



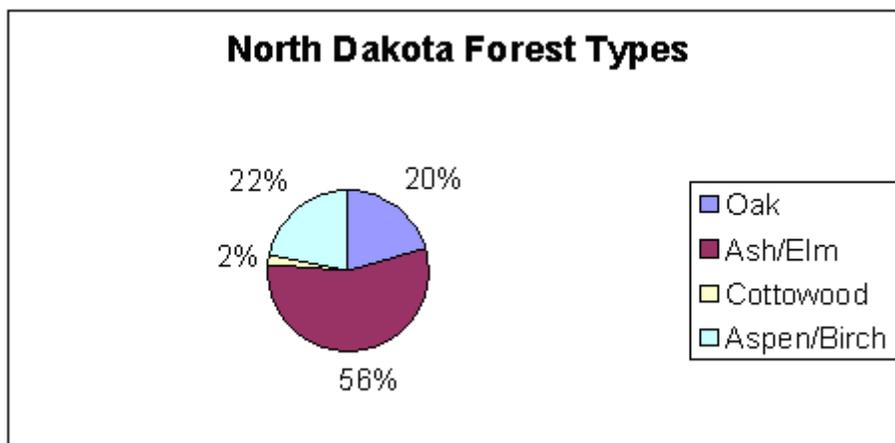
# 2005 North Dakota Forest Health Highlights



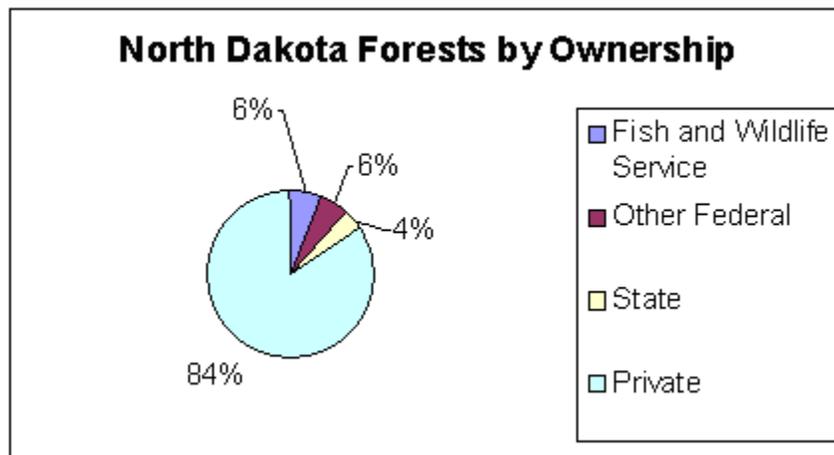
## The Forest Resource



Despite their limited acreage, native forests are an extremely valuable resource in North Dakota. Deciduous forests along riparian corridors in the eastern half of the state 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 and the north east corner of the state. The western half of the state is characterized by Cottonwood (*Populus deltoides*) forests along the Missouri river and pockets of Ponderosa pine (*Pinus ponderosa*) and Rocky mountain juniper (*Juniperus scopulorum*) in the southwest.



North Dakota Forest Types	Acreage
Ponderosa Pine/Juniper	1,310
Oak	148,719
Ash/Elm	405,342
Cottonwood	14,859
Aspen/Birch	159,148
<b>Total acres</b>	<b>729,378</b>



In addition to native 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

### 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 boxelder. 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. Encroachment of non-native species such as Russian olive (*Elaeagnus angustifolia*), Buckthorn (*Rhammus* sp.) and brome grass (*Bromus* sp.) create additional management problems.

### 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* sp) shrub land in part due the absence of shade tolerant conifers in North Dakota.

## Forest Insect, Diseases, and Weather-Related Events

### Gypsy Moth - *Lymantria dispar* (non-native)

The North Dakota Forest Service, North Dakota Department of Agriculture, and APHIS conduct annual statewide gypsy moth detection trapping surveys. There were 419 gypsy moth detection traps placed in 2005. These traps were distributed throughout the state to encompass major forest types and risk of gypsy moth introductions. Despite 2 gypsy moth detections during 2004, there were no positive catches in 2005. Trapping efforts will continue in the future and include new areas of potential risk.

### Cottony Ash Psyllid - *Psyllopsis discrepans* (non-native)

A non-native leaf-feeding insect known as the cottony ash psyllid was detected in Fargo and Bismarck in 2005. Black ash (*Fraxinus nigra*), Manchurian ash (*F. mandshurica*), and cultivated varieties/hybrids of the two are hosts to this species. The psyllid has been found in other locations of the state since the initial discovery. Insect feeding causes curling of leaves and defoliation under severe infestations. Such damage may incite tree decline, particularly during years of below average moisture. Recently, decline of Black ash street trees have been observed in eastern ND. This insect was not observed during a street tree survey of Black ash conducted in 2004. Despite this new pest detection, the role of this new pest in the decline is unknown at this

point. Consequently, no consensus has been reached among forestry/tree care professionals regarding the causes of decline.

