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This guide is intended to help landowners care for their land and the natural resources on their property. The guide recommends practices that can be implemented to protect and enhance natural systems. Each section also suggests resources and publications that offer additional, more specific information for each subject area.

This guide provides information regarding natural areas such as prairies, wetlands, water resources and woodlands. Information about the control of noxious weeds and invasive plants, management of pastures and livestock, maintenance of private wells and septic systems, care of wildlife habitat, and management of household wastes is also included. By promoting environmental stewardship, we hope to preserve and enhance the environment in Hennepin County for current and future generations.

This resource was produced by Hennepin County Environmental Services in partnership with the University of Minnesota Extension Service of Hennepin County.
Managing Forest and Woodland Areas

Forests and woodlands can be a great asset to your property. Forests and woodlands can provide recreational opportunities for landowners and critical habitat for many wildlife and plant species. Trees are also essential in converting carbon dioxide into oxygen and can be a source of fuel, lumber, fruits, nuts and syrup.

Protecting forest remnants

The forests in Hennepin County are remnants of what used to be a large contiguous forest system commonly known as the Big Woods. Due to development, only a small percentage of fragmented forest remains today. Landowners can protect the remaining forest remnants by identifying and managing existing forest remnants on your property.
Forest and woodland types

There are five main forest or woodland types in Hennepin County.

**Maple-Basswood Forest** – These Big Woods remnants are the most common forest type found in Hennepin County. These forests grow in moist, well-drained soils.

**Oak Forest** – These forests are found most often in the transition zone between Maple-Basswood forests and prairies.

**Flood Plain Forest** – These forests are found along major rivers and streams in soils that flood seasonally.

**Lowland Hardwood Forest** – These forests are found in low-lying areas, such as in wetlands or adjacent to lakes.

**Oak Savanna** – This woodland is an upland fire-dependent plant community formed of prairie herbs with scattered trees or groves of trees.

For more detailed information on the forest and woodland types, including species found in each type, see the Field Guide to the Native Plant Communities of Minnesota (See For more information, pg. 17).

Forest and woodland management

Management of forested or woodland areas primarily consists of controlling invasive species, monitoring for and controlling tree diseases and pests, and replanting forest species where major disturbances, such as wind damage, logging or plant removal, has occurred.

**Control invasive species**

Invasive species can spread rapidly in a forest and out-compete native species. European buckthorn and garlic mustard are invasive species commonly found in forests in Hennepin County.

A variety of biological, chemical, cultural and mechanical methods can be implemented to reduce or control populations of invasive forest species. (See Plants that Need to be Controlled, pg 18)

**Monitor for and control tree diseases and pests**

Tree diseases and some insect species can negatively impact forest health. The severity of tree diseases and pests vary – some are treatable while others can kill trees. Once introduced, some diseases and pests can spread to other trees of that species in the forested area.

Diseases and pests can impact the foliage, bark or roots of a tree. Early identification and management of tree diseases and pests can help protect the health of your forest. Landowners should become familiar with the types of diseases and pests that could affect forest or woodland areas and then monitor forested areas for any problems.
The University of Minnesota Extension has a searchable guide to diagnosing and managing plant diseases available at www.extension.umn.edu/gardeninfo/diagnostics. The Minnesota Department of Agriculture also has information on tree and plant diseases available at www.mda.state.mn.us/plants.

Managing removal of dead or fallen trees
If trees in your forest or woodland die or blow down, removal of most of the dead or fallen trees is recommended within the affected area. Leaving some downed or dead trees is desirable as they will provide important wildlife habitat. A wide variety of animals, including insects, birds, squirrels and raccoons use snags (dead trees with cavities) for habitat. It is desirable to have a minimum of six snags per acre. If the tree is diseased, it should be removed to prevent the spread of the disease.

When a tree is removed, replant the area with trees, shrubs and other herbaceous understory plants native to the forest or woodland community to prevent establishment of invasive species.

Selective harvesting
Selective harvesting of mature trees can improve the overall health of your forest or woodland. This should only be done after consultation with a qualified forester and careful consideration of potential impacts to the forest’s integrity.

Reestablishing native species
To promote forest diversity, a variety of native plant species should be established where needed. Native species that may need to be replanted in a forest include trees, shrubs and herbaceous understory plants. Contact Hennepin County or the University of Minnesota Extension for more information on reestablishing native species and for site-specific plant lists.

The dieback in this Green Ash is caused by the Emerald Ash Borer. Loss of foliage is one sign that a tree may be impacted by a disease or pest.
Planting trees in your forest or woodland

Bare root seedlings are typically used when replacing trees in your forest or woodland. The following technique is the most commonly used method for planting the seedlings.

