



CITY OF
NorthOaks
Building on a tradition of innovation

2019 Forestry Report

Prepared by



Rehder Forestry Consulting

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Open Letter to the City of North Oaks

Dear Mayor, Council members, Residents, & Staff

It was another successful year for the North Oaks Forestry Program. Hundreds of diseased trees were marked for removal to the benefit of the entire community. More than one hundred residents had a house call from the City Forestry staff. While numerous trees were lost to shade tree diseases such as Oak Wilt and Dutch elm Disease, countless more were preserved by the efforts of the City and its residents who show an appreciation for the effectiveness of the program as evidenced by the high compliance rate. However many challenges lie ahead with regards to other fatal shade tree insect pests such as the Emerald ash borer (EAB) , Gypsy Moth, the Asian long-horned beetle (ALB), and other as of yet unknown tree killers. Leaf diseases such as Diplodia on pine and Bur oak blight (BOB) on oak are also seriously affecting trees in North Oaks. Include in that impacts from weather related events and we can see that times can be challenging for our rooted friends as well.

Residents are required to apply for and receive a shoreland forestry permit if they intend to do work along the shoreline of most of the lakes within North Oaks. Oftentimes residents are not aware of the requirements of working along the shoreline and the Forestry staff will help them to not only make an aesthetically pleasing and ecologically functioning shoreline but to make sure they are following State, City, and Association requirements.

Still other residents like the fact that they can call the City Forester and request a general health visit or diagnosis of their trees. They appreciate working with our knowledgeable staff and receiving the unbiased advice that is provided. It is in fact one of the best parts of our jobs.

Hazard trees and trees that lean excessively into the street are also an ongoing concern by maintenance staff and residents alike. Operation Clearview, based on our field observations, was designed to address these issues. City staff sent out numerous letters requiring residents to remove or cut back vegetation that was within five (5ft) of the street and within thirteen (13) feet of height and even maintenance staff have noticed that they remove fewer dead or leaning trees from the streets keeping walkers, bikers, and joggers safer from vehicle traffic.

All of our tree inspectors are certified through the State by the Certified Tree Inspector (CTI) Program. We were fortunate enough to have Mary Johnson join our staff in June as she is well versed in tree diseases and all things North Oaks related. Continuing education is an important part of being any Tree Inspector as well as attendance at the annual Minnesota Shade Tree Short Course- a tree aficionados pilgrimage- put on by the University of Minnesota.

One hundred seventy-two (172) trees were marked for Oak wilt within the city of North Oaks in 2019. Removal of these trees is critical as it is the first part of the treatment protocol. If

diseased Oak trees are left standing they can contribute to the over land spread of the disease. This has the potential to create new infection centers on neighboring properties to the detriment of all homeowners within the community. Residents are also informed, educated, and encouraged to seek further treatment options to include root pruning and or fungicide treatment injections. These treatments have the potential to save a large number of trees not only as it relates to oak wilt but Dutch elm disease and Emerald Ash Borer as well. Twenty (20) additional trees were marked for Dutch Elm disease in 2019. Both the number of Oak wilt and DED are within the usual thresholds for this disease annually. No new Emerald Ash Borer trees beyond the original find near the pump house were observed but winter inspections starting in January are the best time to diagnose this fatal tree disease.

Other invasive plants also threaten the health of North Oaks' unique forest resource. Recently the City was awarded a Minnesota Department of Agriculture grant to help initiate a campaign against the Oriental Bittersweet. Oriental bittersweet is an aggressive vine that smothers and strangles forest stands and has been observed in North Oaks and is on the States Prohibited Noxious Weed (Eradicate List). We developed a protocol to reach out to residents who we suspected had Oriental Bittersweet on their property. We then defined the extent and helped facilitate treatments of the sites through a private vendor. We are excited to continue working with the Natural Resource Commission and this program in 2020 as well as other invasive species management plans.

It is critical that the City continues to work with multiple partners to the benefit of its natural resource. To date the City has worked with and has fostered positive relationships with the Minnesota Department of Agriculture and the Department of Natural Resources. Collaborative projects have also been undertaken with the University of Minnesota, St. Paul Regional Water Utilities, Vadnais Lakes Area Watershed Management Organization (VLAMO), and Ramsey County. Locally, the Natural Resource Commission (NRC) and the City has excellent stewardship partners in the North Oaks Homeowners Association (NOHOA), North Oaks Company, and the Golf Course, all of which understand the benefits of a healthy environ. Partnering together is the most effective tool in preserving and protecting our natural environment.