### **Emerald Ash Borer (not in ND)**

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 sentinel trap tree surveys of 5 North Dakota communities during 2005 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. No positive EAB detections were found during any surveys. Additional surveys and detection methods will be incorporated in future years. 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.

### **Yellow-headed spruce sawfly - *Pikonema alaskensis***

All species of spruce (*Picea* sp.) planted in North Dakota are susceptible to the yellow-headed spruce sawfly. Every year small and medium-sized spruce trees are lost to this insect. This insect is particularly troublesome in rural spruce plantings where open growing conditions provide favorable egg-laying sites. Sawfly damage has been most significant in the north-central and northeast parts of the state in recent years. Damage was most severe in Benson and Wells counties for 2005.

### **Oak Rough Bulletgall Wasp - *Disholcopsis quercusmamma***

Several reports were received for the Oak rough bulletgall wasp in 2005. Galls produced by the insect are common on twigs of Bur oak within plantings and native woodlands. Numerous galls may cause stunting or dieback on twigs. Severe infestations may incite decline of host trees however such situations are rare. This pest was found throughout the state and the incidence of the pest did not appear to vary significantly with regards to geographical location. Despite this, the number of reports and casual observations suggests the conditions were favorable for the insect in 2005 compared to past years.

### **Dutch Elm Disease - *Ophiostoma ulmi* and *O. novo-ulmi* (non-native)**

Dutch elm disease continues to be the most damaging disease within community forests. Many communities have reported above average disease levels for 2005. Larger cities conduct annual street surveys and implement pruning and sanitation to reduce the impacts of this disease. Unfortunately, smaller communities that do not possess the means to administer a forestry program continue to experience extensive losses from Dutch elm disease.

### **Foliar Diseases of Deciduous Trees**

Cool wet conditions during 2004 and 2005 have been favorable for infection and disease development of several foliar diseases. Some of the commonly observed foliar diseases of deciduous species included: Ash anthracnose (*Gnomoniella fraxini*), Oak anthracnose (*Discula umbrinella*), Oak leaf blister (*Taphrina caerulescens*), and Septoria leaf spot (*Septoria musiva*).

Moisture conditions from late-May through July were well above average in recent years resulting in higher disease incidence and severity. 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 severely damaged as the result of a season of high disease pressure. If conditions remain moist and the disease pressure remains high, some tree decline may be observed in the ensuing years.

### **Diplodia Shoot blight**

Recently, shoot blight, caused by *Diplodia pinea* (syn. *Sphaeropsis sapinea*) has been confirmed in many Ponderosa pine plantings throughout the state. Symptoms include shoot blight and twig dieback. Shoot blight may incite tree decline and severe infections may kill trees over time. Diplodia shoot blight has been found periodically throughout North Dakota in the past however the incidence and severity of this disease has increased recently. This trend may be attributed to moist conditions in recent years that favor infection and cone production associated with aging Ponderosa pine. Trees of all ages are susceptible however older, cone-bearing trees appear to sustain the greatest amount of damage. As a result, questions have arisen regarding the susceptibility of pine provenances and inoculum sources that infect these isolated pine plantings.

### **X disease of Chokecherry**

X disease is an economically important pathogen of *Prunus* species that causes reduced growth, shortened internodes, and reduced the longevity of plantings. Chokecherry (*Prunus virginiana*) and Wild plum (*P. americana*) are native to the state and are propagated for use in rural tree plantings. X disease symptoms have been observed on chokecherry throughout the state in recent years.

### **Ice Storm**

An early fall ice storm damaged community and forest trees in the western part of the state. Several communities reported boulevard trees that were windthrown or had large branches ripped off. In addition, many rural plantings and trees adjacent to forest edges were damaged.

### **Floods**

Flooding is a common occurrence in North Dakota. Many watercourses within the state are prone to overland spread of spring water flows that breach banks. In addition, flooding may occur near lakes and wetlands as water tables rise and inundate trees throughout the growing season. Depending on the length of inundation and the particular tree species, growing season floods may cause root mortality, tree decline or death. Such flooding has damaged native woodlands surrounding Devils Lake (Benson and Ramsey Counties) in recent years. Although the acres of dead trees currently surrounding the lake appear unsightly, this is a natural phenomenon. Historical records show that water levels exhibit cyclical fluctuations on Devils Lake. Trees may become established in previously inundated areas during periods of falling water levels only to become inundated and killed years later as water levels eventually rise. Such disturbances influence the species composition and age class of these unique forests.

**For more information contact:**

Michael Kangas  
Forest Health Specialist  
North Dakota Forest Service  
NDSU - Department of Plant  
Pathology  
208 Walster Hall  
Fargo, ND 58105  
(701) 231-5936



Forest Health Protection  
Northeastern Area,  
State & Private Forestry  
USDA Forest Service  
1992 Folwell Avenue  
St. Paul, MN 55108  
651.649.5244

