

North Dakota Forest Health Highlights - 2007



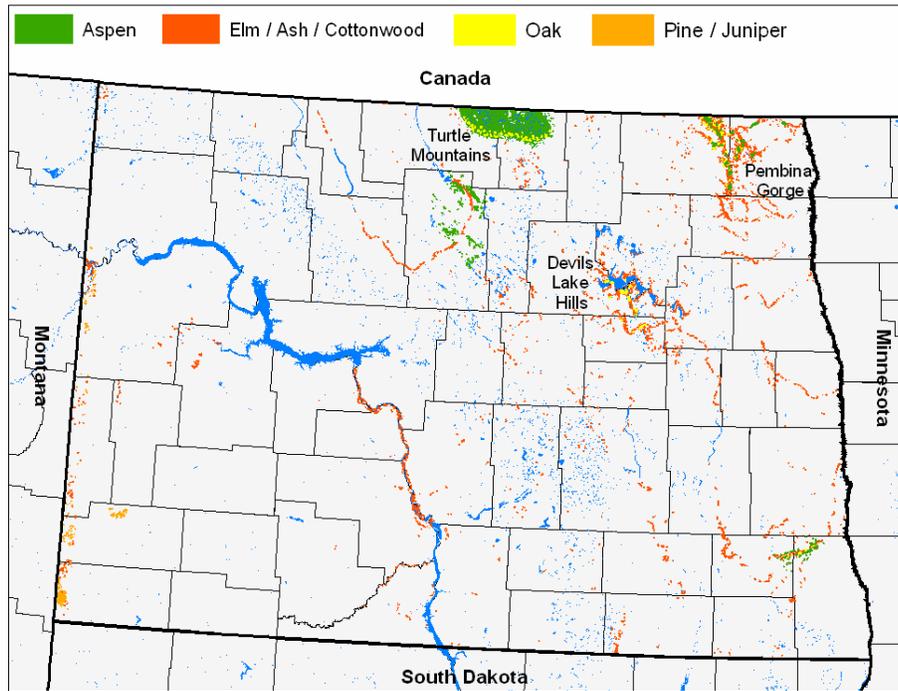
Oak woodland of the Devils Lake hills

The Forest Resource

Native forests are a valuable resource in North Dakota. These forests provide wildlife habitat, provide recreational opportunities, stabilize river banks, filter water runoff from adjacent agricultural lands, provide wood products, serve as seed sources for conservation tree production, and contribute to the botanical diversity of the state. Native forests and woodlands represent approximately 1.6 percent of North Dakota's total land area (724,000 acres). Eastern deciduous forest types and western coniferous forest types can be found in North Dakota (figure 1).

Deciduous forests along riparian corridors represent the majority of North Dakota's forests. Dominant species within these bottomland forests include green ash (*Fraxinus pennsylvannica*), box elder (*Acer negundo*) and American elm (*Ulmus americana*). Stands of aspen (*Populus tremuloides*) and bur oak (*Quercus macrocarpa*) can be found in the Turtle Mountains, Pembina gorge, and Devils Lake hills. Forests of western North Dakota are represented by cottonwood (*Populus deltoides*) forests along rivers, wooded draws comprised of ash and elm, and pockets of ponderosa pine (*Pinus ponderosa*) and Rocky mountain juniper (*Juniperus scopulorum*).

Figure 1. Distribution of Forest Types in North Dakota.



In addition to natural forests, conservation tree plantings such as farmstead plantings, shelterbelts, living snow fences, wildlife plantings, and others contribute substantial wooded acreage. Although many rural tree plantings occur in areas where the historical vegetation type was prairie, these resources are critical for the present needs of rural residents that live in the current agricultural landscape. These plantings control wind erosion, reduce water loss on agriculture lands, alter snow accumulations during winter months, and provide thermal cover for livestock and wildlife. Commonly used species of rural plantings include: green ash, spruce (*Picea* spp), ponderosa pine, and hybrid poplar (*Populus* spp).

Special Issues

The mere presence or absence of pests within a forest does not determine the ‘health’ of the forest. The term ‘healthy forest’ is somewhat subjective and may take on many definitions based upon the social, ecological, economic, or cultural perspectives of people. The forests of North Dakota’s are generally resilient to damage imposed by biotic and abiotic pressures however issues have emerged within recent decades that have warranted concerns. The factors that threaten the sustainability of the state’s native forests include:

- 1) Over-maturity coupled with disruption of natural disturbances essential to regenerate forests.
- 2) conversion of forest to non-forest
- 3) damage caused by non-native pests

Riparian Forest Health

Bottomland riparian forests consisting of American elm and Green ash in eastern North Dakota and Cottonwood forests along western rivers represent a large portion of North Dakota's native forests. Eastern bottomland forests have been severely impacted by Dutch elm disease (caused by *Ophiostoma ulmi* and *O. novo-ulmi*). This disease has eliminated many of the American elms that once comprised a large portion of this forest type and has shifted the species composition toward green ash and box elder. This disease is of particular concern because of the American elm's status as the state tree. The decline of cottonwood forests along the Missouri River is largely attributed to the absence of regeneration and the gradual senescence of mature over story trees.