We appreciate the opportunity to work with the you and feel your passion for the beauty of North Oaks forested resource. We are living in uncertain times, times when we value, even more, the tranquility and enduring beauty of our community and home sites.

Respectfully,

Mark Rehder
Contracted City Forester

Forward

Having a forestry program is something that every community desires especially with the unique makeup of North Oaks and its forested environment. Rehder Forestry Consulting is proud to offer a comprehensive program and variety of services in order to meet North Oaks's urban forestry needs. This report describes those services, details findings and results, and provides recommendations to aid the City in maintaining and improving the quality of its urban forest.

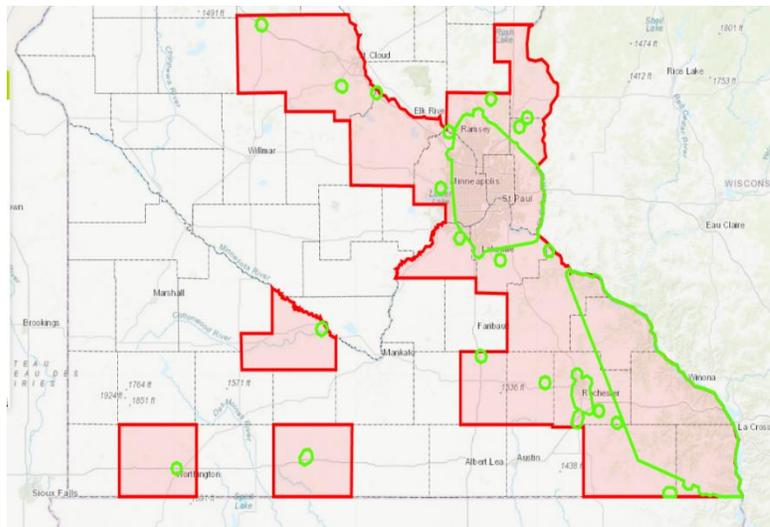
Emerald Ash Borer

In March of 2019, the Emerald Ash Borer beetle (EAB) was confirmed by a MDA scientist to be in North Oaks. The site was near the pumphouse on the south side of Pleasant Lake. EAB is a tiny beetle that is devastating forests and neighborhoods in Canada and the United States. To date, EAB has killed tens of millions of ash trees and infested over 50,000 square miles in Michigan, Ohio, Illinois, Indiana, Iowa, Missouri, Tennessee, Virginia, Pennsylvania, New York, Kentucky, Wisconsin, Minnesota, and Canada.

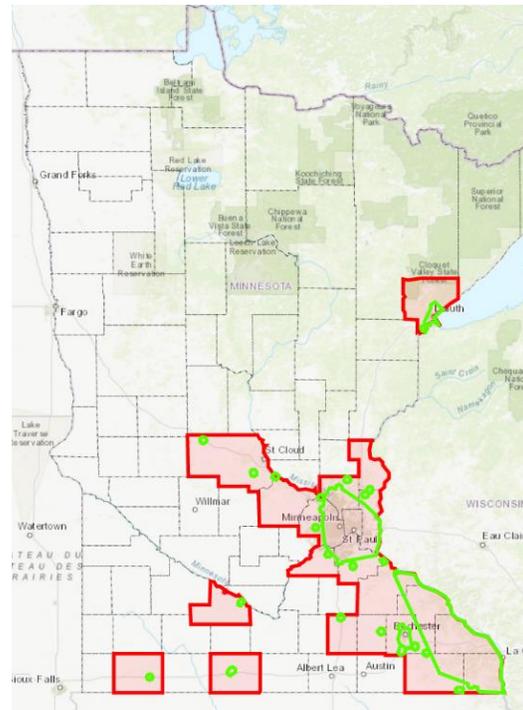


Ash was used extensively as street trees to replace elms lost to Dutch elm disease in the 1970s and 1980s. The state has the third largest volume of ash timber in the nation.

In 2009, Emerald Ash borer was discovered in St Paul, a mere 8 miles away from the borders of North Oaks. Since then the city has been under an ash quarantine, meaning that no ash trees, limbs, or debris can be removed from the county. In 2011 EAB was discovered in Shoreview just over two miles from the North Oaks border. The key to combating the insect is early detection.



