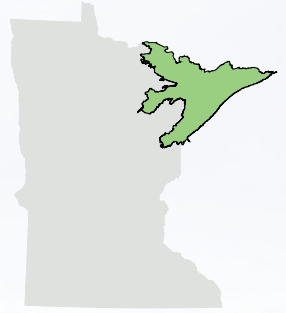


NORTHERN SUPERIOR UPLANDS

WOODLANDS OF MINNESOTA LANDOWNER HANDBOOK



MINNESOTA DEPARTMENT OF NATURAL RESOURCES

About the Woodlands of Minnesota Series

Woodlands of Minnesota is a series of handbooks for woodland owners in different areas of the state.

This handbook is for people who own woods in the Northern Superior Uplands section, labeled as 2 on the map.

If you own woods in other parts of the state, see mndnr.gov/woodlands for handbooks designed for your area.

Areas Covered by Handbook Series

1. Agassiz Lowlands and Littlefork–Vermillion Uplands
2. Northern Superior Uplands
3. Chippewa Plains and Pine Moraines–Outwash Plains
4. St. Louis Moraines and Tamarack Lowlands
5. Hardwood Hills
6. Mille Lacs Uplands and Glacial Lake Superior Plains
7. Anoka Sand Plain, Big Woods, and St. Paul–Baldwin Plains and Moraines
8. Oak Savanna
9. Rochester Plateau and Blufflands
10. Tallgrass Aspen Parklands and Prairie Parkland

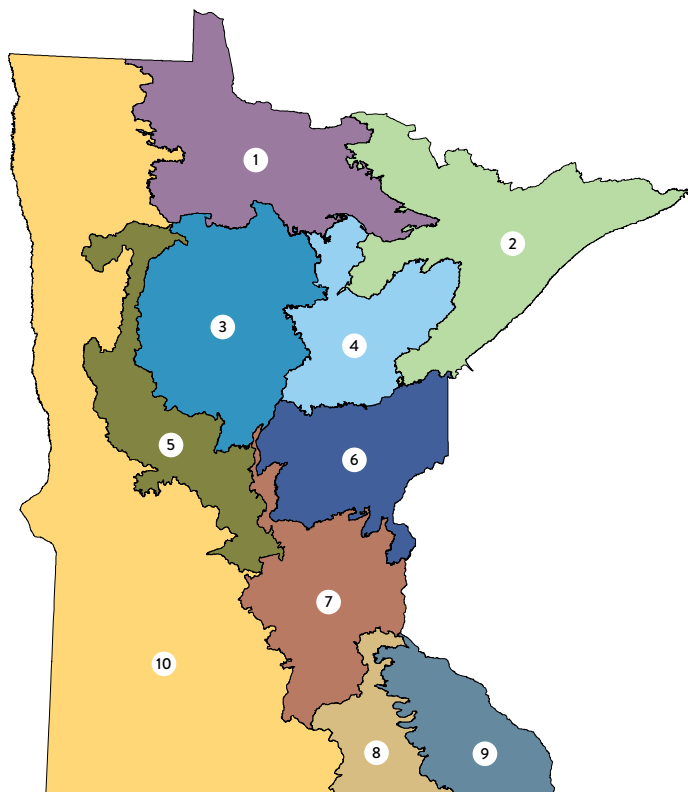




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Introduction

Nearly 191,000 private woodland owners in Minnesota collectively own more than 6 million acres (about one-third) of the state's total forest land. These are individuals, families, cooperatives, or small businesses who own woods for a wide range of reasons such as recreation, hunting, investment, timber, or simply to have a quiet family getaway in the North Woods. You are a part of this landowner community.

Private woodlands provide important benefits such as clean air and water, scenic beauty, hunting, angling, birdwatching, and the raw materials to make paper and other wood products. Minnesota's landowners help enhance these benefits for themselves and others through active involvement in caring for the health of their woods. As a landowner in northeast Minnesota, many resources are available to help you take care of your woods. Whether you are looking for new ideas or just looking for a place to start, this handbook can help you accomplish your goals.

How to Use This Handbook

This handbook is both a reference and a workbook. It contains information on the past and present condition of land in this region, insight into some of the biggest challenges woodland owners face here, and tips for making and accomplishing goals for your woods. This handbook includes:

Landowner Spotlights—Meet a few of your northeast Minnesota neighbors! Their stories, experiences, and words of wisdom may inspire ideas for your own woods.

Woods Workbook—The workbook on pages 88-93 guides you through setting goals for your woods and how to get them done. A digital version can be found on mndnr.gov/woodlands

Vocabulary—The bold italic words are defined at the end of each section ("part").

Handbook Website—The handbook website contains additional resources including contact information for your local natural resource professionals and ideas for woodland projects. mndnr.gov/woodlands

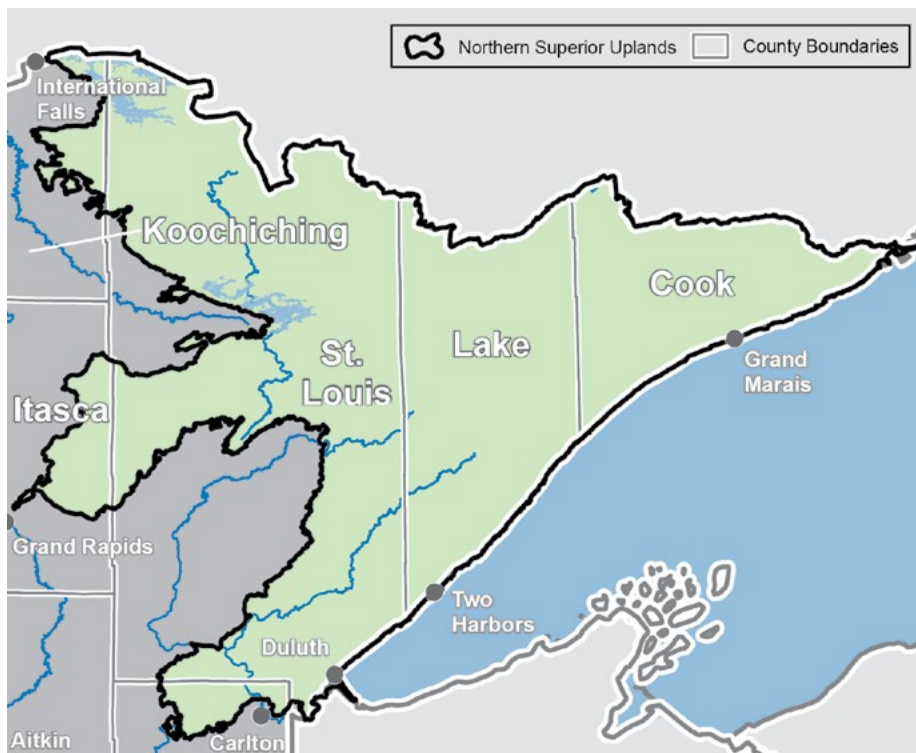
Land Covered in this Handbook

This handbook is specifically designed for those who own land in the area of northeast Minnesota known by ecologists as the Northern Superior Uplands. This ecologically rich place is home to thousands of lakes, vast stretches of northern forest, lush wetlands, diverse wildlife, and Minnesota's Lake Superior coastline.

The Northern Superior Uplands section spans all or parts of Carlton, Cook, Itasca, Koochiching, Lake, and St. Louis counties.

- **Carlton County:** 23%, or 126,245 of 559,725 total acres, is located in the Northern Superior Uplands and makes up 2% of the section.
- **Cook County:** 100% of 1,027,570 acres are located in the Northern Superior Uplands and makes up 17% of the section.
- **Itasca County:** 11%, or 211,922 of 1,872,385 total acres, is located in the Northern Superior Uplands and makes up 4% of the section.
- **Koochiching County:** 7%, or 147,356 of 2,018,168 total acres, is located in the Northern Superior Uplands and makes up 2% of the section.
- **Lake County:** 100% of 1,464,071 acres are located in the Northern Superior Uplands and makes up 25% of the section.
- **St. Louis County:** 69%, or 2,993,370 of 4,312,245 total acres, is located in the Northern Superior Uplands and makes up 50% of the section.

NORTHERN SUPERIOR UPLANDS





PART 1

NORTHEAST MINNESOTA'S FORESTS, PAST AND PRESENT

Chapter 1: The Forest Landscape Around You

If you peered out of an airplane window as it passed over your woods in the summer, you might be hard-pressed to pick out your own trees from the patchy sea of green below. Your property is one piece of a much larger landscape.

A **landscape** consists of all land uses (forest, wetland, agriculture, urban) and ownerships (public, private, tribal) within a defined area that can cover millions of acres. Taking a good look at the forests in your surrounding landscape can teach you a lot about what you might expect to find in your own woods.

Describing Your Landscape

If someone asked you where your property is located, how would you answer? Often people use political boundaries to define their area such as “Cook County” or “west of Ely.” Sometimes they use nearby natural features as reference points such as “just off Lake Vermilion” or “in the Manitou River valley.” Based on the soils, climate, water, and plants in this region, ecologists call this area the **Northern Superior Uplands** Section. But before we get into current classifications, let’s take a trip back in time.



From the air, you can see that your woods are part of a larger landscape.

Photo Credit: USDA Forest Service

Historic Land Cover and Current Land Use

The area covered in this handbook encompasses approximately 6 million acres, which largely coincides with the extent of the **Canadian Shield** in Minnesota. This area is characterized by glacially scoured bedrock terrain with numerous lakes and thin and discontinuous deposits of coarse **loamy till**. The section has high relief, reflecting the rugged **topography** of the underlying bedrock, and features the highest point in Minnesota at Eagle Mountain, topping out at 2,301 feet.

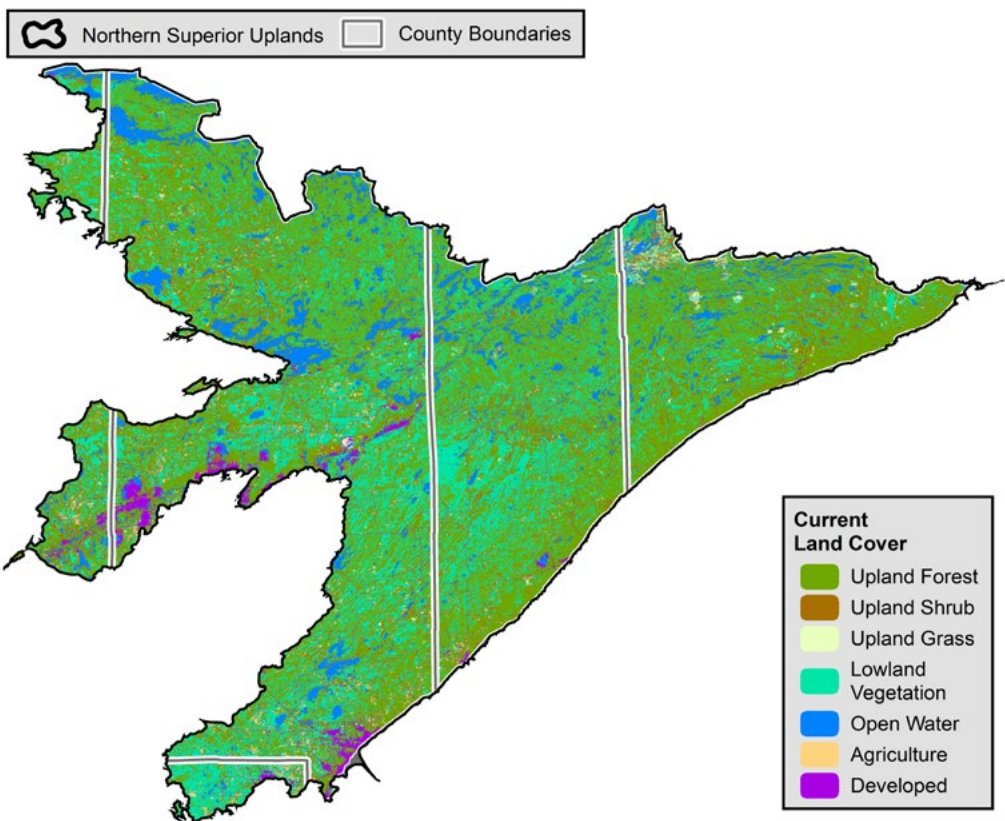
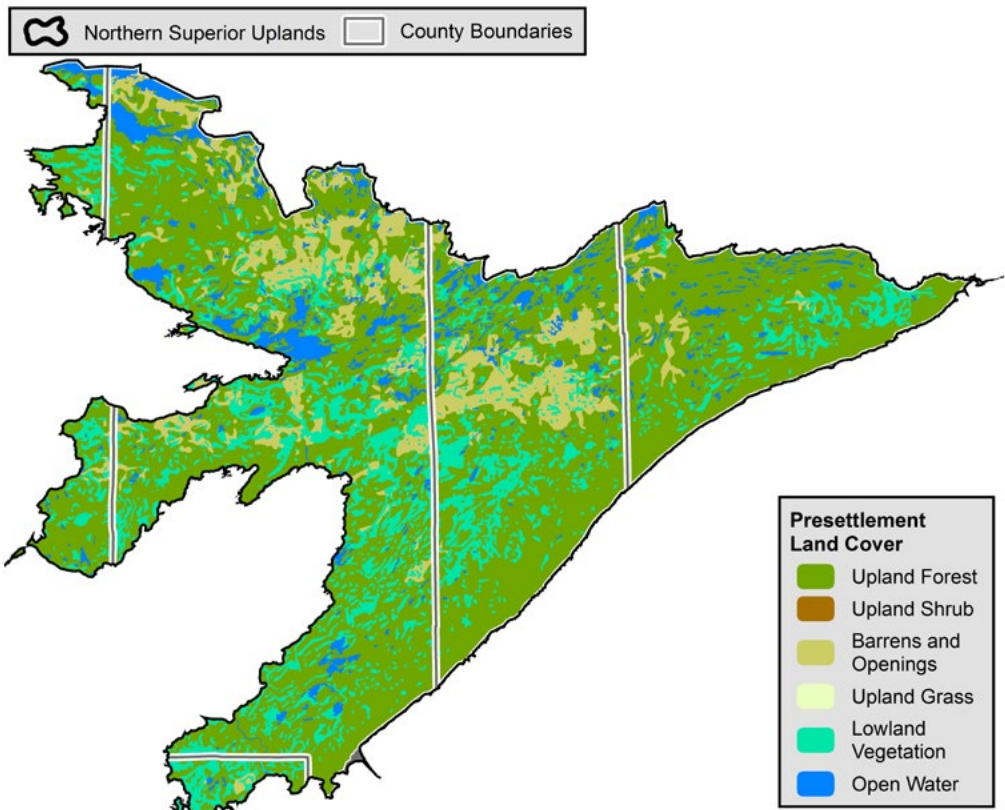
This area receives more of its precipitation as snow than any section in the state. It also has the longest period of snow cover and the shortest growing season.

