Forest Health Highlights:
North Dakota 2018

This report summarizes forest health observations and program activities in North Dakota in 2018 and includes an overview of notable emerging forest health issues. Site visits, forest health surveys and reports, and personal communication with natural resource and community forestry professionals form the basis of this report.

North Dakota contains approximately 819,600 acres of forestland, which accounts for 1.8 percent of the state's land area ("Forests of North Dakota 2018"). The top five species in the state by volume are cottonwood, bur oak, green ash, quaking aspen, and Rocky Mountain juniper.

Conservation plantings such as windbreaks and living snow fences are a significant tree resource and are often too small to be mapped as forestland. Great Plains Initiative II is assessing windbreaks and mapping these "trees outside of forests."

Community trees provide valuable ecosystem services in the northern Plains environment. Two college campuses have achieved Tree Campus USA designation and 53 cities qualify as Tree City USA.

Aerial view of ponderosa pine in western Slope County, North Dakota. (Lezlee Johnson, NDFS)

North Dakota Forest Service
North Dakota State University

Forest Health Issues

Needlecasts and Other Spruce Issues

Problems with Colorado blue spruce (*Picea pungens*) were common since it is planted off-site and makes up over 6% of community trees and about 15% of all windbreak rows. (ND TIP tool and GPI II Windbreak Assessments).

- Needlecasts (*Stigmina lautii* and *Rhizosphaera kalkhoffii*)
- Valsa canker (*Valsa kunzei*)
- Spruce spider mite
- Cooley spruce gall adelgid (*Adelges cooleyi*)

Figure 1:Cooley spruce gall adelgid gall in Grand Forks County. (Lezlee Johnson, NDFS)

Dutch elm disease

North Dakota is still experiencing the first wave of Dutch elm disease (*Ophiostoma ulmi* and *O. novo-ulmi*).

Herbicide Damage

Herbicide damage to trees was common in community trees and windbreaks. Symptoms included curling and shoot distortion.

Figure 2: Boxelder (Acer nigrum) leaf distortions possibly caused by herbicide. (Lezlee Johnson, NDFS)

Spruce Distortion Associated with Mite

Eriophyid mites were identified on isolated Colorado blue spruce exhibiting growth distortions. The symptoms have been observed in Pierce, McHenry, and Ward Counties, and at Towner Nursery.

Figure 4: Eriophyid mites were identified on distorted Colorado blue spruces. (Lezlee Johnson, NDFS)

Diplodia Blight

Diplodia blight was observed at very low levels in ponderosa pine (*Pinus ponderosa*) windbreaks and conservation plantings.

Figure 3: Ponderosa pine windbreak in Slope County showing growth distortions and mortality after exposure to herbicide. (Lezlee Johnson, NDFS)

Forest Health Surveys

Emerald Ash Borer Survey

Emerald ash borer (*Agrilus planipennis*) (EAB) has not been discovered in North Dakota; however, it is one of the greatest threats to North Dakota forest health. EAB feeds on and kills green ash (*Fraxinus pennsylvanica*), the most abundant tree species in the state.

The North Dakota Forest Service (NDFS) staff, interns, and a contractor assisted the North Dakota Department of Agriculture (NDDA) in conducting a statewide EAB survey. United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) provided purple prism traps and lures. Other partners included city foresters and North Dakota State University (NDSU) Extension. EAB was not discovered.

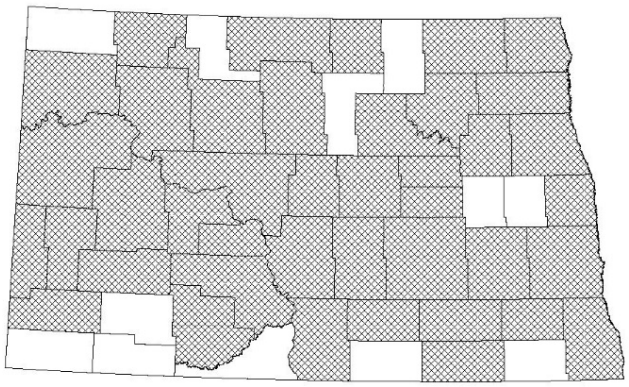

Figure 5: North Dakota Counties surveyed for emerald ash borer in a multi-agency collaboration led by NDDA. (Lezlee Johnson, NDFS)