One of the major concerns about the rapid rate of mortality from EAB is public safety. The city conducted an inventory around the Pleasant Lake and along the major streets and found the potential for a high percentage of hazardous tree situations as a result of tree mortality. Ash trees, which are common in lowland areas (near water bodies and trails), tend to shed bark and large limbs shortly after they die due to their brittleness. It is anticipated that many of the trees will die quickly within the first 10 years, meaning the removal of thousands of trees in a short period of time and burdening cities budget. The NOHOA has also taken action to stay ahead of this mortality curve and continues to remove trees proactively and as budgets permit. They are also treating a select number of high value trees. It is estimated that as many as 75 semi-loads of ash debris could be created from the trees around Pleasant Lake alone. While the environmental impacts may be great, the financial burden may be even greater. The city will need to be vigilant that these problems are addressed as they arise. The map shows the current location of EAB in Minnesota. The insect seems to get further and further into greater Minnesota every year.



One of the keys to slowing the spread of the insect will be early detection. By locating the insect in a particular area, we can quickly take measures to remove the diseased trees and hopefully many of the immature larva still in the trees. In this way we can limit the spread to new areas and within the existing area. The goal is not necessarily to remove the insect completely but to slow the spread thereby giving us more time to take the appropriate steps. While North Oaks does not have the typical “boulevard” trees its ash resource is none the less extensive. It has been suggested that North Oaks has an ash population of around 7%, which equates to roughly 35,000-50,000 trees, a staggering number.

While the pest does continue to spread in Minnesota it may not be moving as quickly as originally forecasted. There are many reasons for this. First would be the colder winter temperatures. When winter lows get below 30° Fahrenheit large

numbers of larvae will perish. It is estimated that up to 75% of the population may have perished in the Twin Cities area as a result of frigid February temperatures in 2019.

Secondly, preemptive and diseased ash tree reduction programs have been implemented by most communities over the last 10 years reducing the population by a significant amount and, at least temporarily, preserving many trees in the process. Trees have also been preserved with treatments that are stated to be 99% effective. Some communities have decided to treat all their boulevard ash trees, while other communities have decided to treat none of their ash trees. Most other communities have used a blend of the two treatment strategy options. The treatments need to be repeated every 2-3 years.

Lastly is the introduction of three different types of parasitoid insects. These insects lay eggs on the EAB larvae under the bark. When the eggs hatch they feed on the EAB larvae. This program, started in 2019, is being used by the Minneapolis Park & Recreation Board as a strategy within its woodlands. This may be the best option for preserving trees in woodland settings such as we have in North Oaks. The parasitoid insects have undergone extensive testing from the USDA but their effectiveness remains to be seen since they have only recently been released. Success will be determined by how many parasitoid insects can be observed in the following years (survivability) and how effective they are at reducing the EAB population.

It is obvious that great cooperation will be needed amongst the homeowner's association (NOHOA), the residents, North Oaks Co., the Golf Course, and the City. To that end, the Natural Resource Commission established an EAB Preparedness Plan, which has been adopted as part of the Cities ordinances. The Plan calls upon the City to treat EAB infested trees as it does Dutch elm disease and Oak wilt. All diseased ash trees will need to be removed and their removal will be enforced. The Plan also set parameters for treatment protocols that follow best management practices as well as numerous other practical steps that can be taken to limit the impact from the devastation caused by the EAB.

A key component of any successful program will be education. Since residents will be the ones most affected by EAB it will be critical to keep them informed and aware hopefully easing the burden of the introduction of EAB into our community. To that end the Forestry Department is available to meet with residents and assess their ash population. The landowner will then know how many, where, and how valuable the ash trees are on their property. They will then be able to make informed decisions with that information.

Oak Wilt

Oak wilt is found in the upper Midwest and as far south as Texas. The fungus probably established itself in this area long ago but was not identified until 1948. The American Phytopathological Society has determined that oak wilt is an invasive species and probably originated somewhere in Central America. Oak mortality had been observed in Minnesota for

many years, but until that time it was not known what caused the trees to die. It is interesting to note that in the 1970's, when Dutch elm disease was decimating so much of the State's elm population, more oaks were dying from oak wilt. Urbanization of metro area suburbs has increased the number of people affected by oak wilt by wounding valuable oaks during road building, home construction and other development. Damage that occurs during these activities has accelerated the spread of this disease. There is now a high incidence of the disease throughout the seven-county metropolitan area. Today, new infections are often correlated to large storm events and new construction in wooded areas. The symptoms of decline and death due to construction damage can mimic oak wilt, complicating diagnosis, and inflating numbers of marked trees in some cases. Currently, oak wilt is the most serious shade tree disease in Minnesota (photo below). Thousands of trees die every year in areas without control programs, but both prevention and control are possible. New techniques also add to the tools available for saving this valuable community resource.



Cities that have any sizable American elm population also have an unavoidable problem with Dutch elm disease. But a continuing elm sanitation program can reduce the incidence of Dutch elm disease. The best way to control this disease is prompt and proper disposal of the diseased wood. The best and only way to assure this is with an inspection and sanitation program.

