

European Starlings



European starlings came to the United States in 1890 when a drug manufacturer, Eugene Scheiflin, released 40 pairs of them in New York’s Central Park. He said he wanted to bring to America all the birds mentioned in the writings of William Shakespeare. The birds quickly established themselves in the wild, and by 1930 had spread all the way to the western states. Two hundred million starlings are now found over most of North America, Mexico, and parts of the Caribbean.

The starling is an intelligent and interesting bird, but is bad news for native bird species such as woodpeckers, bluebirds, and swallows. Starlings compete with these birds for nest cavities in trees, often destroying eggs and young birds in the process. Also, because they have a habit of forming large wintering flocks, they are an unwelcome pest to people.

White Pine Blister Rust



This disease is caused by the fungus *Cronartium ribicola*. It infects white pines all over the United States, causing them to lose their branches and die.

The fungus is native to Asia and first came to the United States from Europe in 1898. By that time, the United States had extensively logged its forests for lumber and was looking for ways to replant. Germany and France began supplying young seedlings to the United States for reforestation. Unfortunately, some of these seedlings carried white pine blister rust. Since white pines native to the United States are not naturally resistant to the disease, the disease has spread.

The fungus causes a canker or blister on the branches of the tree. When this canker goes completely around the branch, it causes the branch to die off. Trees that lose many branches weaken and eventually die.

White pine blister rust does not spread from pine tree to pine tree, but requires a currant, blackberry, or gooseberry plant to complete its reproduction cycle. To prevent the spread of this disease, people have removed these plants from the area and have used genetic engineering to develop more resistant trees.

Gypsy Moths



Gypsy moths were first brought to the United States in 1869 by a scientist who wanted to see if he could use them to produce silk. By accident, several of the caterpillars blew off the window sill of his home in Massachusetts and escaped. Twenty years later, there was a gypsy moth outbreak in the surrounding areas. Today the gypsy moth is one of the most damaging forest pests in Northeastern United States, removing the leaves from millions of acres of trees each year.

Tree damage is caused by the insect larvae, or caterpillars, which emerge from their eggs beginning in early spring. The larvae move to the leaves of trees and begin to eat and eat and eat.

Gypsy moth caterpillars are not fussy eaters. While they prefer oak, maple, and elm tree leaves, they will feed on approximately 500 different plants. When food is scarce, the larvae will eat almost any vegetation.

Gypsy moths are spread in two different ways. Newly hatched caterpillars spin short lengths of silken thread, which allow them to be blown by the wind. But, most new outbreaks occur because people move their outdoor household belongings – cars, RVs, firewood, lawn furniture, and the like – to new places, not knowing that they hold gypsy moth eggs.

Common Buckthorn (*Rhamnus cathartica*) and Glossy Buckthorn (*Frangula alnus*)



Buckthorn was first brought to Minnesota from Europe in the mid-1800s as a very popular hedging material. Shortly after its introduction, it was found to be quite invasive in natural areas of all types. The nursery industry stopped selling it in the 1930s, but many buckthorn hedges may still be found in older neighborhoods throughout Minnesota.

Buckthorn is a problem because it:

- Out-competes native plants for nutrients, light, and moisture
- Degrades wildlife habitat
- Threatens the future of forests, wetlands, prairies, and other natural habitats
- Contributes to erosion by shading out other plants that grow on the forest floor
- Serves as host to other pests, such as crown rust fungus and soybean aphid
- Forms an impenetrable layer of vegetation
- Lacks "natural controls" like insects or disease that would curb its growth

Both cultivars are listed as restricted noxious weeds in Minnesota, making it illegal to import, sell, or transport.

Eastern larch beetle



*A swath of Minnesota's forest heavily impacted by eastern larch beetle.
Photo by Marc Roberts, USDA Forest Service.*

Eastern larch beetle (ELB) is a native bark beetle infesting tamarack (eastern larch) at unprecedented levels throughout the tree's range.

Adults emerge in late spring and bore into the trunk to feed, mate, and lay eggs. After eggs hatch, larvae tunnel throughout the phloem, creating feeding galleries that eventually cut off water and nutrient flow, killing the tree.