The upland vegetation is remarkably uniform, consisting mostly of fire-dependent forests and woodlands. Forests with red and white pine were widespread in the past, mixed with aspen, paper birch, spruce, and balsam fir. Much of the pine was cut in the late 1800s and early 1900s, leaving forests dominated mostly by aspen and paper birch. Jack pine forests are present on droughty ridges and bedrock exposures, as well as on local sandy **outwash** deposits. The highlands along Lake Superior have a local climate moderated by the lake that favors forests dominated by sugar maple with some white pine, yellow birch, and white cedar. Peatlands and wet forests are present throughout the area as inclusions within broader upland forest areas. Sparsely vegetated cliffs and bedrock outcrops are common in the rugged terrain along Lake Superior and in the border lakes region of the northern part of the section.

Logging, forest management, tourism, recreation, and mining are important industries in this area. There are extensive areas of forested public land that are managed for wood products and recreation. Due to the wide-ranging forested landscape, this area produces the cleanest drinking water in the state.



LAND COVER: PAST AND PRESENT

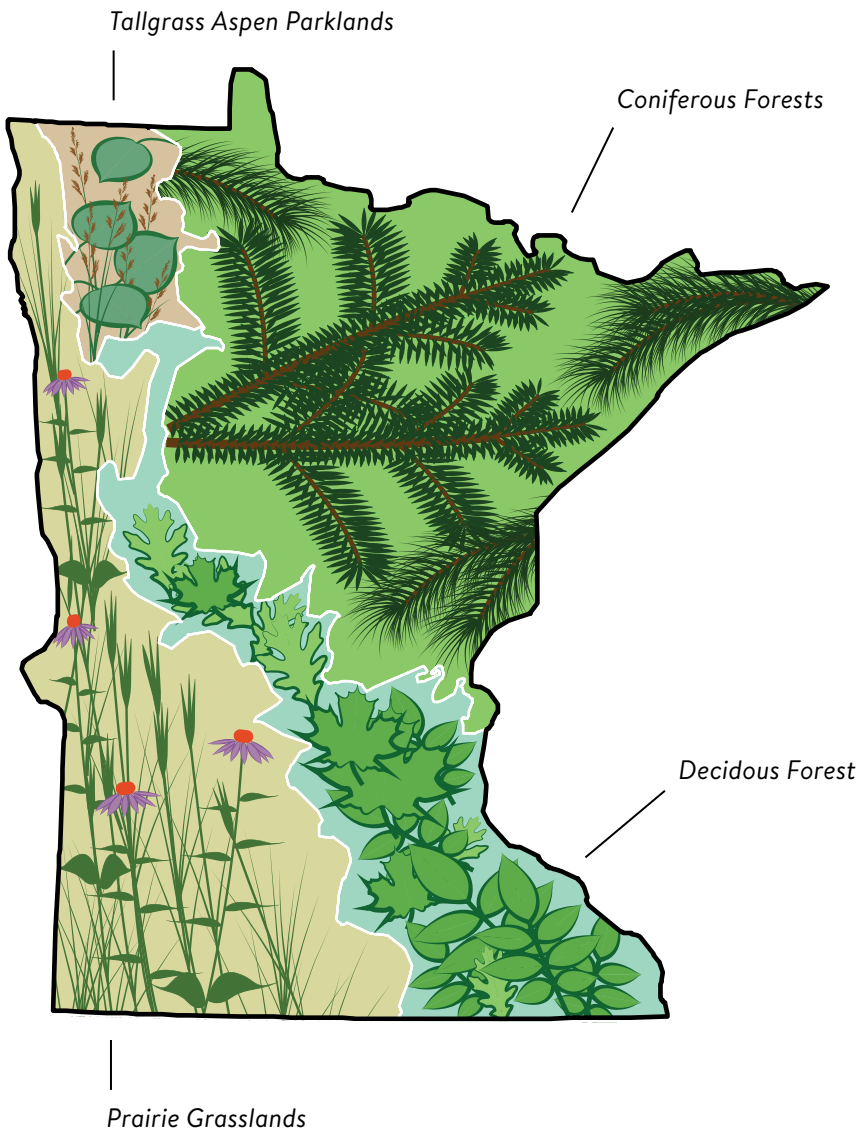


How We Classify Forests Today

Minnesota is located at a great North American transition zone. Here grassland, deciduous (hardwood) forest, and coniferous forest converge and intermingle. As such, tree-covered landscapes can vary greatly. For example, sparsely wooded oak savannahs are common in south-central Minnesota. Mixed grass and aspen parklands dominate the northwest. Bluffs blanketed by deciduous trees cover southeast Minnesota. Dense forests filled with pine, spruce, fir, aspen, and birch characterize the northeast. Finally, mixes of these landscapes can be found throughout the central parts of the state.

While there are several systems in use today that define Minnesota's landscapes, this handbook refers to the *Ecological Classification System*.

MINNESOTA BIOMES



Ecological Classification System

A statewide land mapping project known as the Ecological Classification System (ECS) was created by ecologists to help people who manage the state's natural resources (trees, wildlife, waters, etc.) identify patterns in the landscape to better understand the land's potential. The system divides the landscape into progressively smaller areas based on similarities and differences according to climate, geology, natural features, and the types of vegetation present.

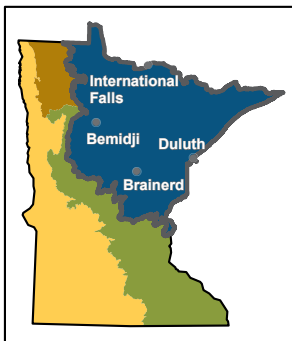
The levels of the ECS hierarchy are nested within each other, similar to townships within counties and counties within states. The highest of the four ECS levels used in Minnesota is **province** (level 1), followed by **section** (level 2), **subsection** (level 3), and **land-type association** (level 4). Note that these ecological boundaries extend across state lines. For instance, the **Laurentian Mixed Forest Province** spans all of northeastern Minnesota and parts of Wisconsin, Michigan, New England, and Ontario.

This handbook focuses on the five ecological subsections within the Northern Superior Uplands Section: **Border Lakes**, **Laurentian Uplands**, **Nashwauk Uplands**, **North Shore Highlands**, and **Toimi Uplands**.

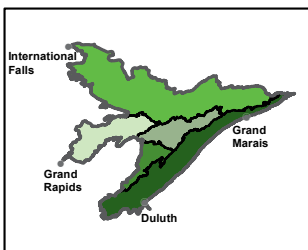
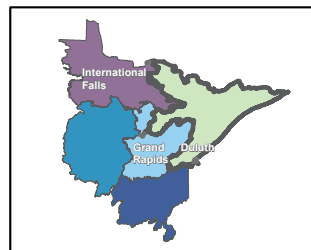
A map listing all 26 subsections within Minnesota can be found on page 87.

ECOLOGICAL CLASSIFICATION SYSTEM HIERARCHY

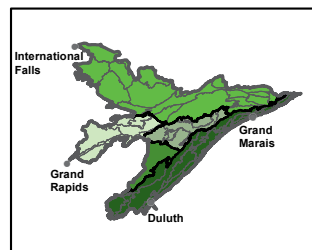
Level 1: Minnesota Provinces



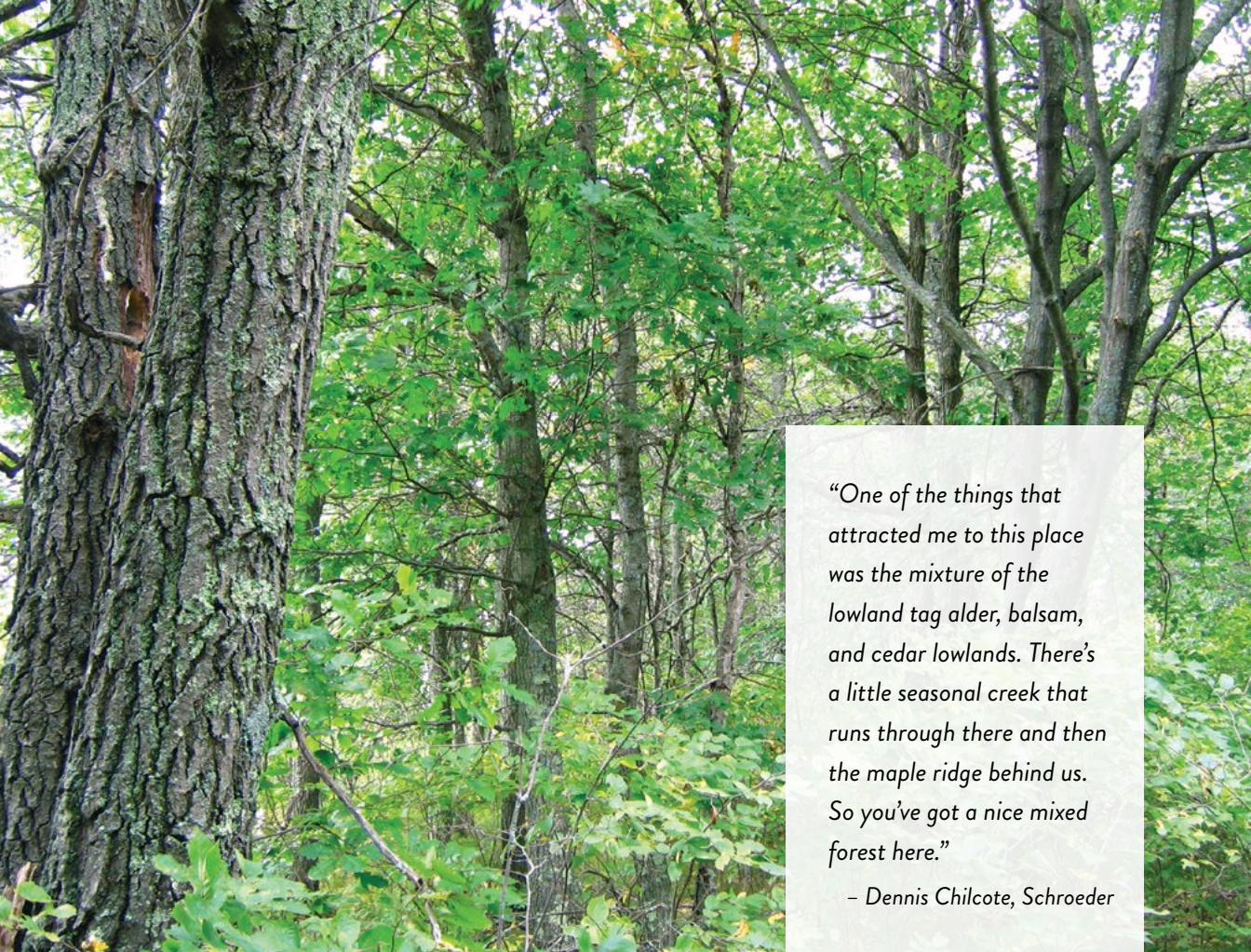
Level 2: Sections in the Laurentian Mixed Forest Province



Level 3: Subsections in the Northern Superior Uplands Section



Level 4: Land-Type Associations in the Border Lakes, Laurentian Uplands, Nashwauk Uplands, North Shore Highlands, and Toimi Uplands Subsections



“One of the things that attracted me to this place was the mixture of the lowland tag alder, balsam, and cedar lowlands. There’s a little seasonal creek that runs through there and then the maple ridge behind us. So you’ve got a nice mixed forest here.”

– Dennis Chilcote, Schroeder

Native Plant Communities

At an even smaller level, ecologists classify land into **native plant communities** based on native vegetation, landforms, and other local conditions such as amount of rainfall and soil richness. This system is used to describe patterns on the landscape more precisely.

The native plant community system describes an area’s specific land types or **ecosystems**. A single community might cover a large area, or exist in scattered pockets. Sometimes very different native plant communities exist near each other. For example, trees and plants growing along a river may vary widely from those growing several hundred feet uphill. Native plant communities are also a useful tool for telling the story of your land’s history. Forests are constantly changing under the influence of time between disturbances and other factors. The trees and other plants that emerge 20 years after a fire or windstorm will differ from those growing in the same area hundreds of years later. While all five ecological subsections (Border Lakes, Laurentian Uplands, Nashwauk Uplands, North Shore Highlands, and Toimi Uplands) contain many similar communities, you can also notice variations as you move from north to south or east to west within the region.

The names of forested native plant communities reflect their general location within the state (northern, central, or southern), the moisture or nutrient content of their soils (wet, dry, rich, poor), and the dominant trees that make up the *canopy*. Examples of forested communities that you might find in northeastern Minnesota include Northern Dry-Bedrock Pine Woodland, Northern Mesic Hardwood Forest (*mesic* means between wet and dry), or Northern Rich Spruce Swamp. The DNR considers 9 out of 44 forested communities found in northeast Minnesota to be “imperiled,” meaning they are rare or threatened within Minnesota. It is especially important to protect these communities from conversion to other land uses. Several local types of forested native plant communities are highlighted in Chapter 5.



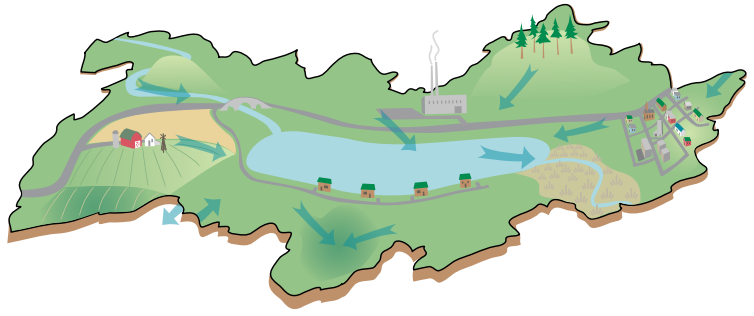
Know Your Plants

Knowing the native plant communities on your property can help you better understand your land’s potential. For example, the presence of certain plants growing on the ground can reveal clues about the soil and climate. This can help you plan which tree species are best suited for your woods, predict where you might find nontimber forest products (such as leeks, balsam boughs, and maples to tap), and which wildlife species might be present. To learn more, visit mndnr.gov/woodlands

Discover Your Watershed!