We continue to find the citizens of North Oaks greatly interested in their City's urban forest. They continue to be concerned enough to ask questions and happy to learn about their important tree resource. Compliance within the shade tree disease program remains at an all time high.

Oak Wilt Program Summary

The following is a brief summary of the inspection and control procedures for the City of North Oak's Oak Wilt Program. The City's Oak Wilt program provides a comprehensive approach to protecting and maintaining its valuable forest resource. The program provides homeowners with detection and treatment of the disease, along with follow-up assistance for proper reforestation.

Oak Wilt is detected through a series of ground inspections, aerial photography, and responses to homeowner calls. Aerial photography is a very efficient method for locating and recording new oak wilt infections, as the infected trees begin turning color in the upper crown first. The city is flown over in a systematic pattern and oblique (out the side window) photos are taken of the wilting trees, along with wider angled photos of landmarks to help locate the trees on the ground. Aerial photography is particularly helpful in North Oaks due to the many hills, ravines and heavily wooded lots not found in other communities. The window for effective flights runs from the middle of July to the first part of August. We would like to investigate the possibility of using drones in the future, especially in heavily wooded and low-housing density areas such as the Conservation Area.

Our inspectors locate and map the infected trees and evaluate the site for potential spread. In neighborhoods with either active infection centers or recent (past two to four years) infections, our inspectors will perform a walking survey of the area to assure all infections are located. In areas of town without a recent history of disease or many oaks, we perform windshield surveys where we can cover a wide area in a relatively short time.

Our tree inspectors are all tested and certified through the Minnesota Dept. of Natural Resources Tree Inspector Certification Program. We have our inspectors wear company work shirts and vests, along with signs on their vehicles for a professional look. Prior to entering a property, our inspectors will first knock on the homeowner's door to introduce themselves, explain the purpose of their visit, and answer any questions the people may have. Over the years we have found the citizens of North Oaks to be very receptive and supportive of the Oak Wilt program and the efforts to maintain a healthy natural environment in the City's parks and neighborhoods.

We also respond to private homeowner calls over concerns about their oaks. If we can't answer their questions over the phone, or if we have not previously identified Oak Wilt on their property, we will make a personal call to the property.

The treatment facet of the program involves controlling the spread of Oak Wilt via the grafts that readily form between the root systems of adjacent oak trees. For years the only effective method of control involved severing the root grafts with a five-foot long blade pulled by a large tractor. While this is a very effective method, recent University of Minnesota studies show 87% effectiveness at stopping the spread of the disease, it is not always feasible, due to

obstacles such as landscaping, underground utilities, fencing, wetlands, or steep topography. Many years ago a chemical fungicide with the active ingredient propiconazole was licensed for use on Oak Wilt in Minnesota.

Research is also ongoing on the potential use of herbicides to kill a number of oaks within root graft distance. The intent is to kill the fungus in the root system so that it can not spread. However, initial reports are not too encouraging, but the research is ongoing. It also sacrifices a large number of oak trees that could be preserved with traditional treatment methods.

Not every Oak wilt infection center requires treatment, only those sites with oaks close enough to form root grafts. Sites where there are enough trees of other species to form a natural barrier, or where other barriers such as roads or houses exist, do not require treatment. North Oaks is blessed with a diverse forest, which help limit the spread and impact of Oak wilt.

Diseased oak trees create spore mates (photo sequence below) which are responsible for the overland spread of the disease. We are limiting the number of new infections that can start by removing diseased trees. Diseased trees often times carry the fungal pads that contribute to the overland spread of the disease.



After the dead trees have been removed and properly disposed of, we encourage and assist people to reforest the area with suitable species. Without taking positive action to replace the missing trees, the area tends to be overtaken by ‘weed’ species like buckthorn, honeysuckle or Garlic mustard. Reforesting an area can be as simple as protecting and encouraging existing seedlings, to moving small seedlings from other areas of the yard, or to planting nursery stock of all sizes. Regardless of the method, we want to make sure we provide the homeowners with the information needed to choose trees that will be suitable and proper for their yard and meet the homeowner’s desires.

Not every tree will be suitable for every site. Our knowledge of the soils and environmental conditions in North Oaks allows us to recommend to people trees and shrubs that will be healthy and thrive on their lot.

We have also expanded the information provided to the citizens by developing and maintaining a natural resource tab on the City’s web page. There residents can find useful information to help them make informed decisions about what species to plant and where to plant them. We will continue to develop this resource as seems fit.