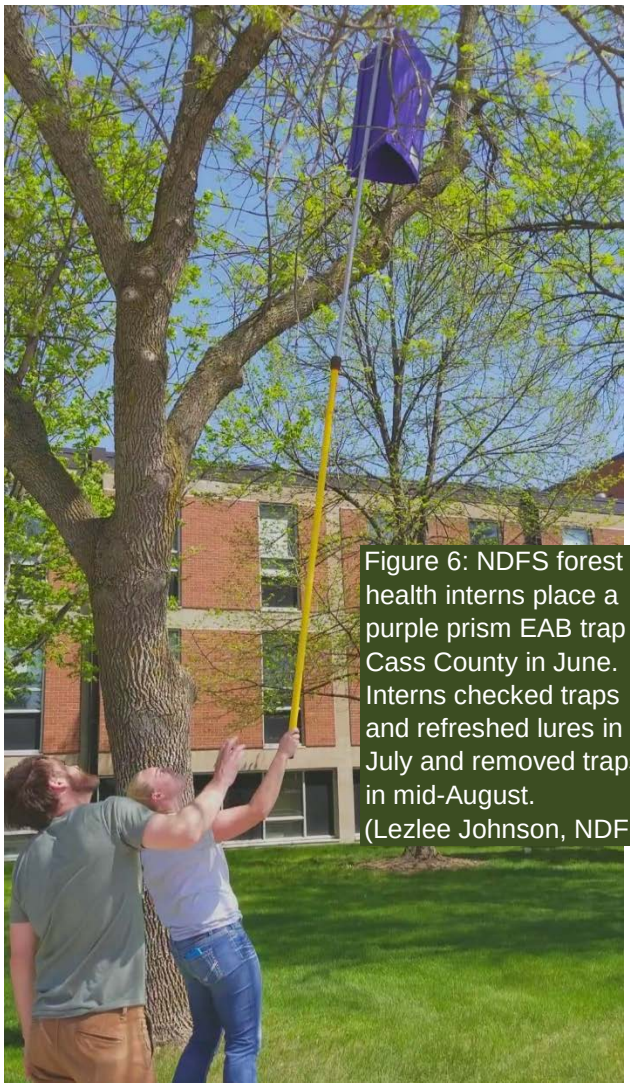

Figure 6: NDFS forest health interns place a purple prism EAB trap in Cass County in June. Interns checked traps and refreshed lures in July and removed traps in mid-August. (Lezlee Johnson, NDFS)

Japanese Beetle Survey

The NDDA conducts Japanese beetle (*Popillia japonica*) and exotic wood-borer surveys in North Dakota. Japanese beetle has a strong feeding preference for linden (*Tilia*) species. Basswood (*Tilia Americana*) is important in native, planted, and community forests, and littleleaf linden (*Tilia cordata*) is important for improving diversity in community forests.

After discovering that infested nursery stock had been distributed statewide in 2017, NDDA intensified trapping efforts, collecting 1,467 beetles in 22 counties, mainly near nurseries. The survey continued in 2018 with 412 beetles captured, in 12 counties, with over half from infested nurseries, Surveying, outreach and education will continue in the future.

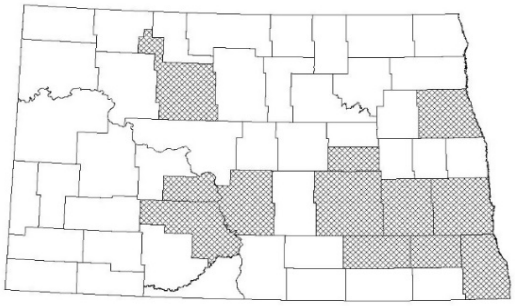

Figure 7: North Dakota Department of Agriculture captured Japanese beetles (*Popillia japonica*) in 12 counties. (Lezlee Johnson, NDFS)

Gypsy Moth Survey

The USDA Animal and Plant Health Inspection Service (APHIS) conducts gypsy moth surveys in North Dakota. One adult male gypsy moth was collected at Sully Creek State Park near Medora, and one was collected at Sertoma Park in Grand Forks. APHIS plans delimiting surveys in 2019.