A **watershed** is the total area of land surrounding a body of water (such as a lake, river, or stream) that drains water into

that body. Watersheds can be small or large. Small watersheds surrounding creeks and streams join to create larger watersheds surrounding major rivers. Northeast Minnesota is located along a great divide in North American water flow. Depending on your land's exact location, your actions can affect the quality of water that will flow either into the Great Lakes and ultimately the Gulf of St. Lawrence by way of the St. Louis River, into Hudson Bay by way of the Rainy River, or into the Gulf of Mexico by way of the Mississippi River. To learn more, visit mndnr.gov/woodlands



NORTHEASTERN MINNESOTA WATERSHEDS

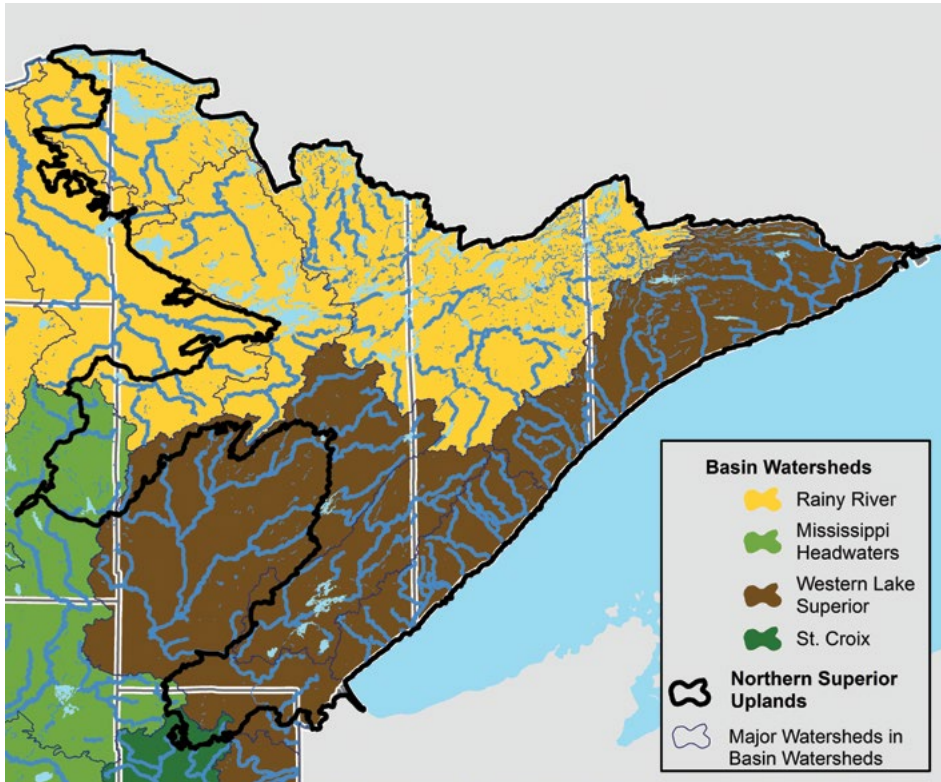




Photo Credit: Benjamin Eckhoff

Challenges in the North Woods

Many changes in the last few hundred years have brought challenges to forests in northeast Minnesota. Here are examples of the biggest challenges we all must consider when making decisions about caring for and using the woodlands in this region.

Habitat Loss

Northeast Minnesota is home to a multitude of wildlife species including some that are rare, declining, or threatened. The DNR refers to these as **species in greatest conservation need**. About 350 species are given this classification in Minnesota. Examples in your area include Canada lynx, spruce grouse, Connecticut warblers, great gray owls, boreal owls, northern goshawks, trumpeter swans, and northern brook lampreys. Many of the species found in your region are at the southern extent of their range and are rare elsewhere in Minnesota.

The greatest threat to these species is **habitat** loss or degradation, which affects approximately 80 percent of the species of greatest conservation need within the five subsections. Landscape changes since European settlement such as fire suppression, logging, mining, and rural development have led to changes in tree species, forest age, and **patch** size. This has positive impacts on some wildlife species and negative impacts on others.

HABITAT SPOTLIGHT

Northern White-Cedar Forests

Northern white cedar is a slow growing, long-lived, shade tolerant tree that grows on both upland and lowland sites. Cedar forests provide important habitat for many wildlife species in your region including blue-spotted salamanders, Swainson's thrush, winter wren, moose, and northern flying squirrels. In total, nearly 100 species of birds, mammals, reptiles, and amphibians make their home in white-cedar forests. Despite the long list of animals that use cedar forests, perhaps the most notable is the white-tailed deer. In the winter, large numbers of deer gather in areas with mature white cedar. These "deer yards" provide shelter from the elements and allow deer to save energy and move with greater ease. However, browsing deer significantly reduce cedar regeneration, even in areas with fewer deer. The unique requirements for regeneration of cedar, along with browsing by wildlife, has led to the decline of cedar in this landscape. As a result, deer and other species that rely on this habitat may also decline.





Declining Water Quality

Nearly 550,000 acres of lakes and rivers cover the Northern Superior Uplands. These waters support important fishing and tourism industries and form a vital migratory corridor for birds traveling between their nesting and wintering grounds. Despite the economic, social, and ecological importance of these waterbodies, many are suffering declining quality from a variety of contaminants including sediment, fertilizers, and pesticides. Some of these pollutants come from nearby sources such as homes with non-functioning septic tanks or lawns bordering lakes, which can contribute pollutants through erosion or lawn chemical runoff. Other sources of pollution are less easy to pinpoint within the greater watershed such as contaminated runoff from agricultural fields, residential developments, or urban centers. Pollutants in runoff from all of these sources eventually collect in water bodies throughout the region, harm fish and other wildlife, and degrades drinking water and recreational opportunities.

As natural water filters, forests play important roles in keeping water clean. Trees and leaves slow the movement of rain to the ground. This slower-moving rain picks up less sediment when it hits the soil. Additionally, forest soils contain large pore spaces that trap sediment and pollutants. As a result, rainwater that leaves a forest to recharge groundwater or flows into lakes and rivers is clean. Keeping forests on the landscape is one of the best ways to protect drinking water. Forests along shorelines are particularly important, as they serve as the last barrier to filter contaminated runoff before it reaches a lake.

Invasive Species

In a part of the country where the landscape is white for much of the year, many people tend to look at the woods in summer and think, “if it’s green, it’s good!” Unfortunately, there are a lot of things living and growing in Minnesota’s woods that do not belong here, and they can cause some pretty big problems. These harmful plants, insects, other animals, and fungi are called *invasive species*. Chances are good that there are a few living in your woods.


The DNR describes invasive species as “species that are not native to Minnesota and cause economic or environmental harm or harm to human health.” Not all *nonnative species* are invasive. For example, we plant many nonnative plants such as crabapples that do not cause trouble. The problems start when species escape cultivation and begin taking the place of native species in the wild.

Plants, animals, and fungi that become invasive have many of these characteristics:

- Fast growing.
- Reproduce quickly, or have easily dispersed seeds or spores.
- Thrive in a variety of conditions.
- Lack natural predators or diseases that might otherwise keep their populations in check.

Many plants that are now invasive were originally brought to the United States to be sold as ornamental shrubs and flowers. Other invasive insects, animals, and fungal diseases were introduced accidentally through international trade or brought here purposely for various commercial or ecological reasons. Once an invasive species becomes established, they can spread by natural methods such as by birds or the wind. However, the way invasive species travel the farthest is through humans transporting them unknowingly.

As a landowner, you can do a lot to help manage invasive species on your land. Tips for controlling invasive species can be found in Chapter 5 and on the handbook website.



“I’ve got a real heartache for buckthorn because it’s so prolific out here. It’s almost the first leafing out deal you see in the woods in the spring, and it’s the last green you see in the winter except for the pines. It’s a horrible, rotten thing!”

– Peggy Meseroll, Esko

INTRUDER ALERT!

Invasive species are an increasing problem for the North Woods. Here are examples of troublemakers to look for on your land.



Common Tansy

Common tansy is a semi-woody, 3- to 5-foot-tall perennial plant with a

cluster of yellow, button-shaped flower heads that blooms from July through October. It was introduced to the United States from Europe for medicinal and horticultural uses associated with its strongly fragrant leaves. This species spreads rapidly in sunny, well-drained soils and has become widespread along roadsides and other open areas across much of northern Minnesota. Once established, common tansy crowds out native plants and forms dense, single species colonies that threaten the area's ecological health by reducing diversity of species and associated wildlife habitat.

Common tansy is particularly difficult to control because it forms a persistent underground root system that resprouts after aboveground damage. Effective control of common tansy requires killing this underground root system. A combination of mechanical and chemical treatments have shown the best results. Patches must be monitored annually to remove plants that regenerate from surviving roots and seeds remaining in the soil.



European Buckthorn

European buckthorn is a tree that grows as a weedy shrub in North America. In

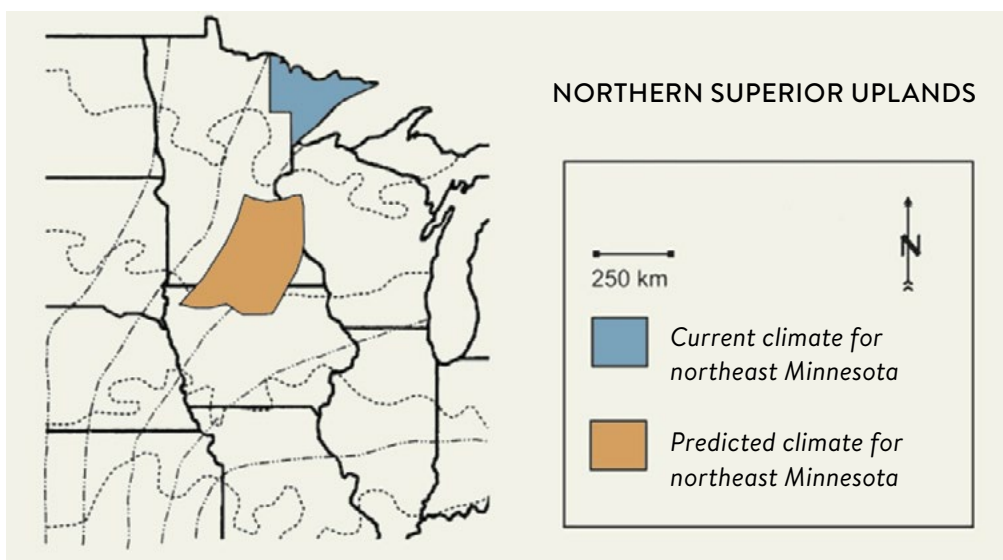
Minnesota both common and glossy buckthorn are highly invasive. Originally, both species were brought to the United States to be sold as ornamental hedges. However, buckthorn easily escaped cultivation and popped up on disturbed patches of land and in the woods, forming dense thickets and shading out native plants. Birds spread the plant by eating its small, black berries and excreting the seeds. Although nurseries stopped selling buckthorn many decades ago, the plant has become established across much of the United State and Canada.

If ignored, buckthorn can take over your woods. Buckthorn greens up earlier and stays green longer than most native plants. With a longer growing season, buckthorn not only grows faster than native plants, it also creates an unnatural layer of shade that stifles many native species growing underneath. Deer tend to avoid eating buckthorn, and it has almost no natural predators or diseases in Minnesota. These combined factors mean there is very little to slow the plant down, except action on your part. Buckthorn can be controlled by hand-pulling small plants and cutting larger plants, followed by stump removal or chemical treatment.

A Changing Climate

Climate scientists predict that as global temperature continues to increase, Minnesota's climate is likely to be significantly affected over the next several decades. Minnesota will experience warmer year-round temperatures—with winter warming faster than other seasons—and changes to rainfall patterns, with more precipitation in the form of big downpours. In fact, your region of Minnesota is already experiencing these changes. Historical climate records show that average low winter temperatures have increased by as much as 6 or 7 degrees Fahrenheit since 1895, making it one of the fastest winter-warming areas of both Minnesota and the lower 48 states. Annual precipitation has increased in this region by an average of 2.5 inches over the course of the historical record—that's about a 10 percent increase.

Future Climate Prediction



Source: S. Galatowitsch et al. / *Biological Conservation* 142 (2009) 2012-2022

When selecting trees for your woods, consider the future climate. By 2060, it is predicated that the climate of northeast Minnesota will most resemble that of present day south-central Minnesota.

The variety of ecosystems we see in Minnesota—grassland, deciduous forest, coniferous forest—happened as a result of the differences in temperature and precipitation from north to south or east to west within the state. Many of the tree species in northeast Minnesota are at the northern or southern edges of their range. This means that even small shifts in average temperature and precipitation could cause big changes to the type and health of forests you are used to seeing. Under higher temperatures, northern tree species such as balsam fir, tamarack, spruce, quaking aspen, and paper birch are likely to experience more stress. Growing conditions may improve for mixed deciduous forest species such as white and pin oak, white pine, basswood, elm, and maple.

Photo on right: Dead top of a balsam fir caused by eastern spruce budworm feeding.

Warmer Seasons, More Insect Damage

Eastern spruce budworm is a native insect that evolved with Minnesota's boreal forest conifers. Contrary to its name, it prefers to feed on balsam fir, although it will also feed on white spruce needles. Balsam fir and white spruce make up almost 30 percent of the forests in your region and represent some of the most iconic North Woods tree species. Two to three years of heavy defoliation will usually kill the tops of balsam fir, and both mature and immature trees will die after three to four years of heavy defoliation. Periodic outbreaks of spruce budworm are part of the natural cycle of events associated with maturing balsam fir and white spruce. However, warmer temperatures may further stress balsam fir and white spruce and lead to higher rates of tree death associated with this natural cycle.





Warmer winters and longer growing seasons have led to larger, ongoing outbreaks of eastern larch beetle.

Photo Credit: Fraser McKee

More wildfires and runoff. Changing rainfall patterns and warmer summer temperatures may create more frequent wildfire-inducing conditions. Increases in the size and intensity of rain events could lead to more erosion.

Warmer winters kill fewer pests. As native trees struggle to adapt or migrate in response to the changing local climate, invasive and native species that thrive in the changed conditions may gain further ground. Drought stress makes trees more susceptible to insects and diseases, which may be more abundant if warmer conditions allow forest pests to survive through the winter.

Help your woods adapt to climate change. While all of this may sound daunting, understanding how climate change may affect your woods can help you proactively choose tree species and strategies best suited to the future landscape.

1. Carefully monitor changes in your woods and look for new species that may be invasive so you can catch problems early.
2. Maintain diversity in the native species and ages of your trees to help your woods adapt to change.
3. Occasionally thin your trees to decrease competition and increase vigor of the remaining trees.
4. Encourage species that are predicted to do well under future conditions to help your woods compete with potential invaders and keep healthy forests on the landscape.
5. Help your woods regrow more quickly after a natural disturbance or harvest by planting or seeding any tree species that cannot sprout from their roots.

When you and other landowners take these actions, you help set the stage for healthy, productive, and resilient forests in the face of a changing climate.



Climate Change Response Framework

Since 2009, a collaboration of the USDA Forest Service and other partners known as the Northern Institute of Applied Climate Science has been working with foresters and landowners across the northeastern United States to understand and adapt to the impending changes that the shifting climate will bring to forests. In Minnesota, several pilot projects are underway and large and small private landowners are helping to test strategies and determine which options will help people and forests adapt to change. Learn more about these projects at mndnr.gov/woodlands

Chapter 2: Why Your Woods Matter

Privately owned woodlands are an important source of wood and all the products made with trees. Your woods may also be a great source of berries, mushrooms, maple syrup, or balsam boughs for wreaths. Or you may value your woods as a place to hunt, watch wildlife, or find serenity.

In this chapter, start thinking about specific goals and what you want to see on your property in 10, 20, or 50 years.

Benefits of Forests to You and Your Community

Wood and Pulp

Forests provide a variety of products we depend on. Wood and pulp are often the most important products we get from forests and we use them to make books, buildings, newspapers, toilet tissue, and many other products. Private woodlands are an important source of wood in Minnesota. Harvest levels vary from year to year, but in 2016 an estimated 35 percent of all timber harvested in Minnesota came from private family-owned woodlands.



"I have my own sawmill, so I can cut up my logs into boards. Cuts down on trips to Menards (chuckles)."

– Ron Brodigan, Isabella

A northern Minnesota lumber mill employee assesses the quality of freshly cut boards.