RECAP OF 2019 DISEASED TREES

	Dutch Elm Disease Trees	Oak Wilt Trees
Private	14	121
NOHOA	6	13
NO Company	0	27
Pines/Summit	0	11
TOTAL	20	172

Propiconazole Fungicide Injections

We keep abreast of recent developments in disease control techniques. One such option that is showing great promise is the injection of the fungicide propiconazole for control of Oak wilt.

Although there has been good success with vibratory plowing for the severing of root grafts, occasionally there are cases where it is not applicable or feasible. Situations where access for the plow is limited due to terrain or other obstacles sometimes preclude its use. Other times only a single high-value tree may be at risk, in these cases a fungicide injection can be a relatively low-impact, effective option.



The most common utilization of Propiconazole is on Red oaks that share root systems with infected trees but cannot be protected by mechanical root graft barrier. There are many valuable trees that are in inaccessible areas (near homes, terraces, underground utilities or septic systems) that are at high risk, which now can be protected by Propiconazole injections. White and Bur Oaks are less susceptible to the Oak Wilt fungus but can still become infected. If caught early enough, Propiconazole treatments can be used to treat the infected trees, both suppressing the fungus and allowing the trees to recover.

Results from injecting oaks with propiconazole in the metro area over the last 10 years are encouraging. The process consists of minor excavation to expose the tree's root flare below grade, drilling a series of shallow holes in the tree in this area, and placing a system of plastic tees and tubes connected to a container that supplies the chemical. Time for uptake of the chemical varies with the weather conditions but usually ranges from 1 to 3 hours.

Research has shown that the chemical does not move much beyond the root area where the injections take place. Injections do not keep the fungus out of the tree but keep it from expressing oak wilt symptoms. Only high value oaks should be considered for treatment or bur and/or white oaks which are showing signs.

We recommend the use of propiconazole injections for the control of Oak wilt with the following conditions:

- Use is limited to situations such as mentioned above where the presence of Oak wilt has been confirmed, but mechanical severing of root systems with the vibratory plow is not practical.
- *Preventative use* in Red oaks is used only if a healthy tree at risk shows no symptoms.
- *Therapeutic use* (for curing a tree that is infected but not too advanced) is used on Bur and White oaks only. In Red oaks, the fungus is already systemic by the time any symptoms appear, and the chemical use is ineffective.
- Not all trees are good candidates for injection. The presence of cracks, rot, decay, other structural defects that cause a hazard, or too advanced an infection, are things that can preclude injection.

We will continue to assess the use of fungicides as part of North Oaks' shade tree disease program.

Severing Grafted Roots

The oak wilt fungus can remain active in roots of diseased oaks for 2 to 3 years after the tree has died or been cut at ground level. The fungus can travel through the root system into healthy oaks quickly or remain in the root system before infecting the next tree. The purpose of root graft disruption is to separate the common root systems between oaks, so that the disease becomes isolated and cannot continue to spread.



The above picture shows a root graft. Roots can graft when as small as pencil- thickness, when their diameter becomes large enough to cause enough soil pressure to stimulate a graft to form. Soil type will also affect root structure, and therefore grafting distance between trees.



The vibratory plow is a large and heavy machine in order to be able to cut to an effective depth. The only part that enters the ground is the blade at the right of the photo. It is a powerful machine that is pulled by large tracks and usually does minimal ground disturbance.

The best mechanical method of separating roots involves the use of a large articulated tractor with a specially designed 5' plow blade. The vibrating blade is pulled through the ground, physically cutting and separating the roots. Numerous contractors are available to provide this service to residents. Studies by the University of Minnesota analyzed the success of root graft disruption with a vibratory plow. The data show an 87% success rate on plow lines placed as primary barriers. This low rate of failure can nevertheless involve very significant and valuable trees. These losses can be devastating to a homeowner expecting control measures to save all of their trees. By reviewing the barriers placed and participating in current research, we are learning more about the biology of the fungus and its spread vectors. This information will help us to increase the success rate of our control programs even more.

Bur Oak Blight

Impacts from Bur oak blight (BOB) continue to be felt. The symptoms can be very dramatic as large bur oak trees can be severely effected. The cause is a leaf fungus which will attack the leaves of the tree causing early browning. The symptoms can be very similar to oak wilt and it is easy to mis-diagnose. I have seen many cases where 4 or 5 large bur oak trees have become severely infected leaving the homeowner in a state of panic. Fortunately, it is believed that a dry spring may break the cycle of this disease. The leaf fungus stays on the leaf petiole of the tree over the winter and when the spring rains



come it moves to the newly emerged leaves and infects them. This cycle can continue for many years and can cause significant stress to the tree. **It's important to remember that bur oaks can lose up to 50 percent of their canopies every year but still remain relatively healthy.** However, when a bur oak loses more than half its leaves for several consecutive years, it may become stressed and susceptible to other problems, such as two-lined chestnut borer and Armillaria root disease. The same bur oak in Zimmerman, Minnesota, photographed in September 2017, 2016, and 2015, from top to bottom.