Historically in Minnesota, ELB produced localized outbreaks that lasted only a few years. However, [climate change](#) has lengthened the growing season, increasing reproductive success and allowing the beetle population to increase at faster rates than in the past. As of 2017, Minnesota is in its 17th consecutive year of ELB outbreak, and currently has more than 440,000 acres with affected forest tamarack. There is no indication that the outbreak is subsiding.

Location

Eastern larch beetle occurs anywhere tamarack is found across the northern United States and Canada.

Identification



Eastern larch beetle galleries under tamarack bark. Photo by Steven Katovich, USDA Forest Service, Bugwood.org

Vertical galleries with many perpendicular branches are the identifying characteristics of eastern larch beetle infestation. Infested tamarack often looks reddish in late winter, as woodpeckers remove outer bark to feed on beetle larvae in the reddish inner bark.

Sudden Oak Death

Scientific name: *Phytophthora ramorum*

Native range: unknown

Sudden oak death is regulated at the state and federal level. States with known infections and USDA Animal and Plant Health Inspection Service regulate the movement of host nursery stock from infected nurseries to prevent the movement of sudden oak death to other areas.

Distribution

Sudden oak death was first officially reported in California in 2000 and was found in Europe around the same time. However, it is not clear that it originated in North America or Europe. In the U.S., sudden oak death is now known to occur in California, Oregon and Washington.

Although the primary impact has been on oak, many other plants can carry sudden oak death and the importation of infected plants could introduce the pathogen to new areas.

Biology

Sudden oak death does well in cool, wet climates like can be found in coastal northern California. Nurseries appear to also provide suitable habitat. In Minnesota, greenhouses and nurseries are likely at greatest risk for problems with sudden oak death. Once a nursery is infected with sudden oak death it has proven difficult to eradicate and can affect a nurseries ability to export and sell plants.

The fungal pathogen likely spreads between plants during rainfalls or watering, when fungal spores are splashed by water drops. After entering a tree through its leaves, the fungus moves through the bark, killing phloem and cambium tissue that transports food throughout the plant. Eventually the fungal infection makes its way around the entire trunk, girdling and killing the tree. Secondary pests (insects) can also attack the stressed plant, causing further damage by reducing the flow of water at the surface.

Identification

Sudden oak death was first named after the short period (six to eight weeks) it takes for infected oaks leaves to turn from green to brown. The most likely way that sudden oak death would occur in Minnesota is after importation of infected plants. Identifying sudden oak death is not easy and will require expert laboratory analysis.

A number of other more likely problems affect oak trees in Minnesota and should be considered when diagnosing potential problems:

- [Oak Wilt](#) is a common problem for oak trees in southeastern Minnesota and the Twin Cities Region.
- [Bur oak blight](#) is a recently discovered problem and has been confirmed to occur throughout Minnesota.
- [Other *Phytophthora* species](#) besides sudden oak death can also impact oaks and other trees in Minnesota.

For help diagnosing problems on oak trees, consult the University of Minnesota “What’s Wrong With my Plant?” for [oaks](#).

What Can I Do?

Contact the Minnesota Department of Agriculture via [Arrest the Pest](#) if you suspect you have found Sudden Oak Death.

Garlic mustard (*Alliaria petiolata*)

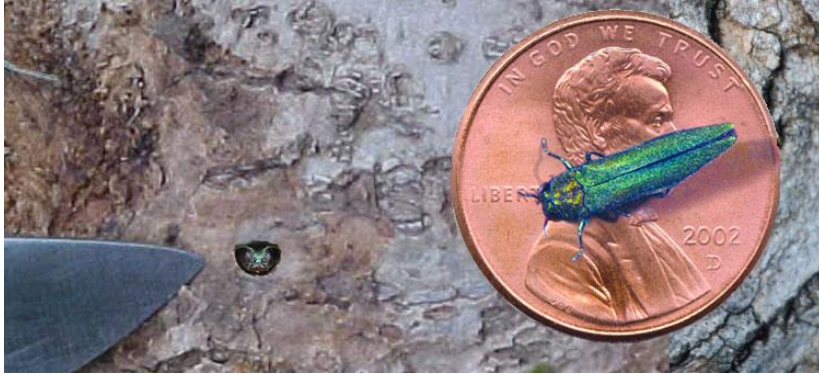


This biennial herbaceous plant has weak single stems 12 - 36" high in its second and flowering year. It is the only plant of this height blooming white in wooded environments in May. It is considered a severe ecological threat because it spreads into high quality woodlands, uplands, and floodplain forests, not just into disturbed areas. Once infested, invaded sites undergo a decline on native herbaceous cover within 10 years, which thereby alters the habitat suitability for native insects, birds, and mammals.