Advancements in technology are expanding the number of ways we can use wood. Sappi Mill in Cloquet has modernized its wood pulp process so it can switch production between Kraft paper pulp and dissolvable wood pulp that is used to make clothing, textiles, and cellophane. Aspen, the most common tree species in your region, is the main pulp-producing tree.

Some businesses, municipalities, and schools in Minnesota burn **biomass** to produce local, renewable energy. For example, Minnesota Power in Duluth creates steam and electricity for the nearby paper mill using wood, tops, and limbs left over from traditional timber harvests and mill byproducts such as small wood residue. The innovative ways Minnesota entrepreneurs can use this renewable wood resource is incredibly diverse and continually evolving.



Photo credit: Hedstrom Lumber Company

Wood: A Local Industry

Forest-based industries are important contributors to northeast Minnesota's economy. These businesses provide nearly \$900 million in regional economic output and more than 1,800 local jobs in logging, forest consulting, and a variety of wood product manufacturing industries. For example, the Hedstrom Lumber Company employs about 40 people in the Grand Marais area. The company purchases a variety of tree species from hundreds of Minnesota landowners to produce kiln-dried and finished products such as timber for timber frame construction, dimensional lumber, and specialty pattern stock. Having a healthy forest economy in your region means more local jobs, higher demand for your wood, and greater support for maintaining healthy forests. The trees you grow and manage on your land today could end up building the homes of your family and neighbors tomorrow.

Nonwood Products

Forests can provide many other products from the decorative to the delicious. Spring foragers might find tasty morel mushrooms or ramps (wild onions) poking out from under the damp leaf litter. Summer berries and other fruits include blueberries, blackberries, raspberries, strawberries, gooseberries, and chokecherries, just to name a few. Wild hazelnuts are a fall favorite of wildlife and some people too, and they can be roasted and eaten like commercial filberts. As winter approaches, balsam boughs can be collected and turned into holiday décor for your home or sold to the wreath-making industry. When winter fades and the tree sap begins to flow, maples can be tapped for making sweet, sticky maple syrup.





Forest Ecosystem Services

Forests provide a great many **ecosystem services** that we often take for granted such as clean air and water, healthy soils, erosion control, and wildlife habitat. Forests also help control weather patterns by regulating temperatures and the water cycle.

Importantly, forests store large amounts of carbon in roots, trunks, limbs, and soils. In fact, about half of the weight of a tree is carbon. Healthy, growing forests absorb carbon from the atmosphere in the form of **carbon dioxide**, a **greenhouse gas** that traps sunlight and warms our planet. As excess carbon dioxide builds in the atmosphere as a result of human activities and global temperatures increase, maintaining healthy, young forests helps store more carbon in wood and soils, slowing the effects of climate change.

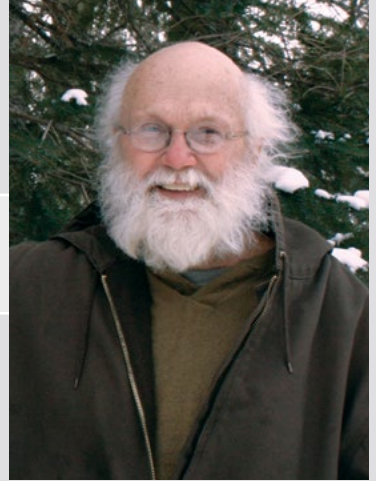
These free ecosystem services cannot be replaced without a lot of expensive infrastructure. Some economists are working on ways to estimate the economic worth of the carbon stored in forests. Creating and growing markets for less tangible forest benefits might be an important step toward managing forests in the future.

Support for working forests helps keep them from being converted to other land use so they can provide environmental services and maintain habitats for wildlife and plants.

FOREST CREATIONS SPOTLIGHT

Dennis Chilcote—Schroeder, Minn.

NORTH SHORE HIGHLANDS



Dennis Chilcote's inspiration for creating art from the forest came at an early age. "I had a grandfather who spent most of his time in the woods. He'd take me out when I was really young, just put me up on his shoulders and off in the woods he'd go. He instilled that love of wilderness in me, and really a fascination with nature-craft."

A variety of intriguing creations lay across the table: a tiny pair of shoes woven from birch bark; a delicately carved wooden miniature of a moose antler; and a diversity of baskets made from birch bark, black ash wood, and richly-colored willow stems.

He pulls a small object from one of the baskets. "This is a willow whistle, it's something my grandfather taught me how to make when I was a little kid. You cut a piece of willow early in the spring when the bark is slipping and you can slip the bark right off the stem. Then you hollow out the inside to make the sound box and slip the bark back on. And then," he produces a few cheerful tweets, "it works. So it's a little wilderness whistle."

He gestures to two of the birch bark baskets. "This is where the birch bark has been cut into strips and then woven. This is very Scandinavian," he says of the first. "And this is very typical of early North American birch bark work, where one piece of birch bark was cut into a pattern, and then folded and stitched into place," he says while examining the second basket, which is stitched together with spruce root and has a handle woven from sweetgrass. "So you've got grass, and root, and bark. Several different products from the forest."

Dennis harvests much of the material for his nature-crafts from his own woods, and supplements from nearby federal forest land using special harvesting permits. Dennis and his wife Sedna are long-time owners of an inherited property north of Cook, and they recently purchased a 20-acre parcel of diverse woodland near Schroeder where Dennis is building their retirement home. The couple wished to be closer to the North House Folk School in Grand Marais where Dennis has taught courses in birch bark and black ash basket-making for the last decade. Dennis believes in teaching his students the entire process of basket creation—from harvest to final product. "We start right from the tree," he says.

To harvest birch bark for his baskets, Dennis enters the woods in mid-June to early July. "Birch is a really unique tree. There's a time of the year where you can remove the outer bark from the birch tree and leave the inner bark attached to

the tree itself.” The inner bark protects the tree, which will eventually produce a new outer bark. In this way, birch bark can be harvested without harming the tree. Dennis makes two horizontal cuts around the tree and a single vertical cut, producing a tube; he then opens up the bark and rolls it up skyward along the tree (with the inside of the bark facing outward) to prevent it from tightly curling as it dries. To use the bark, he softens it with warm water or steam, then cuts and shapes it as needed. “You might have to buy a leather awl, a rotary punch, and good pair of scissors. But with that kind of investment, you’re off and running.”

Gathering the raw material for black ash baskets requires a different process. After the ash log is harvested, Dennis strips the bark and then forcefully pounds the wood with a metal mallet along the length of the log. “You need to actually hit it with some force, smack it pretty good,” he says. Ash grow more rapidly in the spring, and a cross-section of a log shows annual rings consisting of bands of wide, extremely porous spring wood and narrow, less-porous summer wood. The force of the pounding cracks the weaker spring wood along the ring separations, allowing Dennis to easily peel from the log strips of splint that can be dried and woven into baskets. He can usually peel 20 to 40 layers from a single, good quality log.

So, why nature-craft? Dennis gestures again to the stitched birch bark basket, a style traditionally made by indigenous North Americans from Maine to Alaska. “This is a very functional basket, I mean it’s sort of ‘woodland Tupperware’ really, and it was used for everything. But to make a functional basket, you didn’t need to make a beautiful basket. And yet, they all did. When those folks had time, they would turn something of utility into something of beauty. And I think that’s just the nature of the human being,” he muses.

To learn more about the North House Folk School, visit: www.northhouse.org



Part 1 Vocabulary

Biomass

Living and recently dead plant and woody material that can be used as fuel or for industrial production.

Border Lakes

A *subsection* of the *Ecological Classification System* in northeastern Minnesota characterized by lakes and rocky ridges, and covers 2,771,462 acres.

The subsection encompasses portions of Cook, Koochiching, Lake, and St. Louis counties.

Canadian Shield

Exposed portion of the continental crust underlying the majority of North America.

Canopy

The ceiling of a forest created by branches and leaves from several trees.

Forests with dense canopies allow less sunlight to reach the ground than do forests with open canopies.

Carbon dioxide

A colorless, odorless gas that is produced when a carbon-based fuel is burned; a *greenhouse gas*.

Ecological Classification System

A method to identify, describe, and map units of land with different capabilities to support natural resources. This is done by integrating climatic, geologic, hydrologic, topographic, soil, and vegetation data.

Ecosystem service

The benefits that people obtain from *ecosystems*. Ecosystems provide hundreds of services such as soil formation, nutrient cycling, decomposition of wastes, regulating climate, purifying air and water, and recreational experiences.

Ecosystem

The complex of a community of organisms and their environment that functions as an ecological unit.

Greenhouse gas

A broad term for any gas present in Earth's atmosphere that contributes to planetary warming by trapping heat from the sun's energy. Examples include *carbon dioxide*, water vapor, and methane.

Habitat

The place or environment where a plant or animal naturally or normally lives and grows and can access needed food, water, cover, and space.

Invasive species

A **nonnative species** that invades lands or waters, particularly natural communities, causing ecological or economic problems.

Landscape

All land uses (such as forests, agriculture, urban) and ownerships (public, private, tribal) within a defined area that can cover thousands or millions of acres.

Land-type association

Units within **subsections** that are defined using glacial landforms, bedrock types, topographic roughness, lake and stream distributions, wetland patterns, depth to ground water table, soil parent material, and pre-European settlement vegetation. Minnesota has 291 land-type associations.

Laurentian Mixed Forest

A **province** of the *Ecological Classification System* characterized by broad areas of conifer forest, mixed hardwood and conifer forests, and conifer bogs and swamps that traverses northern Minnesota, Wisconsin, and Michigan, southern Ontario, and the less mountainous portions of New England. In Minnesota, the province covers a little more than 23 million acres of the northeastern part of the state.

Laurentian Uplands

A **subsection** of the *Ecological Classification System* in northeastern Minnesota that is dominated by rolling hills running southwest to northeast, and covers 567,280 acres. This subsection encompasses portions of Cook, Lake, and St. Louis counties.

Loam

Rich soil composed of a mixture of sand, clay, silt, and decaying organic material.

Mesic

An environment or habitat that contains a moderate or well-balanced amount of moisture. Moisture does not limit plant growth during the growing season and soils are not saturated except following rain or spring snowmelt.

Nashwauk Uplands

A **subsection** of the *Ecological Classification System* in northeastern Minnesota that is located on the northern edge of the Mesabi Range, and covers 810,028 acres. This subsection encompasses portions of Itasca and St. Louis counties.

Native plant community

A group of native plants that interact with each other and with their environment in ways not greatly altered by modern human activity or by introduced organisms. These groups of native species form recognizable units such as an oak forest, prairie, or marsh, which tend to reoccur over space and time.

Nonnative species

Species that have been introduced, or moved, by human activities to a location where they do not naturally occur. A nonnative species is not necessarily harmful unless it becomes invasive.

North Shore Highlands

A *subsection* of the *Ecological Classification System* in northeastern Minnesota that is adjacent to Lake Superior, and covers 1,481,891 acres. This subsection encompasses portions of Carlton, Cook, Lake, and St. Louis counties.

Northern Superior Uplands

A *section* of the *Ecological Classification System* in northeastern Minnesota that includes five subsections.

Outwash

A deposit of sand and gravel carried by running water from the melting ice of a glacier.

Patch

Relatively homogenous forest units that differ from surrounding habitat at an *ecosystem* scale.

Province

Units of land defined using major climate zones, native vegetation, and biomes such as prairies, deciduous forest, or boreal forests. There are four provinces in Minnesota.

Section

Units within *provinces* that are defined by origin of glacial deposits, regional elevation, distribution of plants, and regional climate. Minnesota has 10 sections, five of which are within the *Laurentian Mixed Forest Province*.

Species in greatest conservation need

Animals whose populations are rare, declining, or vulnerable to decline, and are below levels desirable to ensure long-term health and stability.

Subsection

Units within *sections* that are defined using glacial deposition processes, surface bedrock formations, local climate, topographic relief, and the distribution of plants, especially trees. Minnesota has 26 subsections, 14 of which occur in the *Laurentian Mixed Forest Province*.

Till

Unsorted material deposited directly by a glacier. Till consists of clay, sand, gravel, or boulders mixed in any proportion.

Toimi Uplands

A *subsection* of the *Ecological Classification System* in northeastern Minnesota that is heavily forested, consists of rolling hills that run from the southwest to the northeast, and covers an area of 339,147 acres. This subsection encompasses portions of Lake and St. Louis counties.

Topography

The arrangement of surface features such as hills and streams in a given area on the earth.

Watershed

An area that contains all the land and water features that drain excess surface water to a specific location on the landscape such as a river.

A photograph showing a young pine tree growing in a black plastic mulch bed. The scene is viewed through a wire mesh fence. The background is filled with autumn foliage in shades of yellow, orange, and red. The pine tree is small and green, with a thin trunk and several branches. The black plastic mulch is spread on the ground, and some fallen leaves are scattered around it. The wire mesh fence is made of thin, dark metal wires.

PART 2

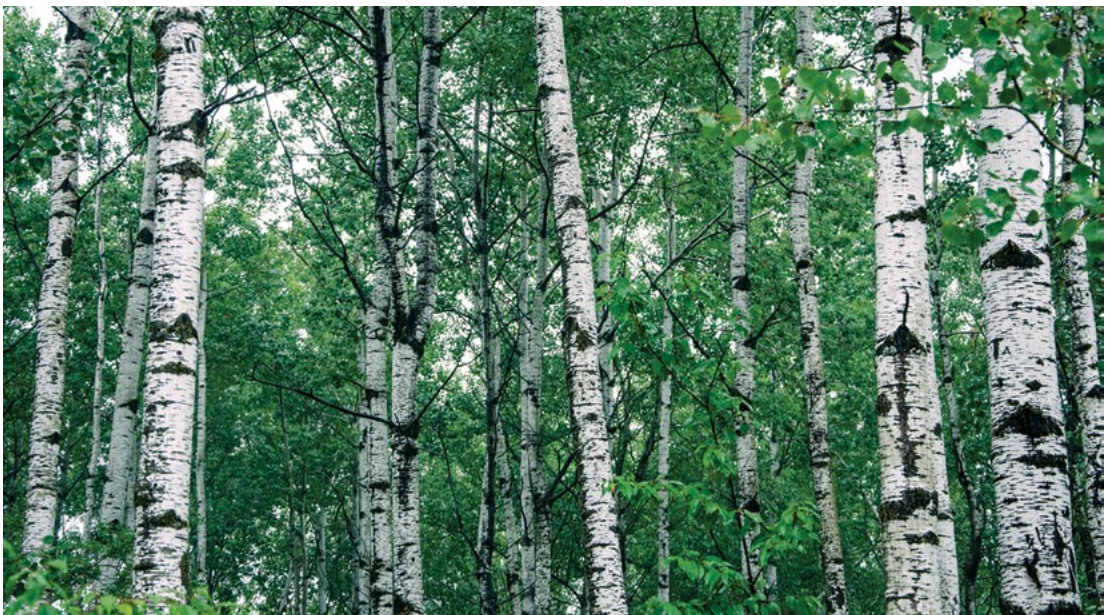
PLANNING FOR THE FUTURE OF FORESTS

Chapter 3: Goals for the Landscape, Caring for Your Woods

Your woods are part of a larger landscape. Understanding more about that landscape can help you make decisions about your own property. This chapter introduces you to these landscape goals and helps you consider top priorities for your woods.