Still, even when a bur oak has had severe BOB, it may be relatively healthy. The best time to evaluate bur oak health is in June: if the tree does not have branch dieback or epicormic shoots (small, young branches growing out of the trunk and big limbs), it is probably not stressed. We need to educate residents to give these trees the benefit of the doubt and to not remove healthy trees. Articles in the North Oks News will be forthcoming on this tree disease.

Yard Trees

Yard trees are high value and additional measures are often possible with them. Two-lined chestnut borers (TLCB) populations can be reduced by cutting and removing infested trees before the start of the next growing season. Infested oaks are those trees which died or showed heavy dieback this year.

Remove oaks that are completely dead. TLCB populations can be reduced by cutting and removing infested trees before the start of the next growing season. Since TLCB larvae can survive in cut and split wood to emerge next spring, the complete removal of infested logs and branches should be done by May 1st of next year.

The preferred methods of wood and slash disposal are removal to an approved landfill or sale of tree for lumber. If any woody materials larger than 1 inch in diameter remain, pile and burn them before May 1st in an approved fire pit. If you want to keep the wood for firewood, cover the wood pile with a heavy plastic tarp and bury the edges of the tarp in the soil for an airtight covering. Keep the firewood covered until at least July 30th next year. Then the wood can be moved or burned as you like.

If droughty, water healthy and declining oaks on a regular basis during the growing season. Trees with less than 50% dieback may be saved by heavy watering during droughty weather. If rainfall is inadequate, make sure trees get at least 2 inches of water per week in May and June and 1 inch per week in July and August. Water so that the entire root system receives this amount of moisture all at once. Remember the absorbing roots are at the dripline and beyond.

Strictly avoid using fertilizers and/or herbicides on lawns and gardens within 50 feet of an oak tree. Fertilizers will only hurt an ailing tree and herbicides kill tree roots too, leading to more root system loss.

Avoid practices which destroy or smother roots. Root loss will drastically affect tree vigor. Practices which damage roots include trenching or burying utility lines which sever the roots; compacting the soil around the roots by driving and parking of vehicles on roots systems; smothering roots by paving or temporarily storing excavated soil over the root system; or, by changing soil grade, either adding or removing soil.

Control other insects that cause defoliation before 60% of the foliage is lost. Once defoliation reaches this level, the trees may re-foliate and this decreases tree vigor. Develop and implement spray plans if heavy defoliation is predicted to occur for the second or third consecutive year.

Avoid bringing fresh firewood into your yard. Bringing more infested wood into an area can compound the problem of Oak wilt and EAB.

Chemical insecticides are not useful against TLCB because of difficulties with timing and obtaining thorough coverage on large trees. However, certified arborists or commercial pesticide applicators may be able to treat high value shade trees.

Gypsy Moth

Gypsy moth is an exotic species of leaf-eating caterpillar that was introduced in the 1800's. The spread was initially very slow, but the post WWII economy brought an increased movement of people, recreational vehicles and nursery stock. In the last four years, moth populations have increased across Wisconsin with major infestations being discovered in Eau Claire and Madison. More recently the moth has established itself on the North Shore of Minnesota in Cook County. The moth eats leaves from over 200 species of trees and shrubs. When the caterpillars feed in the spring, they rob the tree of its ability to undertake photosynthesis, effectively stealing the tree's energy reserves and slowing its growth. In Minnesota, they will find lots of oak and aspen, the moth's two favorite hosts. In the past few years, Minnesota has come under increasing pressure of introduction as our neighboring states become infested.

Gypsy Moth



Larva (May- June) Hairy caterpillar with 5 pair of blue dots and 6 pairs of red dots



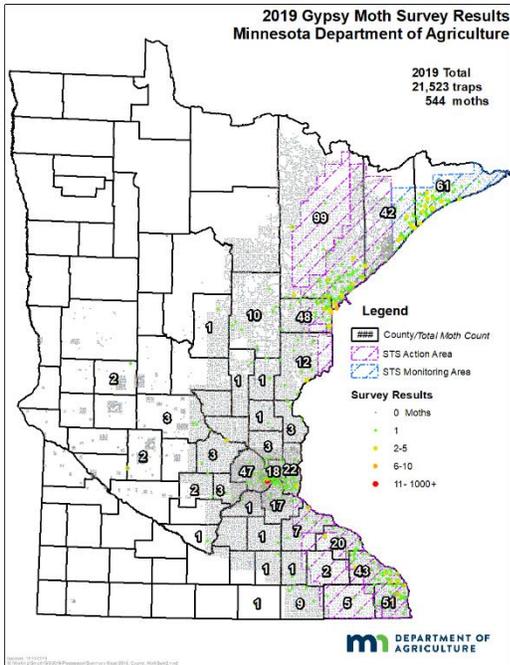
Pupa (July-August) pupal skin and pupa (females are larger than males)



Adults and egg mass (July- August) male moth is brown; female is white with brown markings.