In a May, 2006, peer-reviewed publication, researchers report that garlic mustard interrupts the mutually beneficial relationships that many forest trees have with specifically arbuscular mycorrhizal fungi (AMF) by interfering with germination of fungal spores. Tree seedlings depend strongly on AMF. The researchers comment: "By killing off native soil fungi, the appearance of this weed in an intact forest could stifle the next generation of dominant canopy trees. It could also invite other native and nonnative weedy plants that currently grow in low-AMF habitats, such as those disturbed by logging or development."

This European exotic now occurs in 27 midwestern and northeastern states and in Canada. The Minnesota Department of Agriculture has categorized garlic mustard as a Prohibited Noxious Weed in Minnesota.

Emerald Ash Borer



Emerald ash borer (EAB) is a nonnative invasive insect that destroys ash trees. The adults are small, iridescent green beetles that live outside of trees during the summer months. The larvae are grub or worm-like and live underneath the bark of ash trees. Trees are killed by the tunneling of the larvae under the tree's bark.

EAB kills **ash trees**, and it does so in great numbers. Already it has killed millions of ash trees in North America. EAB will have a huge effect on Minnesota's landscape and the 998 million ash trees that grow in our cities and forests.

A quarantine has been placed on Ramsey, Hennepin, Houston, and Winona counties to help slow the spread of EAB to other areas. It's against the law to move the following items out of EAB-quarantined counties:

- Firewood from hardwood trees
- Entire ash trees
- Ash limbs and branches
- Ash logs or untreated ash lumber with bark attached
- Uncomposted ash chips and uncomposted ash bark chips greater than 1 inch in two dimensions.

Zebra Mussels



Zebra mussels first came to North America in the 1980s as stowaways in cargo ships. Large cargo ships are often top-heavy if they are not fully loaded, so people pump water into their holds to stabilize them for long ocean voyages. This *ballast water*, which may contain billions of tiny plants and animals, is then pumped out at the destination port. Scientists believe this is how zebra mussels first made their way to North America from their native waters in Western Asia.

Zebra mussels begin their lives as tiny swimming larvae, which are carried by water currents. As they mature, the larvae attach themselves to hard substances like rocks, other mussels, logs, boat hulls, and even the inner walls of pipes. They are a major problem for power plants, public water systems, and other water users because they accumulate very thickly. In Lake Erie, 700,000 mussels per square yard have been found in some utility water intake pipes.

Mussels feed by filtering water and removing plankton (tiny plants and animals) from it. The water in invaded lakes looks very clean after Zebra mussels take over because they have finer filters than native populations. The problem is that they can filter out all the plankton from a lake or stream, leaving nothing for native animal species to eat.

One adult zebra mussel may release up to a million eggs each year! Adults can also reattach themselves if they break off, and can survive out of water for days by closing their valves and slowing their metabolism. Zebra mussels can move to new locations as larvae, and when adults attach to boat hulls, anchors, or ropes.

Purple Loosestrife



Purple loosestrife is a lovely plant – or so it first seems. It has a tall stalk of pinkish, purple flowers that bloom in the late summer. But ever since it was brought to North America in the early 1800s as an ornamental garden plant, this plant has earned its nicknames – beautiful killer, marsh monster, and purple plague.

Soon after coming to the United States, purple loosestrife started spreading into natural areas. By 1830, it could be found all along the New England coast. The construction of the Erie Canal and other canals in the 1880s allowed it to spread further inland. Today it is in wetlands throughout all the lower 48 states except Florida, and in some areas grows so densely that scientists have counted up to 20,000 seedlings in one square meter.

In Europe, where it is a native plant, purple loosestrife is not invasive because a variety of insects feed on it and keep it in check. None of these insects occur naturally in North America. This, and the fact that a single plant can produce more than 2.5 million seeds annually and grow very quickly, has allowed purple loosestrife to spread uncontrollably. When purple loosestrife invades a wetland area, it crowds out native plants, reduces the food and cover available to wildlife, and chokes waterways.