Private landowners like you own about 25 percent of the forested land in the Northern Superior Uplands. Therefore, your decisions and the decisions of all woodland owners in the region have an impact on the health and beauty of the North Woods.

“Letting nature take its course” on your woodland is in itself a decision that impacts the forest landscape. However, current forces—including suppression of natural wildfire, changes in wildlife populations and forest size, changing climate patterns, and invasive insects, diseases, and plants—have already disrupted nature’s “course.” So taking no action against these forces may result in less healthy and diverse forests than nature would have produced hundreds of years ago. As a woodland owner, you can restore some of the natural balance through **woodland management**—actively shaping and directing your woods to keep them healthy, productive, and resilient.





Managing Your Woods

Taking care of your woods often requires a plan.

This handbook guides you through the steps:

- Setting goals
- Choosing a management theme
- Selecting strategies
- Working with a professional forester to develop a personalized Woodland Stewardship Plan
- Choosing work projects, depending on tools and budget

The Big Picture—Thinking From a Landscape Perspective

Knowing how your woods fit into the larger landscape can provide a useful perspective. For example:

- The wildlife on your property is influenced by habitat conditions beyond your property lines.
- The movement of wildlife can be helped or hindered by how your land connects with surrounding forest and other habitat.
- Your property may be home to unique plants, animals, forest habitat, cultural resources, or other features that are rare in the broader landscape.
- Water quality in other parts of the watershed is influenced by how you manage your streambanks, hillsides, and wetlands.
- The visual quality of the area is impacted by your management choices.
- Allowing access to your road may reduce the need for additional roads in the area, thus reducing disturbance to forests.
- Surrounding trails may provide opportunities for you to link to a broader trail network.

The actions you take on your land can help support broader goals for forests in your region. Likewise, you may see opportunities to tie your goals with landscape features found beyond your property lines.



"In second grade I visited a farm and I knew I didn't want to live in the city. And I thought, 'I don't know how to farm, but I could learn how to plant trees, and I can take care of trees.' And so that seemed more logical to me."

– Deb Pomroy, Duluth



Goals for the Landscape

Before determining goals for your own back-forty, it's a good idea to understand the landscape management goals shared by natural resource professionals, land managers, and local community members. Collectively this group is known as the Minnesota Forest Resources Council's "Northeast Regional Landscape Committee." More information about the MFRC is in Chapter 7.

The MFRC developed goals for the northeast region that includes the Northern Superior Uplands through large-scale forest planning efforts. These goals show a long-term vision of what future forests in this area could look like while providing for wildlife, the local economy, and society:

- **Maintain forest cover.** Forests should remain the major land cover across northeastern Minnesota, with development managed in ways that support sustainable forest management and no net loss of forest land in the region.
- **Encourage diverse, native forests.** Diverse forests tend to be healthier and more resistant to stress. Encouraging forest diversity means increasing the variety of native trees on your land and maintaining a balance of young and old forests on the landscape.
- **Manage for wildlife and habitat.** There are at least 549 wildlife species in your region. Natural resource professionals are trying to ensure that each of these species can sustain a healthy population while reducing adverse effects that some species may have on forests. Special steps are often taken to protect the region's rare and threatened species.



"We need to think about the wildlife that's around here, and what we can do to generate more of it."

– Peggy Meseroll, Esko

- **Support productive forests.** We rely on our state's forests as an important source of wood products. Managing forests to increase their production of quality timber helps ensure a steady supply of wood products and a healthy forest-based economy.
- **Protect forest health.** Forest health supports many of the goals above such as maintaining diverse and productive forests. Keeping forests healthy means protecting them from invasive pests, planning for the effects of climate change, and monitoring the effects of large-scale disturbances caused by fire, windstorms, insects, and diseases.
- **Protect water quality.** Forests and water are intimately linked, especially within the water-rich Arrowhead region of Minnesota. Forests play a key role in the water cycle by regulating the flow of water across the land, filtering drinking water, and preventing erosion. Protecting forests near wetlands, seasonal ponds, natural shoreline, and streams is key to protecting local water quality.
- **Enhance recreational opportunities.** Sustainably managed forests improve property values and provide high-quality recreation such as hiking, hunting, angling, and boating.
- **Preserve cultural resources.** Forests are special places for many Minnesotans, providing peace, beauty, recreation, and the opportunity to preserve and honor important historic sites and unique natural features. Natural resource professionals in Minnesota strive to manage forests in ways that preserve these cultural resources and reduce negative visual impacts on the landscape.

What Are Your Goals?

Your goals may include making a sound investment, improving the health of your woods, maintaining privacy, or passing your land onto the next generation. When setting your goals, consider the broader landscape goals made by natural resource professionals. Doing so will help you succeed long-term because you are using a basic framework for what tends to work best in your region. In other words, landscape goals provide the foundation. It is up to you to build the rest.

Biodiversity Counts

When developing goals for the landscape, biodiversity counts.

The Minnesota Biological Survey is an ongoing effort by the state to collect detailed information on rare plants and animals, native plant communities, and local landscapes. The surveying began in 1987 and has been completed for most counties. The results of this work have taught us a lot about the locations and abundance of Minnesota's flora and fauna. Visit mndnr.gov/mbs/index.html to learn more.



Leaving logs in a lake creates habitat for wood ducks and turtles.

Setting Goals for Your Woodland Using the “Woods Workbook”

The workbook on pages 88-93 of this book and on mndnr.gov/woodlands is for you to record your observations and woodland goals. Use this workbook as a field tool—don’t be afraid to take it outside and get it dirty!

Speaking of dirt, the best way to get to know your woods is to explore them. Perhaps you already do this regularly, but in case you are not familiar with what lies in your back-forty, you may have some questions. For example, which trees make up the canopy and what is growing underneath? How old are your trees? What does the **understory** look like: is it brushy or open? Are there any invasive species growing in your woods? The Woods Workbook will help guide you through these and other important questions.

Once you have a feel for the lay of your woods, consider why you own them. Perhaps the land has been in your family for generations and you inherited it. Maybe you purchased it recently as an investment or as a place to hunt deer every autumn. It could be a part of your home that you enjoy for the solitude and visual beauty it provides. Or maybe your woods are simply a part of your property that you have not thought much about. The Woods Workbook will help you think about your reasons for owning woodland and the benefits that you want from that land.

Choosing a Management Theme

Once you have identified your goals, develop a management theme to guide your strategies to achieve your goals. You may not be able to accomplish all your goals on one piece of woodland or all at once, but having a central theme can help you focus and prioritize your efforts. Here are four common themes that many woodland owners use to guide their decisions.

Theme 1: Wildlife habitat

Perhaps you are interested in attracting game species such as deer, grouse, or wood ducks. Or maybe you are an avid birder and wish to make your land a desirable stopover location for migrating songbirds and waterfowl. You might value providing habitat for rare species. Whatever your interests, you can take steps to make your woods more friendly for wildlife.

Wildlife need four key features: food, water, shelter, and space.

Songbirds, wood ducks, foxes, black bears, and other species rely on nut- and fruit-bearing trees and shrubs such as dogwood, serviceberry, blueberry, mountain maple, northern bush honeysuckle, and chokecherry. Deer, squirrels, and some birds especially depend on acorns. Grouse prefer aspen, hazel, and birch buds and flowers. Wildlife can generally find their own water sources, given suitable habitat.

To attract wildlife, some landowners also choose to create **wildlife openings**—clearings in the woods. Chapter 5 discusses how to create wildlife openings and choose vegetation.

Large diameter trees with cavities and dead trees—or **snags**—provide shelter for a variety of wildlife species. Brush piles and understory trees and shrubs can provide protected areas for birds and small mammals. Maintaining large, connected woodland patches provides space and attracts wildlife that cannot live near a forest edge.

Maintaining wooded **corridors** between smaller patches of woods provides shelter for wildlife passing between them. Keeping woody debris in streams creates habitat for juvenile trout and provides refuge areas and deep pools for larger fish. And, woody debris in lakes provides habitat for species such as ducks, turtles, aquatic insects, and fish. Finally, preserving any wetlands, bogs, or swamps on your property provides shelter, food, and water for many types of creatures.

Different wildlife species have different needs, so any action you take will inevitably favor certain species over others. Be sure you are clear about what kinds of wildlife you wish to attract before making any changes to your land.

Know Your Critters

Visit mndnr.gov/woodlands to learn more about the animals living in your area, how to look for them, and how to provide suitable habitat.



Snag



"I like to clear trails, maintain trails, develop new trails for skiing, snowshoeing, hiking."

– Ron Brodigan, Isabella

Theme 2: Recreation

Perhaps you want to use your woods to hunt, hike, watch wildlife, snowmobile, or do some other form of recreation. If improving recreation is your theme, make sure that your management strategy includes increasing access to key places on your property. Where trees have become too crowded, strategically thin your woods to improve the health and quality of the remaining trees. Also, removing invasive plants can improve your recreational experience and the health of your woods. Building trails creates accessibility. The design of your trails will depend on their purpose, who will use them, and your land's features. Your land's shape, size, slope, soil, and ecology will determine the best route for the trail, points of interest to highlight or protect, and steps you need to take to prevent erosion and spreading invasive species. Chapter 5 provides more information on how to do this.

Learning how to identify your woodland's native and invasive trees and plants is a fun activity in any season. For links to field guides and to learn more, visit mndnr.gov/woodlands



PlayCleanGo

While important for recreation, trails also provide pathways for invasive species to infiltrate your woods. To help prevent this, clean dirt, bugs, and plant material from shoes, clothes, equipment, vehicles, and pets before and after trail use. PlayCleanGo.org

Theme 3: Healthy woods

Having healthy woods is important to many woodland owners. Keeping your woods healthy may involve actively managing your woods to mimic natural disturbances such as wildfire and blowdowns and increasing the diversity of trees and plants.

Woodland stand improvement activities keep your woods healthy and resilient. Activities include:

- Removing invasive species, less desirable trees and shrubs, and dead and diseased trees.
- Thinning out overcrowded trees.
- Preventing the establishment of invasive species.
- Planting a diversity of tree species that are suitable for your site.
- Creating layers of vegetation in the canopy, understory, and forest floor.
- Keeping a mix of trees that are young-, middle-, and old-aged.



Undesirable trees removed.

A professional forester can assess your woods, develop a plan to increase its health, and recommend trees to plant. Chapter 4 provides information on who to contact for advice on actively managing your woods.

Theme 4: Income

Your woods can provide economic returns for generations to come such as income earned from harvesting timber. The condition of your woods, dominant tree species, and your goals determine the type of harvest to use. Clearcuts with reserves of live and dead trees are used when full sunlight is needed to regrow trees such as aspen and red and jack pine. Thinning is used to decrease competition when red pine is the dominant tree.

To get the most revenue out of your woods, you may want to do **timber stand improvement** activities. Timber stand improvement helps your woods grow faster, become healthier, and allows you to harvest sooner and more frequently. Depending on your woods and your specific goals, these improvements may involve thinning out lower quality or overcrowded trees, removing diseased or dying trees, pruning trees, and protecting trees from damage. See Chapter 5 for tips.

“One of our objectives is to make sure we get some money out of our woods at the end. ‘At the end’ may be 20 years from now, which is fine. Recognize that you’re not normally going to get a huge payback in the short-term.”

– Paul Knuti, Embarrass



Your woods may also provide “nontimber” forest products that have established markets such as balsam fir boughs (branches). After the second hard frost of the year, you can harvest balsam boughs from mature balsam firs and sell them for making holiday wreaths—a \$20 million industry in Minnesota. You could also collect seeds or cones and sell them to the Department of Natural Resources, the USDA Forest Service, or private nurseries for growing seedlings. Harvesting decorative spruce tops is a way to earn some income while decreasing competition for trees left standing. The University of Minnesota Extension’s ***Minnesota Harvester Handbook*** provides many more examples.

Finally, you might be able to defray your land ownership costs by enrolling in a woodland cost-share, tax-relief, or incentive payment program. Because private woods provide many public benefits, you can use public funds to help pay for some of the costs incurred from improving your woods. These programs are discussed in Chapter 6.

Combination Approach: Multiple Benefits

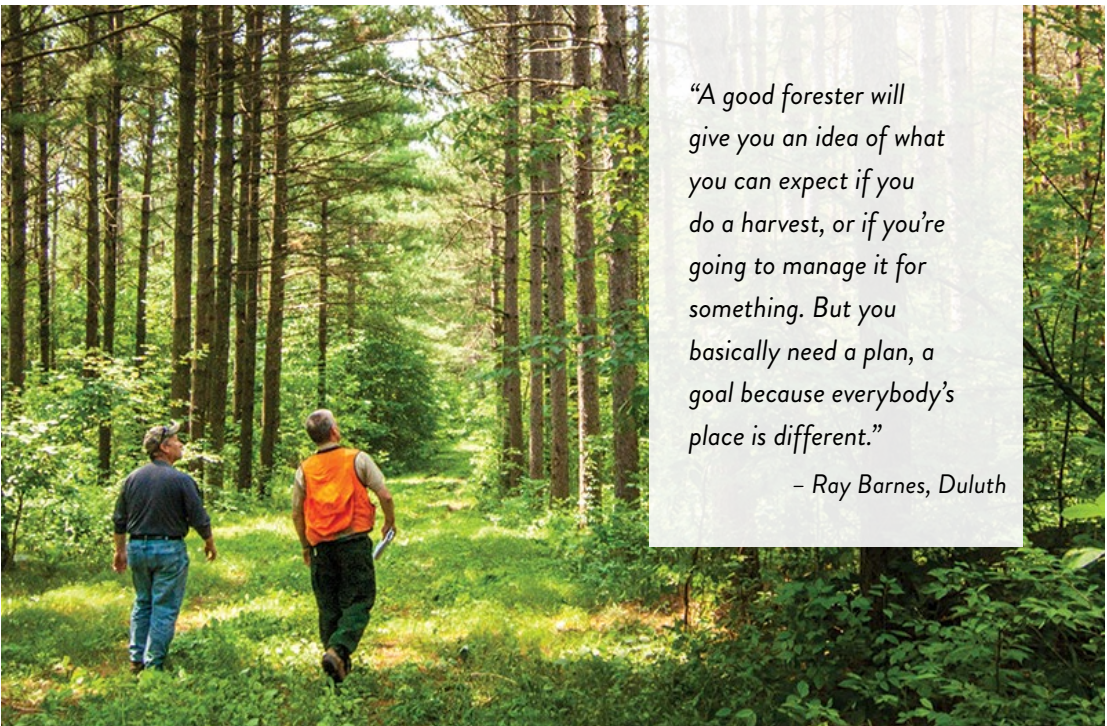
Management themes may overlap, and you want to incorporate elements of most or all of them into your approach. You might have different goals for different areas of your woods, or perhaps your goals do not fit into one of these categories. Examples might include planting a shelterbelt around your home or improving the water quality in your woodland creek. Certain activities such as clearing invasive species, thinning the understory, and planting diverse native tree and understory species can support multiple strategies because they benefit everything from forest health to timber production to wildlife. Thinning woods that are within 100 feet of homes, barns, and garages can also help protect expensive structures from wildfires.