**Bare root hand planting technique**

1. Drive a shovel into soil. Pull the handle toward you to open the bottom of the hole.
2. Set the seedling vertically, one to three inches deeper than the nursery depth.
3. Push the top soil back into the hole with the back of the blade.
4. Pack the soil firmly with your heel.

**Protect trees from livestock**

Livestock can damage tree roots by compacting the soil. Livestock can also damage or even kill trees by eating or stripping the bark. To prevent damage, livestock should be fenced out of forested areas.

**Planting a woodland**

Planting a woodland requires proper planning and site preparation. To learn more, read the Minnesota Tree Planting Handbook, visit [www.myminnesotawoods.umn.edu](http://www.myminnesotawoods.umn.edu), search: tree planting, or contact a forestry professional.

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**Save energy by installing a windbreak**

Windbreaks or shelterbelts are used to modify wind flow to reduce energy use in homes, control snow drifting on roads and protect fields from wind erosion. By blocking homes from harsh winter winds, windbreaks can reduce annual fuel bills by 10 to 20 percent.

Windbreaks can be made up of one row or a few rows of trees and shrubs. Depending on the species selected, trees used in windbreaks can provide wildlife habitat and effective erosion control for crop fields.

Windbreaks should be placed on the prevailing wind side of a house, field or road. In Hennepin County, the prevailing winds are from the northwest. Hennepin County or the University of Minnesota Extension can provide assistance designing a windbreak and selecting tree and shrub species.

Windbreaks modify wind flow and can reduce energy use in homes.
For more information

- University of Minnesota Extension
  Database of tree professionals
  www.myminnesotawoods.info/assistance/assi_loc_home.aspx

- Forest resources
  www.myminnesotawoods.org
  www.extension.umn.edu/foreststewardship

- Minnesota Department of Natural Resources
  Forest information
  www.dnr.state.mn.us/forests/index.html
  www.mntrees.org
  Forest health information
  www.dnr.state.mn.us, search: forest health

- Seedling tree sales
  1-800-657-3767
  www.dnr.state.mn.us/forestry/nurseries/ordering.html

- Minnesota Tree Care Advisors
  612-625-3765
  www.mntca.org

- Natural Resources Conservation Service – windbreak information
  www.nrcs.usda.gov, search: windbreaks

- Field Guide to the Native Plant Communities of Minnesota: Eastern Broadleaf Forest Province
  Minnesota Department of Natural Resources, St. Paul, Minnesota. 2005.

- Minnesota Trees

- Trees of Minnesota Field Guide

- Windbreaks for Rural Living
  Wight, Bruce, Teresa K. Boes and James R. Brandle, University of Nebraska and the Soil Conservation Service.

- Minnesota Tree Planting Handbook
  Minnesota Department of Natural Resources, St. Paul, Minnesota. cfc.cfans.umn.edu/links/handbook.pdf

- How to Prune Trees

- Save Energy with Trees
  Minnesota Department of Commerce Energy Information Center, St. Paul, Minnesota. www.energy.mn.gov
Resources

- Hennepin County Environmental Services
  www.hennepin.us/naturalresources
  612-348-3777
  Hennepin County provides a variety of information and technical assistance for managing your land.

- University of Minnesota Extension – Hennepin County
  www.extension.umn.edu/county/hennepin
  612-596-2110
  The University of Minnesota Extension provides outreach for the University of Minnesota and delivers educational programs and technical assistance on a variety of land management topics.

- Minnesota Department of Agriculture
  www.mda.state.mn.us
  651-201-6000

- Minnesota Department of Natural Resources (DNR)
  www.dnr.state.mn.us
  651-296-6157

- USDA – Natural Resources Conservation Service (NRCS)
  www.mn.nrcs.usda.gov
  763-241-1150, ext. 3

- Minnesota’s bookstore
  www.minnesotasbookstore.com
  Minnesota’s bookstore sells a variety of publications from Minnesota state agencies including many of the publications listed in this guide.

- Midwest Plan Services
  www.mwps.org
  Midwest Plan Services, based out of Iowa State University, sells a variety of low-cost agricultural publications.

Books & publications

- A Quick Reference Guide for Earth Friendly Home Landscaping
  Hennepin County Environmental Services.
  www.hennepin.us/sustainablelandscaping

- Beyond the suburbs – A landowner’s guide to conservation management

- Guide to Rural Living
  www.extension.umn.edu/ruralliving

- Living on Acreages

- Small Scale/Small Field Conservation
  NRCS, Washington, D.C.
  landcare.sc.egov.usda.gov