Egg mass (August- May) small larvae emerge the following May



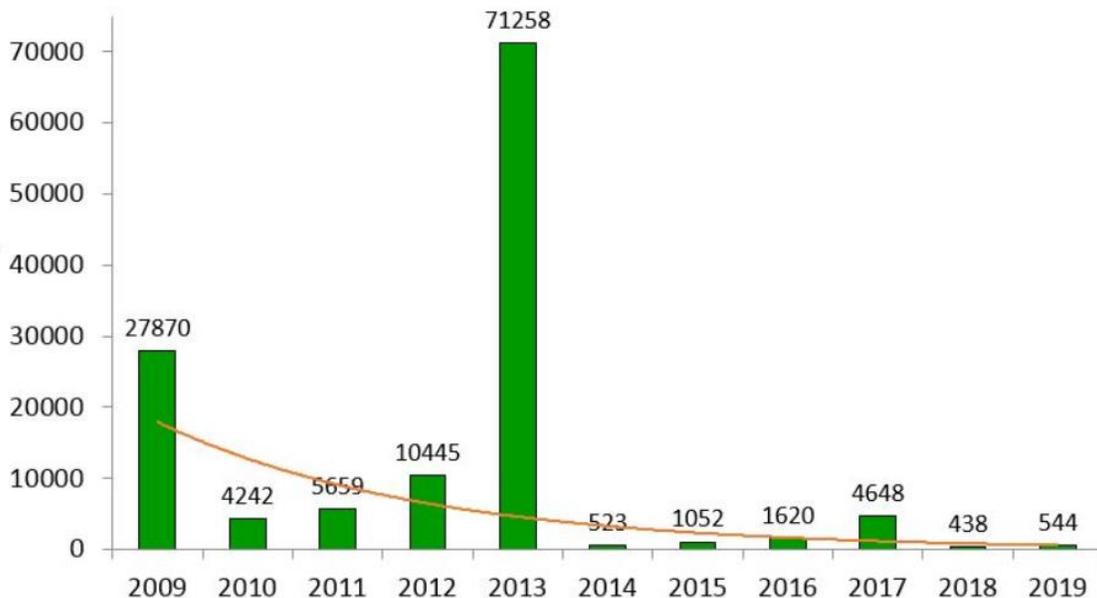
Bitter winter has impact on gypsy moth in Minnesota

Experts caution that more cold weather won't eliminate the population

Last winter's harsh temperatures have resulted in some positive benefits – a decline in the state's gypsy moth population. The Minnesota Department of Agriculture (MDA) captured approximately 500 moths this year in traps around the state.

“While the decrease in moths is good news, we know they will bounce back quickly.” said Dr. Brian Aukema of the forest insect laboratory at the University of Minnesota. “A single surviving egg mass will produce more than 500 hungry caterpillars.”

Total # of Male Gypsy Moths Trapped in Minnesota (by all Survey Cooperators): 2009-2019



The placement of survey traps throughout the state also affected 2019 trapping numbers. The gypsy moth survey program concentrates on the eastern half of the state due to the natural westward movement of gypsy moth through Wisconsin as the population front expands. Selected high-risk businesses also receive survey traps throughout the annually designated trapping survey project area. Over the years, the trapping survey has shown us where gypsy moth populations are starting up, building, and moving.

Each year the MDA sets around 20,000 gypsy moth traps throughout Minnesota to determine the location and size of gypsy moth populations. The MDA's survey program is closely tied to the insect's biology. The female does not fly so she uses a pheromone, or sex attractant, to lure the male moth to her for mating. Although humans can't detect the scent of the pheromone, it is a powerful attractant to the male gypsy moth.

Gypsy moth caterpillars, which are not native to North America, eat the leaves of many trees and shrubs. Severe, repeated infestations can kill trees, especially when the trees are already stressed by drought or other factors.