The purpose of this chapter was to get you thinking about how you use your woods and what you want them to be like in the future. To learn more about rare plants and animals, trees to harvest, and property taxes, read Chapter 4.

Chapter 4: Choosing a Strategy

Chess players know that good strategy is the key to winning the game. Like chess, managing your woods requires foresight. While you can't predict the future and may need to adjust your plans, having an organized, long-term strategic approach increases your chances of success.

Once you have determined goals and a management theme for your woods, achieving those goals depends on your interests and available resources. Options range from a simple walk through your woods with a forester to enrolling your land in a long-term conservation program. This chapter covers some helpful first steps. As you become more interested in investing in your woods, see Chapter 6.



"A good forester will give you an idea of what you can expect if you do a harvest, or if you're going to manage it for something. But you basically need a plan, a goal because everybody's place is different."

– Ray Barnes, Duluth

Photo credit: Leslie Robertson/NASF



Attending a field tour is a great way to meet other landowners and get project ideas for your woods.

Who to Know: Key Players

Your key players are people you can contact to help you reach your goals. There are many agencies and organizations in Minnesota that can help.

Join a Group: These organizations provide print materials, online resources, classes, workshops, field days, and other professional advice. Additional groups to join are discussed in Chapter 7.

- **University of Minnesota Extension**—The University of Minnesota delivers practical, research-based education programs and information to landowners. Extension also manages the MyMinnesotaWoods website and other free electronic communications for landowners. myminnesotawoods.umn.edu
- **Minnesota Forestry Association (MFA)**—MFA is an organization for private woodland owners that offers educational opportunities and other services. Their “Call Before You Cut” hotline directs woodland owners to free information before a harvest including lists of foresters, certified loggers, and a variety of other resources. minnesotaforestry.org

Thinking of harvesting timber from your land?

Call Before You Cut

You will be sent a packet of information with no cost or obligation to you.

218-326-6486

Other sources of information include the federally administered Natural Resources Conservation Service and Farm Service Agency and the state-administered Board of Water and Soil Resources. Financial assistance is often available through these agencies.



“I have a couple of independent foresters that I’ve worked with. If I was wanting to put together another harvest, I would reach for them, and say ‘Put a harvest together for me.’ Harvesting plan, find us a decent logger, and manage the harvest.”

– Paul Knuti, Embarrass

Photo credit: Leslie Robertson/NASF

What to Do: Create Your Strategy

Based on your goals and theme, develop a strategy starting with these basic steps.

1. **Get advice.** Schedule a time for a professional forester to visit your property and walk through your woods with you. A forester will help you learn more about your woods’ potential for wildlife management, timber harvest, and recreation, and identify invasive species, areas in need of thinning or restoration, and important natural features. This process can help you plan your strategy and choose specific projects you want to do in your woods.
- **Minnesota Department of Natural Resources (DNR)**—The DNR is a state agency that helps take care of Minnesota’s natural resources. The DNR has foresters that protect and manage 5 million acres of public forest land, and foresters who assist Minnesota’s private landowners with woodland decisions and projects. The DNR can also direct you to many other resources and people including other agencies and private sector consultants. Local DNR Forestry offices often have long-standing relationships with a network of private foresters and loggers. If you decide to have a plan written for your property or a timber harvest performed, locate your closest forester at mndnr.gov/woodlands/cfm-map.html
- **Private Consulting Foresters**—Private, independent consulting foresters help woodland owners meet their goals by writing stewardship plans, developing project plans, setting up timber harvests, and much more. web.paulbunyan.net/norfor

- **Soil and Water Conservation Districts (SWCDs)**—SWCDs are local government agencies that help private landowners manage their natural resources. Some SWCDs have foresters who can visit your woods and provide advice. There are 90 SWCDs in Minnesota, at least one for each county. maswcd.org
 - **Industry Foresters**—Employed by timber harvesting companies, they can set up a timber sale and write a stewardship plan.
2. **Have a management plan prepared.** The DNR’s Forest Stewardship Program helps woodland owners finalize goals and prepare a professional, voluntary *management plan* for their woods. A management plan (also known as a *Woodland Stewardship Plan*), is a nonbinding, written document that lists your land’s potential, what you want to accomplish, and specific actions you can take to accomplish those goals within a given timeframe. Woodland Stewardship Plans are discussed in Chapter 6. If you want something simpler, your forester can also create a brief or streamlined management plan using the ideas that you have recorded in your Woods Workbook.
 3. **Decide how the work will get done.** A “project” may include activities such as tree planting, woodland stand improvement, invasive species removal, wildlife habitat improvement, development of recreational trails, or timber harvesting. When planning how the work will get done, consider your available time and budget. Doing the work yourself is one option. This saves money, but requires more time investment. Many landowners enjoy doing their own management activities, as it provides an opportunity to be out in their woods and get great exercise.





Photo credit: Leslie Robertson/NASF

If you can't do the projects yourself, hire a contractor. Several organizations maintain directories of forestry professionals and logging contractors in Minnesota.

- **Minnesota Logger Education Program (MLEP)**—MLEP educates loggers on sustainable forestry practices. MLEP-certified loggers meet Minnesota Master Logger standards, and may market timber from private lands as “certified wood.” The organization also has a free, online directory of its trained member including a list of Minnesota Master Loggers. mlep.org
- **Minnesota Association of Consulting Foresters (MACF)** has a similar directory of trained professional foresters, along with descriptions of their experience and service areas. web.paulbunyan.net/norfor
- Your local DNR Forestry office also has lists of contractors for your surrounding area. mndnr.gov/areas/forestry
- You might consider asking your neighboring landowners if they've had woodland work done and what their experiences were like.

Part 2 covered some of the goals for the forested landscape of which your land is a part, how your own goals intersect with these landscape goals, and how to develop a strategy for doing the work necessary to reach your woodland goals. Part 3 starts you down the path of becoming a more active woodland manager by giving you the tools you need to begin your first project and pointing you in the right direction for getting more involved in the future.



WORKING WOODLANDS SPOTLIGHT

Deb Pomroy and Ray Barnes—Duluth, Minn.
NORTH SHORE HIGHLANDS

In Deb Pomroy and Ray Barnes' neck of the woods, there is no shortage of critters. Wolf tracks crisscross the frozen river that runs through their property. Grouse sing and dance outside of their living room window. They've fed branches to the local beaver family living in their wetland and had a baby porcupine sniff their boots. And once, while quietly spying on a pair of otters wrestling with a fish, they surprised a red fox who'd come trotting along to check out the commotion. Deb gestures to a tamarack in the distance. "It's on a hill that overlooks the river, you can see quite a ways downstream and upstream. And from there we watch a lot of wildlife. You can see the ducks and the swans." These two wildlife-lovers couldn't ask for a better place.



Their fondness for the local fauna plays an important role in how they manage their woods. “We have more birds now than before because our woods were opened up,” say Ray in reference to their most recent harvest, which took place three years ago. They worked with natural resource professionals to design a harvest that would not disturb the local population of wood turtles that inhabit their river, a threatened species in Minnesota. “They weren’t nesting at the time,” Deb notes, “That was really important.” Deb and Ray have plans to continue improving areas near the river for wood turtle habitat.

They are also eager to experiment with *hugelkultur*, a traditional German gardening technique that involves mounding up woody debris (stumps, logs, branches) and covering it with soil. Ray explains: “It’s part of permaculture. As the wood breaks down it provides the bacteria and it holds water, provides nutrients and everything.” “You can grow trees there, you can grow fruits there’—things for wildlife,” Deb adds.



Deb and Ray's harvest took about a month to complete. During this time, areas of mature timber were removed throughout their 80-acre property, leaving behind strategically chosen "islands" of trees. Though the change was significant, they couldn't be happier with the results. "People say 'Oh it's going to look bad for a long time.' But it doesn't look bad more than a couple of years," Deb says. In fact, the couple saw beauty return quickly to their harvested areas: "Right after they got done logging that fall, we had plants that only show up during periods of disturbed ground," explains Ray. "That corydalis, beautiful little plants, they were everywhere. And then, all of the asters came out. You look out there and it was just a sea of blooms. And at night when the moon would come out late in the evening, it would just be silver in color—shining off of blossoms out there. The bees were everywhere," he recounts. "It's really interesting to watch how everything progresses in different stages."



The couple also found fascination with the harvest process itself, having the opportunity one day to accompany the logger inside the harvester. “I found it very interesting to watch,” says Deb. “He has a computer in front of him. Each tree he goes up to, he could enter the species,” she recalls. “It kept track of everything that he was cutting,” Ray continues, “it’d tell you what the diameter was and he could actually see what the market value of the tree was per day as he’s cutting.”

For other landowners considering a harvest, Deb and Ray encourage patience. “Don’t expect immediate results. It takes a little bit to come back,” Ray cautions. “But it does come back. And it’s all new—it’s all new regeneration, it’s new growth. It’s a rebirth, basically, of the property.”



Part 2 Vocabulary

Corridors

Areas of protective vegetation, such as trees, shrubs, or tall grass, connecting larger *patches* of habitat and providing shelter for wildlife travelling between these patches.

Management plan

A nonbinding, written document, usually written by a professional forester, that lists your land's potential, what you want to accomplish, and specific actions you can take to accomplish those goals within a specific timeframe. Also called a *Woodland Stewardship Plan*.

Snag

A dead, decaying tree that provides habitat for wildlife.

Timber stand improvement

A practice in which the quality of a forest stand is improved by removing less desirable trees, vines, and occasionally large shrubs so the best-quality trees have more room to grow. Also called “forest stand improvement” or “*woodland stand improvement*.”

Understory

The vegetative layer of trees and shrubs between the forest *canopy* and the ground cover.

Wildlife opening

A small area cleared in the forest to mimic openings that naturally occur from disturbances such as wind and fire. They create less disturbance to the soil, support native plants, require less labor and expense, provide fewer opportunities for invasive plant introduction, and have greater plant diversity and structure than traditional *food plots*.

Woodland management

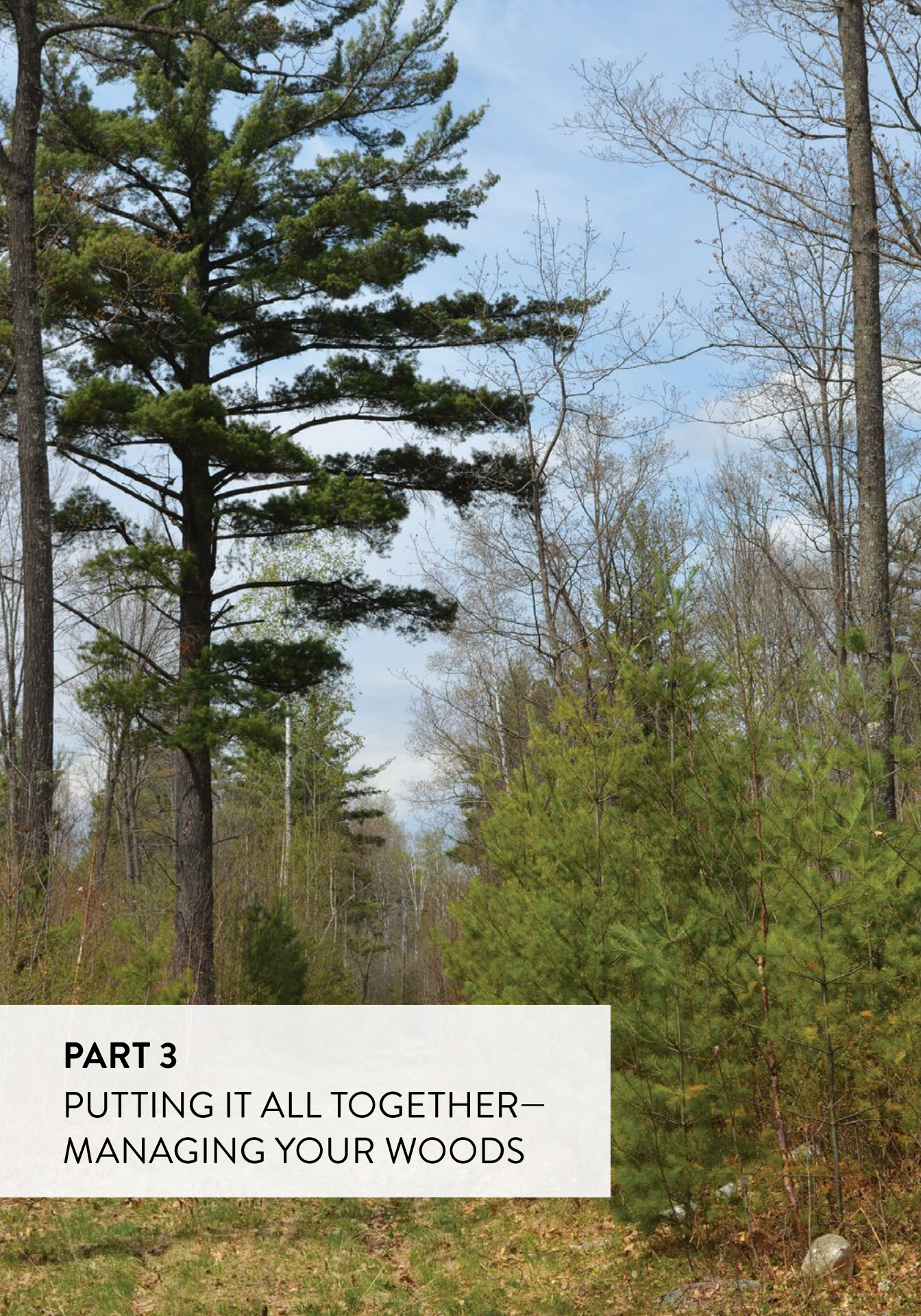
The process of caring for woodlands so they remain healthy and vigorous and provide the products and amenities desired by the landowner. Also called “forest management.”

Woodland stand improvement

A practice where less desirable trees and shrubs are removed to increase health and encourage the growth of best-quality trees. Also called “forest stand improvement” and “*timber stand improvement*.”

Woodland Stewardship Plan

A *management plan* that is written by a certified plan writer.



PART 3

PUTTING IT ALL TOGETHER— MANAGING YOUR WOODS

Chapter 5: Woodland Projects

By now you should have identified your goals, a theme, and a strategy for managing your woods. Begin executing those strategies with tools, a budget, and some defined work projects.

Tools

First, you need to prepare your toolbox. This involves more than just sharpening your chain saw!

Important tools include:

- Personalized woodland management plan written by a professional who has walked your land and discussed your goals with you.
- Aerial photographs of your property.
- Soils information.
- Mechanical equipment.
- Names and contact information of resource professionals or other landowners that can help.
- Project plan. Online project plans and planning tools, such as the American Forest Foundation's "My Land Plan," can also help.

As with any project, your most useful tool is knowledge. Visit mndnr.gov/woodlands for resources that can help.



"Learn how to be safe with all the tools that you're going to use. Learn how to use them properly. Learn how to use them safely. Get acquainted with the tools, learn how to treat the tools, how to stay away from other people when you're using them. And take some training."

– Ron Brodigan, Isabella

Safety First!