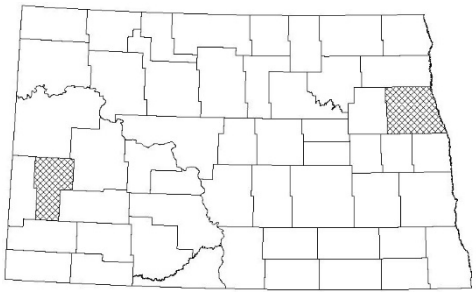

Figure 8: Grand Forks and Billings Counties each had single gypsy moth collections. (Lezlee Johnson, NDFS)

Exotic Wood-borer Survey

NDDA's 2018 exotic wood-borer survey trapped none of the exotic species of state/national concern at its eight trapping locations in cities and potential entry sites. All specimens collected from the families Scolytidae, Cerambicidae and Curculionidae were identified and recorded. New county species records were collected in most counties, with several in Pembina County which had not been surveyed before. Pembina county also had a new state record.

In addition, NDFS placed two traps in ponderosa pine stands in late May in Slope County in an attempt to detect mountain pine beetle (*Dendroctonus ponderosae*). These yielded 2 state and 6 county records.

Notable finds from the 2018 exotic wood-borer survey:

- *Dendroctonus rufipennis* (Kirby) was collected in Pembina and Cass Counties for the first time in North Dakota. The species feeds on Spruce (*Picea*), usually on slash or damaged trees but will attack healthy trees when population numbers are high.
- *Neospondylis upiformis* (Mannerheim) was collected in Slope County. This longhorn beetle occurs in coniferous forests throughout the western U.S. and southwestern Canada.
- *Hylastes tenuis* (Eichhoff) was collected in Slope County. This bark beetle occurs from central Mexico north throughout temperate North America reaching southwestern British Columbia and southern Ontario. Life history of this bark beetle is unknown.

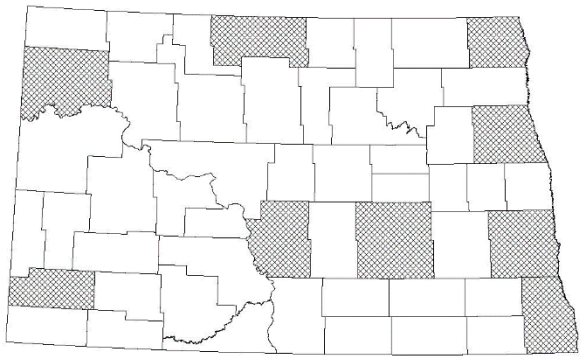

Figure 9: Exotic wood-boring insect survey trapping locations in cities and potential entry sites in eight counties, plus Slope County. (Lezlee Johnson, NDFS)

Figure 10: Bark beetle trapping site in a ponderosa pine stand in Slope County. (Lezlee Johnson, NDFS)

Forest Health Issues of Concern

- An overabundance of green ash in light of potential introduction of EAB threatens the sustainability of riparian forest areas, conservation tree plantings and municipal forests.
- Forest health issues associated with off-site planting.
- The overmaturity of aspen and other forests, accompanied by increasingly severe forest health issues, threatens their sustainability in the absence of stand-replacing disturbance.

Select References and More Information

Forests of North Dakota:
https://public.tableau.com/views/FIA_OneClick_V1_2/StateSelection?:showVizHome=no

North Dakota Forest Service: https://www.ag.ndsu.edu/ndfs

North Dakota Department of Agriculture: https://www.nd.gov/ndda/node/21

For more information on North Dakota Forest Health

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