Aspen Health

Aspen forests of North Dakota are in a general state of poor health. Lack of fire disturbance and/or harvesting has resulted in older stands with minimal natural regeneration. The current condition of many stands are characterized by extensive stem decay caused by *Phellinus tremulae* and large stem mortality caused by Hypoxylon canker (*Hypoxylon mammatum*). In addition, defoliating insects contribute to the overall senescence of these forests. The declining aspen over story may succeed to hazel (*Corylus* spp.) shrub land in part due the absence of shade tolerant conifers in North Dakota. Fortunately, there have been recent opportunities for forestland owners to harvest aspen. The vigorous regeneration of aspen that follows harvesting is important for the long-term perpetuation of this unique forested resource.

Forest Insect, Diseases, and Weather-Related Events

Defoliating Insects

Despite an increased occurrence of spring and fall cankerworms (*Paleacrita vernata* and *Alsophila pometaria*, respectively) in 2006, there were few reports of defoliation in 2007. Outbreaks of these species occur periodically in North Dakota however no major outbreaks have been observed since the late 1990's.

Forest tent caterpillar (*Malacosoma disstria*) damage has been minimal since 2003 when nearly 18,000 acres were defoliated within the Turtle Mountains of North Central North Dakota. Defoliation caused by forest tent caterpillar was observed in a few isolated areas throughout the state in 2007.

Eastern tent caterpillar (*Malacosoma americanum*) and prairie tent caterpillar (*Malacosoma californicum*) caused noticeable damage to chokecherry throughout eastern and central North Dakota.

Foliar Diseases of Deciduous Trees

Despite cool wet spring conditions, foliar diseases did not appear to cause extensive damage in 2007. Some of the commonly observed foliar diseases of deciduous species in North Dakota included: ash anthracnose (*Gnomoniella fraxini*), oak anthracnose (*Discula umbrinella*), oak leaf blister (*Taphrina caerulescens*), and septoria leaf spot (*Septoria musiva*).

Outbreaks of these diseases occur periodically throughout the state. Healthy, vigorous trees may suffer little damage from foliar diseases. In contrast newly planted trees or older trees in a state of poor vigor, may be damaged as the result of severe disease. If conditions remain moist and the disease pressure remains high, some tree decline may be observed in the ensuing years.

Wood Boring Insect on Oak

A previously unknown wood-boring pest has been observed on young bur oak trees in several locations of eastern North Dakota. The pest is believed to be the living beech borer (*Goes pulverulentus*) but has not been confirmed to date. Species confirmation can be made once the adult beetles emerge from symptomatic samples. Samples are being processed by the NDSU Dept. of Entomology. To date damage has only been observed on young bur oak (*Quercus macrocarpa*) in North Dakota.

Gypsy Moth - (non-native)

The North Dakota Forest Service, North Dakota Department of Agriculture, the US Forest Service and the USDA Animal Plant Health Inspection Service conduct annual statewide gypsy moth (*Lymantria dispar*) detection surveys. There were 312 gypsy moth detection traps placed in 2007. These traps were distributed throughout the state to encompass major forest types at risk of gypsy moth introduction.

There were no gypsy moths caught in 2007. The gypsy moth has been detected periodically in past years as single egg masses and larvae can be transported long distances on cars, recreational vehicles, nursery stock and other items. One gypsy moth was detected in 2003 and two additional gypsy moths were detected in 2004. Despite those isolated detections, there are no known established gypsy moth populations in North Dakota to date and trapping efforts will continue in the future and include new areas of potential risk.

Emerald Ash Borer (not in North Dakota)

The Emerald ash borer (*Agrilus planipennis*) poses a serious threat to North Dakota's native and planted ash resources. The North Dakota Forest Service and the North Dakota Department of Agriculture coordinated limited sentinel trap tree surveys in areas where the risk of introduction is greatest. In addition to trap tree surveys, visual inspections were conducted at several parks and campgrounds throughout the state in 2007. No positive EAB detections were found during any surveys.

Education and outreach efforts directed at city foresters, state agencies, decision makers and the general public have begun and will continue as an important component the state's preparation for this potential threat.

Abiotic Factors

The prairie environment presents many unfavorable conditions for the health and survival of trees. Unfavorable soil conditions such as high pH, poor drainage, and fluctuating water tables are damaging to many rural tree plantings. Weather influences such as prolonged drought, unseasonable frosts, hail, and ice storms may incite further decline. Other damaging factors include herbicides, wildlife damage, fire, and overgrazing. Such conditions of the prairie environment may predispose trees to secondary pests and exacerbate damage caused by others.

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