Working in the woods can involve some inherently dangerous activities such as operating chain saws or other mechanical equipment, using herbicides, handling noxious plants such as wild parsnip and poison ivy, and working around deer ticks and other biting insects. Arm yourself with the proper equipment (e.g., hard hat, eye protection, gloves, long sleeves, chain saw chaps, insect repellent) and the right knowledge before trying any of these activities. Some organizations offer short courses on chain saw safety and herbicide application.

Budget

Your budget will influence the size and scope of the project you choose. Several options for financial assistance that may help stretch your management dollars are discussed in Chapter 6. Record your budget in your Woods Workbook on pages 88-93.

Choose a Work Project

Choose a project that fits your budget, timeline, and long-term goals. Projects range from simple tree pruning to in-depth lakeshore restoration. Here are a few examples that correspond with the wildlife, recreation, healthy woods, income, and combination management themes described in Chapter 3. Each of these projects may be tailored to meet multiple goals.

Option 1, wildlife habitat focus: Creating a wildlife opening

If you want to attract wildlife to your property, you might consider creating a wildlife opening as your first woodland project. Unlike traditional **food plots**, which usually consist of planted non-native grasses or crops, wildlife openings using native vegetation are often more suitable to meeting the needs of native wildlife.

Wildlife openings are clearings in your woods—ranging from a ½ to 10 acres—that mimic the type of openings created by natural disturbances such as fires or wind. Disturbance is nature’s way of renewing a forest, and many creatures depend on specific habitats created by a forest disturbance. Methods for creating and maintaining your wildlife opening could include hand-cutting trees and shrubs, brush mowing, and controlled burning with the help of a professional. Maintaining your opening is best done outside of the primary nesting season for birds (mid-May through early August). A natural resource professional can help you decide which method(s) work best and the best location for the opening.



Larger wildlife openings create better habitat for moose.

Photo credit: U.S. Fish and Wildlife Service

You do not need to remove all of the trees and shrubs in your opening. It benefits wildlife to leave or plant nut- and fruit-bearing species, a few snags, fallen logs, and brush piles for shelter. Openings should be irregular in shape, placed on a south- or southeast-facing slope to take advantage of the sun, and about three times as long as they are wide if small in size.

If your property is located within the range of moose, creating larger openings that encourage the growth of young trees and shrubs and maintaining young forests with brush or saplings provides both food and cover.

You may not need to clear new areas if you have existing openings that can be improved by planting or regenerating native species. Pre-existing openings include yards, old pastures, edges between forest and agricultural fields, and open areas near lakeshore. You might also consider improving an existing food plot. Using pre-existing openings can prevent unnecessary **fragmentation** of your woods.

NATIVE PLANT COMMUNITY SPOTLIGHT

Northern Mesic Mixed Forest

This is one of the most common native plant communities in northeastern Minnesota and is very important to the biology and economy of the region. Young forests of this community consist largely of aspen that gives way to a mixed canopy of paper birch and white pine with balsam fir, red pine, and old aspen. Eventually this middle-aged forest declines and the plant community is ultimately dominated by white pine and white spruce with northern white cedar on some sites. Common understory plants of this mixed-forest community include wild sarsaparilla, large-leaved aster, bluebead lily, bunchberry, Canada mayflower, beaked hazelnut, fly honeysuckle, and mountain maple.

When in a younger stage, this native plant community attracts grouse and moose who rely on abundant aspen. Aspen begin to disappear around 50 years after a fire or harvest. Cutting mature aspen causes it to sprout tender young shoots from the roots, providing a protective thicket for grouse. Other animals, such as deer and songbirds, can benefit from this type of management as well. You might consider implementing this strategy along the perimeter of your wildlife opening.

This plant community has seen significant declines in its long-lived conifers (pine, spruce, and cedar) over time. Consider planting white pine, white spruce, and northern white cedar in and around your openings.



Option 2, recreation focus: Controlling invasive plants

Nonnative species can be a big problem for forests when they displace native species. Invasive shrubs such as buckthorn can crowd the understory of your woods or proliferate along your trails, making recreational access difficult. Prevention is the first and least costly step to combat any invasive—plant, insect, or fungi.

Here are some steps you can take:

- Identify invasive species or signs of their presence for harder to find species such as insects.
- Avoid spreading seeds, insects, and microbes found in wood or soil to new areas by cleaning boots, tires, pets, and equipment after being in the woods. **PlayCleanGo.org**
- Minimize disturbance to native vegetation where possible, and maintain healthy communities of native species.
- Monitor high-risk areas such as roads, trails, and disturbed ground for new invasive species.
- Detect new outbreaks of invasive species early and eradicate them quickly.

If you have confirmed that invasive plants are growing in your woods, taking steps to control them is a good first woodland management project. Catching an infestation early can be critical to successful eradication. The best time to tackle removing an invasive plant is when it's not yet well-established in your woods. Once an invasive plant becomes well-established, eradication is more difficult, but you can still manage the problem and give your native plants a chance to compete.

Woody and weedy invasive plants in your region include:

- Common buckthorn
- Several species of non-native honeysuckle
- Siberian peashrub
- Common tansy
- Spotted knapweed
- Purple loosestrife
- Non-native thistles, especially Canada thistle

Garlic mustard is an especially prolific understory plant with clusters of small four-petaled white flowers and a garlicky scent to its leaves. While it is present, it's not yet prevalent in your region. Already it has invaded other parts of Minnesota and the United States. If you spot garlic mustard, act quickly to remove it before it becomes established to prevent degradation of your woods.



Dense infestation of garlic mustard in a red pine stand.

Photo credit: Steve Katorich, Bugwood.org

Visit mndnr.gov/woodlands to help you identify these and other invaders that might be present in your region, as well as tips for distinguishing invasive from native species.

A variety of methods are used to control invasive plants.

- **Hand-pulling:** Small seedlings can be pulled by hand in the spring when the soil is moist, taking care to remove the entire root so the plant does not resprout.
- **Herbicide:** For young sprouts and seedlings, you can spray the leaves of invasive woody plants, preferably after native plants have lost their leaves and gone dormant to reduce the chances of killing the native plants as well. The stems of large woody plants can be cut at the base and treated with the appropriate herbicide to prevent resprouting. There are also specific oil-based herbicides that can be applied as a “basal bark treatment” where you spray herbicide on the bark around the lower portion of the plant’s stem and the herbicide penetrates through the bark and kills the standing tree. Infestations of invasive plants may be

controlled with spot herbicide treatments. As always, be sure you're treating the correct plant and take care to protect native plants. Before applying any herbicides, it is best to talk to your forester to make sure you select the most effective treatment and the best product for your site. Finally, wear protective clothing and follow instructions on the product label when applying herbicides—it's the law.

- **Fire: *Prescribed burning*** can be effective at killing seedlings and resprouted plants. Consult with a professional to determine if burning is an appropriate strategy for the invasive species in your woods, and if so, how frequently you need to burn. Just as with the use of herbicides, it is best to talk to a professional before tackling a prescribed burn. You will also need to get a burning permit. mndnr.gov/forestry/fire
- **Mowing or grazing:** Some invasive plants can be deterred by repeatedly mowing the plants before they go to seed. Alternatively, livestock such as cows, sheep, or goats can be used to graze heavily infested areas of certain invasive species. Talk to your forester if grazing might be an option.
- **Insects:** In a few cases, scientists have identified insects that selectively attack particular invasive plants. These ***biological controls*** can target invasive species while sparing native species. For example, two types of weevil are used to control spotted knapweed, an aggressive invader of open or disturbed areas. One weevil attacks the seedhead. Another weevil attacks the roots of the knapweed, weakening or killing those plants. Both weevils are needed to control knapweed. Purple loosestrife and leafy spurge are two other species that have biological control insects in Minnesota. For information on applying biological controls on your property, contact your county agricultural inspector or the Minnesota Department of Agriculture.



Goats eating buckthorn.

Arrest the Pest

You are able to report newly detected invasive species to the Minnesota Department of Agriculture by leaving a message at **Arrest.the.Pest@state.mn.us** or 888-545-6684. If you can, provide digital photographs and GPS coordinates of the infested site.

Remember that seeds in the soil can germinate for several years after you remove mature plants. You must be persistent in removing new plants until the seedbed is exhausted or the infestation will return. After you remove an invasive species, it's recommended you plant native species to fill the void, otherwise new invaders may quickly return to the disturbed area. Native trees and shrubs that could replace buckthorn and honeysuckle include highbush cranberry, nannyberry, pagoda dogwood, American hazelnut, common elderberry, and native bush honeysuckle. Native **forbs** in your region include bloodroot, wild ginger, Canada tick trefoil, black-eyed Susan, and whorled milkweed. More information about choosing native plants is on mndnr.gov/woodlands and mndnr.gov/plants

Unfortunately, new invasive species can pop up in areas where they have not been spotted before. Stay current on the forest invaders, including insects and diseases, that you need to look out for in your woods. Projects that increase the diversity of plant species and ages will strengthen your woods' resiliency to change. Following prevention measures such as cleaning your equipment will reduce the chance that you introduce new species to your land.



Fire can be used to control some invasive species. Always take precautions and get a permit.

Photo credit: Elena Teich

NATIVE PLANT COMMUNITY SPOTLIGHT

Northern Dry-Mesic Mixed Woodland

Red pine, white pine, quaking aspen, and paper birch are often dominant components of these northern woodlands. These species are typically mixed together but individual sites can range from solely coniferous to solely deciduous. Small openings are common, with the forest canopy typically covering 50 to 75 percent of the area. Common ground layer plants include Canada mayflower, wild sarsaparilla, large-leaved aster, and bracken. Beaked hazelnut is present in the shrub layer of nearly all sites and is usually abundant.

White pine has declined by 75 percent since the late-nineteenth century. This large, beautiful tree is among the most iconic of all Minnesota tree species and fills many important ecological roles. Restoring this species typically requires an active approach that includes protection from browsing deer through fencing or bud-capping (placing a folded piece of paper and a few staples over the top bud), careful pruning to prevent blister rust infection, and controlling competing weeds and shrubs. With these efforts, you can play a role in restoring this species to its former glory as the monarch of the forest for future generations.





Open up the canopy by removing smaller trees.

Option 3, healthy woods focus: Harvesting firewood

If you enjoy keeping the hearth crackling throughout the long Minnesota winter, a woodland stand improvement harvest will give you abundant firewood while improving the health of your woods.

Harvesting firewood on your property also saves money. Choose your firewood trees strategically. Mark for harvest trees that are:

- **On the small side**—Trees that measure 6 to 8 inches in diameter (or 19 to 25 inches in circumference) at 4½ feet from the ground are good choices for firewood harvests.
- **Dying or dead**—Choose trees that have diseases or insects, as they will likely not survive to be part of your future forest. You may wish to leave a few dead trees behind for wildlife habitat, especially ones that wildlife such as wood ducks, owls, or bats are already using.
- **Low timber quality**—Choose trees that are crooked, damaged, or have trunks that fork close to the ground. Harvest species that are less desired by timber markets.
- **Crowded high-quality trees**—If the trees in your woods are too crowded, they compete for resources. Thinning some of the trees that surround your best quality trees allows those remaining trees to thrive and grow more quickly. To identify overcrowded trees, look up at the crowns (the tops) of the trees. Make sure that your best trees have plenty of room for their crowns to grow.



"My long-term goal would be to open up the forest, especially around the yellow birch and make sure that they have space to grow. They are spectacular."

– Dennis Chilcote, Schroeder

Don't Move Firewood!

Are you tempted to transport and store firewood from your land to another location? Resist the urge! Instead, use firewood from trees cut in your county, or buy firewood that is heat-treated and certified by the Minnesota Department of Agriculture. Moving firewood from one area to another can quickly move invasive forest pests such as oak wilt, gypsy moth, emerald ash borer, and other organisms that kill trees. This is true even if the wood is burned shortly after being moved. For many of these pests, we don't have an effective way to remove them once they are established in an area. Preventing further spread is the most effective means of control. Some Minnesota counties have quarantines that prohibit moving firewood, and violations can result in hefty fines.

Logs cut from dead or dying trees may contain insects or fungi that can harm remaining trees, and some insects from nearby trees are attracted to recently cut logs. To prevent these organisms from spreading, it is best to cut and process your firewood in cold weather. Split, stack, and cure the wood on site for two years before moving it to another area on your property.

If you choose to harvest trees yourself, having a project plan prepared by a professional forester can help you identify where, how many, and which species of trees to cut. Visit mndnr.gov/woodlands for information about safety considerations when felling trees.

NATIVE PLANT COMMUNITY SPOTLIGHT

Northern Mesic Hardwood Forest

The canopy of this common hardwood community is usually dominated by sugar maple or northern red oak with lesser amounts of basswood, paper birch, and quaking aspen. Wild sarsaparilla, large-leaved aster, mountain rice grass, and Pennsylvania sedge are all common ground-layer plants, with Pennsylvania sedge often the most abundant ground-layer species in this community. The shrub-layer is typically dominated by sugar maple saplings, along with beaked hazelnut, chokecherry, pagoda dogwood, fly honeysuckle, and balsam fir.

Catastrophic disturbances were historically rare, while small disturbances that create gaps resulting in a mix of shrub, understory, and canopy layers, were far more common. A firewood harvesting strategy that creates small gaps—single trees or small clusters (by removing single trees or small clusters of trees)—will allow some of the maple saplings to grow and give your forest more vertical diversity. If you want to add more species diversity to your forest, consider developing additional gaps up to an acre in size that may encourage oak and birch. Either strategy will help create diverse tree ages similar to historic disturbances, which will create better wildlife habitat and help your woods resist environmental stress. In some of these openings, you may even try planting northern white cedar seedlings. (You may need to fence these seedlings to protect them from browsing deer and rabbits.) This tree is often thought of as a lowland species but was once a component of these northern mesic forests—especially along Lake Superior’s North Shore.





Photo credit: Leslie Robertson/NASF

Option 4, income focus: Having a timber harvest

The first step to having a good harvest is to work with a professional forester who can meet you at your property to help design a harvest that meets your goals. Your goals may include generating income, improving wildlife habitat, or increasing the health of your woods.

Working with a forester—whether DNR, consulting, or industry—is an investment of time and money. However, because your forester will design a plan to maximize revenue, improve your woods, and address your goals, you will likely recover your costs.

Your goals determine which trees to harvest. For example, removing older trees can create deer or grouse habitat and removing dead or dying trees can improve the health of your woods. Depending on your harvest design, your forester will mark the boundaries of the sale or individual trees with paint to show the logger which trees to cut.

Getting your timber appraised is key to collecting a fair price for the trees you sell. Many factors influence tree value including:

- Industry—forest product companies are interested in certain tree species.
- Species—some species are worth more than others.
- Diameter and length—larger and longer trees can be more valuable.
- Quality—straighter trees with fewer defects can be more valuable.
- Accessibility—easy access by loggers makes harvesting cheaper.
- Location—sites closer to mills are often more desirable to loggers.

Consider a joint timber sale with adjacent woodland owners to make your harvest more desirable to loggers. Be sure to work with your forester to develop a plan to regrow trees in your woods.

