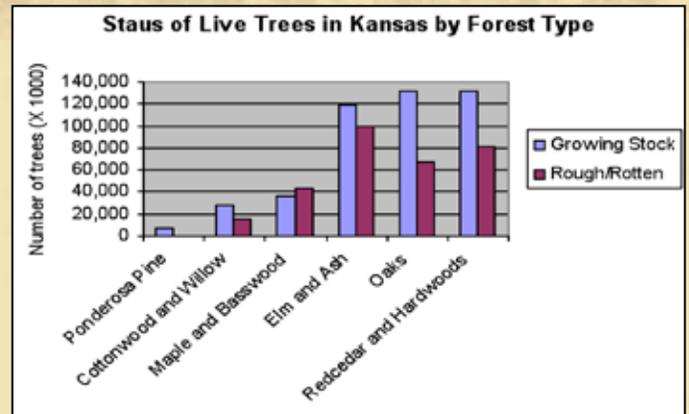


Chart –Terms of "Rough" and "Rotten" are usually associated with timber industry descriptions of decaying timber and non-merchantable wood. However with a forest health focus, these terms usually indicate that significant disease and insect infestations are causing decline of forest trees.

Certain amounts of insect and disease problems are expected in all populations, but the above chart shows that with the cottonwoods/willows, maple/basswood, and elms/ash trees, there is significant decay and damage.

The "growing stock" label usually indicates healthy/vigorous growth of the trees and hopeful timber-producing trees.

Invasive insects, diseases, and noxious weeds, along with prolonged drought and changing climates cause decline in the forests of Kansas.

Moser, W.K., Hansen, M.H., Atchison, R.L., Brand, G.J., Butler, B.J., Crocker, S.J., Meneguzzo, D.M., Nelson, M.D., Perry, C.H., Reading, W.H.IV, Wilson, B.T., Woodall, C.W. 2008. Kansas Forests 2005, Resource Bulletin NRS 26. USDA Forest Service, Northern Research Station.



Kansas State Tree
Plains Cottonwood (*Populus deltoides*)

Special Issues – Forest Health 2004–2009

Diplodia Blight

Diplodia pinea

Ponderosa, Austrian, and Scotch pines

Diplodia Blight seemed to increase in importance in the Great Plains and was one of the most important diseases affecting pines in the area.

There were very few reports of this disease in the 1900s. So this shoot blight pathogen may be considered a nonnative, invasive, forest pathogen.

In 2006, stress from drought allowed the disease to cause greater damage in planted areas and native forest. Diplodia seems to continue to be a problem, and might be getting worse.

Dutch Elm Disease

Ophiostoma ulmi on American Elm

The incidence of Dutch Elm Disease in the Great Plains did not increase beyond 2005 reports, though the mortality was higher than what was experienced during the 1990s. This disease is still a concern, especially in trees that escaped the first wave of the disease and are about 5-6" diameter, or about 20 years of age. Larger trees were succumbing as well. The disease continues to be a problem in riparian areas and cities in the state.

Flatheaded Wood Borer

Agilus spp., *Chrysobothris texanus* found on a variety of **hardwood** and **conifer tree species**.

Many species of flatheaded borer are trapped each year in Kansas, identified and monitored by agriculture specialists.

Gypsy Moth (*Lymantria dispar*) on **Hardwood trees**

Annual detection trapping for gypsy moth is conducted each year in the state. Traps are placed at likely introduction points according to USDA protocols. A single male gypsy moth was captured in eastern Kansas in 2009.

Occasionally, 1-2 gypsy moths will be found in these traps in Kansas, so this destructive insect sometimes is transported into the state.

Oak Decline

Multiple Agents

Bur, northern red, and other oaks

Oak health faces many challenges in Kansas. It is a complex decline issue dealing with many biological, environmental, and agricultural factors that combine into situations unfavorable to oaks.

Hypoxyton and *Botryosphaeria* cankers have been noted in decline situations. Incidence of both canker diseases have

been recorded in moderate to high levels in select sites.

Weather extremes of flooding and drought are important as are animal husbandry practices such as cattle lots in oak stands and related soil compaction and erosion issues.

Oak decline is long term and appears to be brought on by a combination of weather and man-made stresses which gradually wear down the trees allowing opportunistic diseases to establish themselves in a stand. Each decline site situation is different but the combination of these factors is common to all situations and absent when undisturbed native stands were observed.

Pine Tip Moth

Rhyacionia spp., *Dioryctria* spp.) on **Pines**

Pine Tip Moths are found on Austrian, Scotch, and Ponderosa pines in Kansas. Young pines in windbreaks and conservation plantings are often damaged by pine tip moth.



Surveying and sampling of suspect cankers and foliage—Specimens were sent to plant health diagnostic labs to test for SOD (*Phytophthora ramorum*).

Sudden Oak Death (SOD) Survey conducted in 2005 *Phytophthora ramorum* (pathogen)—Red Oaks, various shrubs/bushes (hosts). In 2003, a few garden-center businesses in eastern Kansas received shrubs/bushes accidentally infected with SOD from a California nursery. Unknowingly, the infected bushes/shrubs were sold to Kansas residents and were likely planted in garden/landscape plantings near forest lands in Kansas. The potential for the disease to spread to Kansas red oak trees was a concern to many foresters. A survey was conducted in 2005 by Kansas Forest Service and USDA Forest Service to examine forested lands near the garden center businesses that received these infected shrubs/bushes.

Red oak trees and other possible hosts plants of the SOD pathogen were examined and specimens of symptomatic tree cankers or infected foliage were collected. These specimens were evaluated at a Kansas State University lab and a national lab. The results were reported to the Washington D.C. Office and to Kansas Forest Service. Fortunately, all specimens from Kansas had negative results for the SOD pathogen.

Other Forest Health Damages of Concern

Weather Damages on All Tree Species:

Drought Effects—In Kansas during 2006, desiccation from hot southern winds caused severe tree damage during the drought.

Ice/snow damage—Ice storms often occur in the Great Plains and damage many different species of trees. In south-central Kansas in 2006, severe ice storms caused extensive damage in communities and urban areas. Monitoring efforts continue for other possible invasive insects and diseases in the state—Kansas and the Great Plains states play an important role in preventing the spread of damaging insects and diseases from Eastern and Western forests across the Great Plains to other forests in the United States.

- Gypsy Moth
- Dutch Elm Disease
- Sudden Oak Death
- Emerald Ash Borer
- 1000 Canker Disease in walnut

Zimmerman pine moths (*Dioryctria* sp.) on Austrian and Ponderosa Pines

Zimmerman pine moth can be a problem in windbreaks and ornamental plantings. Austrian pine is the primary species affected, though ponderosa pine windbreaks in drought-stricken areas were also experiencing significant branch injury. These borers continue to kill branches and entire trees in windbreaks and plantations.

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For Forest Health Assistance and further information on Forest Health in Kansas, especially during the “missing years” of Forest Health Highlight reports. Please refer to the contacts and websites listed below.



Kansas Forest Service

Larry Biles—State Forester
lbiles@ksu.edu
785-532-3309

Nicole Ricci—FH Specialist
nricci@k-state.edu
785-532-3276

<http://www.kansasforests.org/>



US Forest Service - Rocky Mountain Region Region 2 – Forest Health Protection (FHP)

Jeff Witcosky, Lakewood, CO Service Center Leader
jwitcosky@fs.fed.us
303-236-9541

Susan Gray (Denver –FHP Group Leader)
susangray@fs.fed.us
303-275-5061

<http://www.fs.fed.us/r2/fhm/>