Gypsy moth is an introduced non host-specific leaf-eating insect. It has slowly spread across the United States from New England to Minnesota over the last century. The pest is known as the gypsy moth because the females cannot fly and have the habit of depositing their eggs on objects near the trees on which they were feeding as caterpillars. These objects might be picnic tables, car fender wells, grills or any outdoor household article or lawn ornament. When these objects are moved from an infested area, the gypsy moth eggs "hitchhike" along and are transported into and threaten other areas.

States located along the leading edge of the gypsy moth population have implemented a regional strategy to minimize the rate at which gypsy moth spreads into uninfested areas. As a direct result of their actions, the national spread rate has been dramatically reduced by more than 70% from the historical level of 13 miles per year to 3 miles per year. In just eight years, this program has prevented the impacts that would have occurred on more than 75 million newly infested acres. The benefits from the national strategy are experienced by the nation as a whole as well as individuals.

While the numbers within Ramsey County have remained consistently low the last 8 years, 18 moths caught in 2019, communities must remain aware of the potential for destruction of large tracts of forested lands if they become established. Gypsy moth prefers oak and aspen -both species are well represented in North Oaks - but it does not discriminate against other tree species.

Although it's just a matter of time before gypsy moth is well established in Minnesota, the Minnesota Department of Agriculture estimates that by eliminating infestation pockets such as the ones along the Northshore, the establishment of gypsy moth into Minnesota can be delayed by up to 10 years

Minnesota began its participation in a federal program called Slow-The-Spread (STS) in 2000. This program operates along the advancing front of the east to west spread of the insect in an effort to slow the infestation to neighboring States. A list of Gypsy Moth hosts is found below. Our State is calling on forest managers to respect the potential threat that Gypsy Moth poses and consider it when managing our forests. Certain conditions limit the extent of damage this insect can have on a forest:

1. Encourage a vigorous, healthy forest. Trees with little or no stress are more capable of withstanding Gypsy Moth defoliation while those that are already diseased; insect infested or stressed by drought may not.

- Keep the forest diverse. Oaks are one of the most at-risk trees growing on this site. Growing a wide variety of trees can minimize the number of preferred targets. This means that while some trees may be defoliated or even lost, other species will live on to perpetuate the forest.

Preferred Hosts

- Apple
- Alder (speckled)
- Basswood
- Hawthorn
- Oak
- Poplars (some species)
- Willows
- Birch

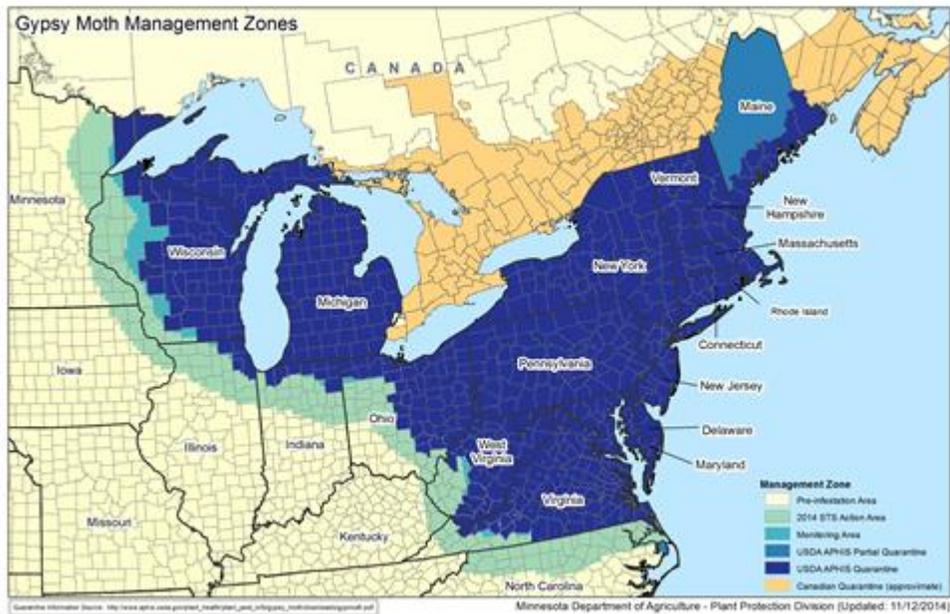
Intermediate Hosts

- Elm
- Black Gum
- Hickories
- Maples
- Beech*
- Hemlock*
- White cedar (arborvitae)*
- Pines*
- Spruce*

Rare Hosts

- Ash
- Balsam fir
- Butternut
- Black walnut
- Catalpa
- Red cedar (Eastern)
- Dogwood
- Holly
- Honey locust
- Sycamore

* Only in extreme cases or only attacked by older larvae.



Gypsy moth spread throughout the United States.