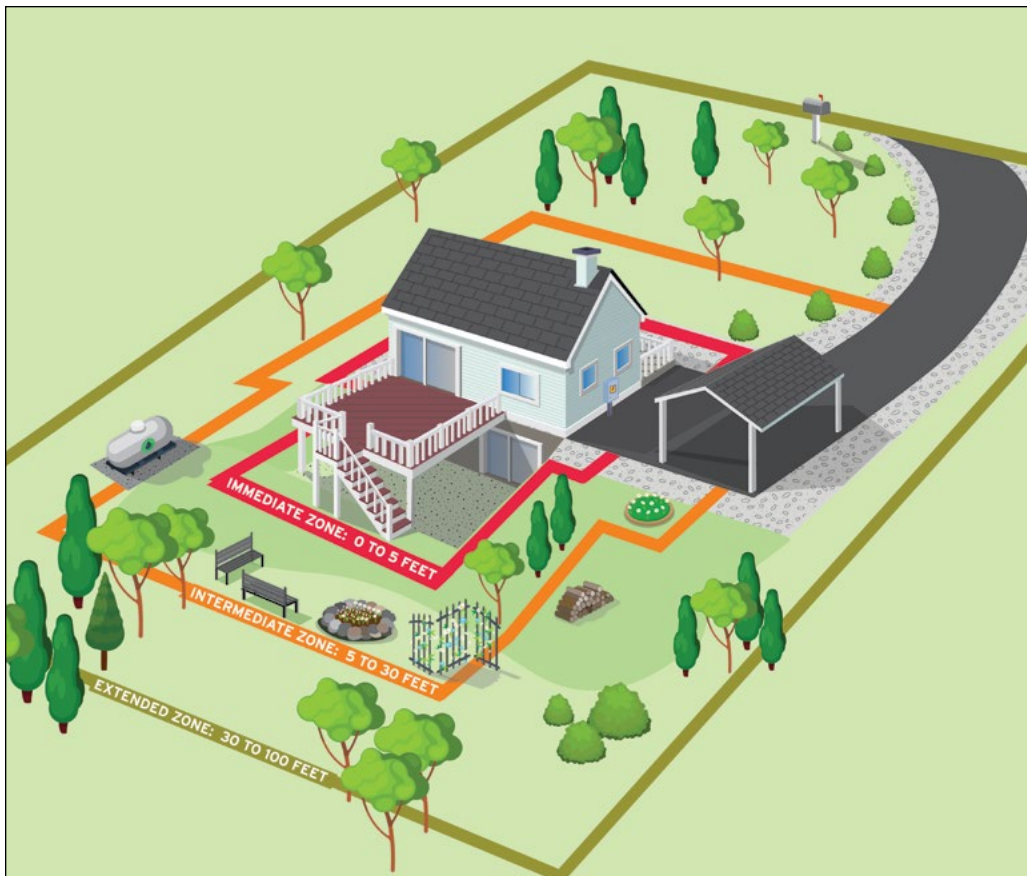
NATIVE PLANT COMMUNITY SPOTLIGHT

Northern Poor Dry-Mesic Mixed Woodland

This native plant community is common across northeast Minnesota and extends across the Canadian border in areas with relatively nutrient-poor and shallow soils that cover bedrock. Fires rejuvenated these woods about once every 170 years. After a fire, young woods dominated by jack pine with a mix of quaking aspen and paper birch formed. Over time the canopy becomes dominated by red pine and paper birch as jack pine and quaking aspen decline. Without fire, the woods will mature to a mix of black spruce with some paper birch, balsam fir, white pine, and old jack pine. Often these mature woods are overgrown with shade tolerant conifers, making them more vulnerable to catastrophic damage by wildfire and insects such as spruce budworm.

Due to the suppression of wildfires, this native plant community is not experiencing natural rejuvenation. Conducting a timber harvest is one way to mimic natural disturbance and regrow jack pine and quaking aspen while also reducing wildfire risk. Deciding on how much harvesting to do depends on your goals. If you have mature aspen and jack pine, harvesting the majority of the trees in the upper canopy will restore young woods. If your goal is to increase the amount of aspen, harvesting a large portion of the trees in the winter will favor aspen regrowth. If you want more jack pine than aspen, a summer harvest that includes scattering any jack pine tops then direct seeding and planting jack pine while controlling aspen and other tree species is needed. If you want to favor long-lived conifers like white pine, selectively harvest around white pines that are good at producing seed. Care must be taken to protect remaining canopy and understory trees from damage during the harvest.





Firewise properties can better withstand wildfires.

Be Firewise

Protect your home, barn, and other structures from wildfire with these easy, inexpensive steps:

- Maintain at least 5 feet of cleared area around buildings.
- Limit or remove flammable materials such as trees, overhanging branches, brush, and firewood within 30 feet of a building.
- For trees that are within 30 feet of a building, prune lower branches 6 to 10 feet from the ground, or no more than one-third the tree's height.
- In a 30- to 100-foot zone around each building, reduce fuels by mowing grasses, removing brush, and pruning lower branches to decrease the intensity of approaching wildfires.

[firewise.org](https://www.firewise.org)

Combination focus: Lakeshore restoration

Forests play a critical role in maintaining the health and beauty of northeast Minnesota's many lakes. If you own lakeshore property and are interested in a "combination approach" to managing your woods, a lakeshore restoration project may be a good fit. Maintaining healthy lakeshore provides habitat for birds, fish, and other wildlife. It also improves recreational opportunities by maintaining good water quality and can potentially increase the value of your land by improving visual quality.

There are several steps you might take to improve the quality of your shoreline:

- **Stabilize the soil bank**—If the shore is eroded or sensitive to erosion, you need to stabilize the soil to keep it from muddying the water. Planting native trees, other woody vegetation, or deep-rooted perennial forbs and grasses is one way to secure the bank. Visit mndnr.gov/woodlands for tips on selecting native plants in your county.
- **Control invasive plants**—Aggressive invasive species, such as reed canary grass and purple loosestrife, plague the shores of lakes and other water bodies in your area. Controlling invasive plants helps native plants compete for space.
- **Create wildlife habitat structures**—If the area has few snags and downed logs, you might consider installing some habitat structures for wildlife such as tree boxes for wood ducks or floating nest platforms for loons and other waterfowl.

Specific recommendations for lakeshore restoration projects vary depending on the condition of your shore, the local ecology, your goals, and regulations governing your shoreline. The DNR's online Restore Your Shore tool on mndnr.gov/restoreyourshore is an excellent resource to assess the current condition of your lakeshore and find tips to increase ecosystem health along your water's edge. For grants and general planning assistance, check with your local county soil and water conservation district, watershed district, lake association, or with a DNR fisheries habitat specialist for more information.



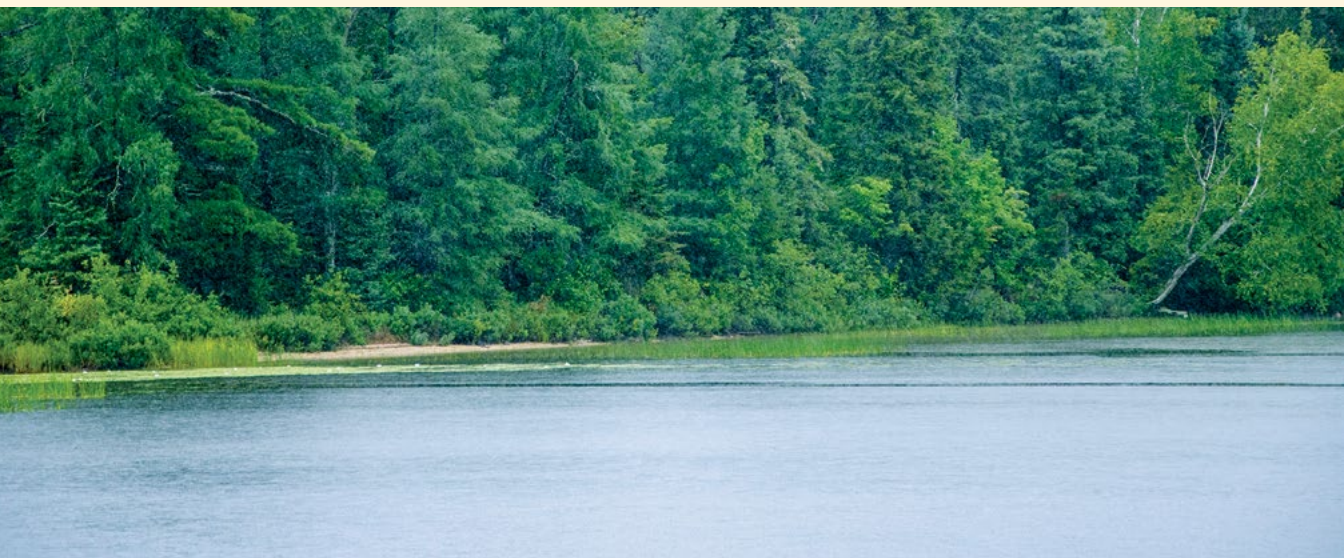
Native shoreline vegetation reduces runoff, creates important wildlife habitat, and adds visual appeal to your property.

NATIVE PLANT COMMUNITY SPOTLIGHT

Lakeshore

Lakeshore is prevalent in northeast Minnesota. Shores may be sandy or rocky and could contain a variety of terrestrial and aquatic plants depending on the season and current water level. Just above the normal water level you would find shrubs and forbs such as alder, meadowsweet, spotted Joe Pye weed, and sweet gale. Below the normal water level you may find broad-leaved cattail, an assortment of sedges and rushes, and floating plants like water lilies and pondweeds.

A variety of ecosystems, from upland forest to lowland swamp, surround these lakes. Taking care of shallow-water plants can protect shorelines from waves, and properly managing vegetation growing along the shore prevents soils from depositing into the water. Woodlands filter runoff and hold soil in place, whereas agriculture and lawns do little to prevent soil, fertilizer, and pesticides from washing into lakes. It is important to consider the impacts that all land use and management activities have on your lake, even beyond the shores.



Once you have chosen your project, record it in your Woods Workbook. Record your expected timeline and the contact information of any professionals with whom you are working. Next, consider breaking your project into concrete steps and record these as well. As you progress, keep track of observed changes and accomplishments. You might also consider taking “before” and “after” photographs of your woods. Be proud of your work! Becoming an active woodland manager benefits you, your family, society, and nature—so you will have earned some bragging rights.

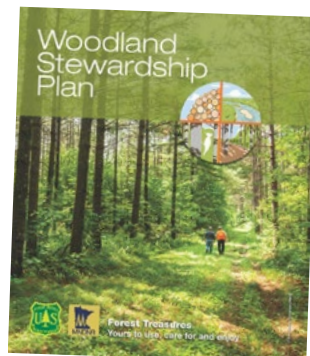


Chapter 6: Next Steps

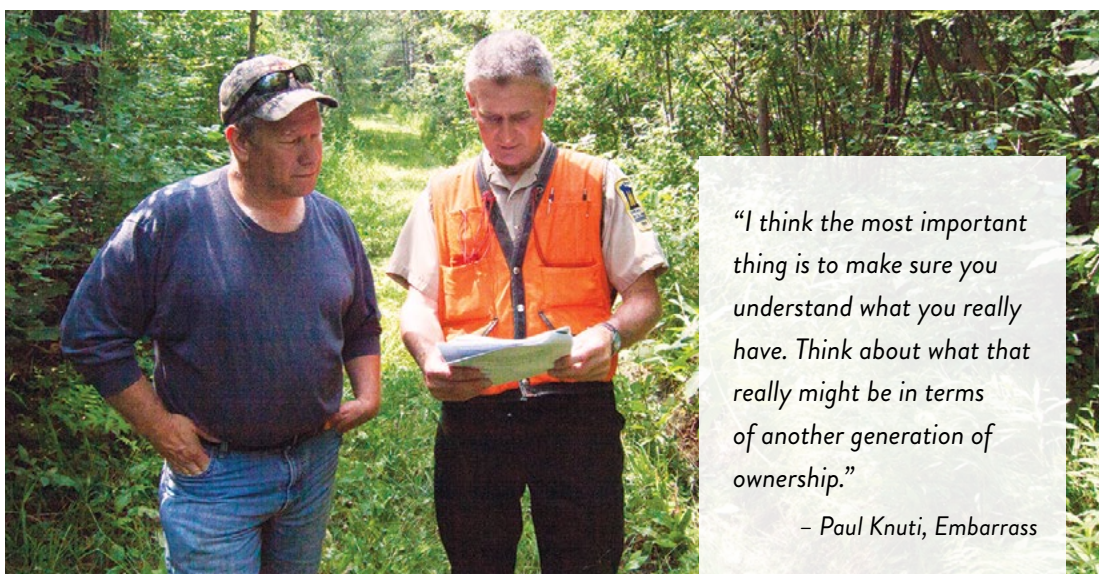
If you want to take the next step to actively manage your woods, there are programs and resources that can help you develop an in-depth property plan, use sustainable practices, save money, and protect your land long-term.

Getting a Woodland Stewardship Plan

The DNR's Forest Stewardship Program helps woodland owners create and use voluntary management plans for their property. A Woodland Stewardship Plan written by a certified plan writer and registered with the DNR qualifies landowners to apply for one of Minnesota's cost-saving woodland tax-relief or incentive programs. To access one of these programs, a landowner must have at least 20 qualifying acres of land. Of those 20 acres, at least 10 must be currently wooded or will be converted to woodland or woody vegetation.



Plan-writing services include the DNR, private consulting foresters, industry foresters, some county soil and water conservation districts, and certain environmental organizations. Costs for plan-writing services vary by provider. To locate a certified plan writer, visit www.myminnesotawoods.umn.edu/minnesota-stewardship-plan-preparers



"I think the most important thing is to make sure you understand what you really have. Think about what that really might be in terms of another generation of ownership."

– Paul Knuti, Embarrass

Photo credit: Leslie Robertson/NASF

To create your personalized plan, you and a forester walk through your woods, discuss your goals, and take notes about your woodland's current status and its potential. You may wish to have your Woods Workbook on hand as a reference for your goals and interests. The forester then prepares a written plan specifically for your land, usually including information on your woods' diversity and health, timber quality and species, rare species and historical sites, specific project suggestions, aerial photographs and maps of your property, and information about the surrounding landscape. Recommendations made in these plans are voluntary. However, if you enroll your plan in a tax-relief or incentive payment program, you are expected to follow these recommendations.

Management Plan Options for Landowners with Less Than 20 Acres

Managing smaller woodlots is becoming more important every year as more wooded plots are subdivided into smaller ownerships. All woodland owners, regardless of acreage, can contact the DNR or another professional to schedule a woods walk and get a streamlined management plan or a plan for a specific project. A streamlined management plan provides a list of work projects. A project plan focuses on a single project such as tree planting, harvest, or invasive species control. It describes the current and desired future conditions of the project area and specific steps for completing the project. Another option is to team up with your neighbors and have an in-depth Woodland Stewardship Plan written for multiple properties. Owners with less than 20 qualifying acres are not eligible to enroll in a tax-relief or incentive payment program. For more information, ask your forester.

Voluntary Guidelines

The *Minnesota Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers, and Resource Managers* is a set of science-based guidelines to reduce negative impacts during activities such as woodland stand improvement, timber harvest, site preparation, pesticide use, reforestation, managing for recreation, managing with fire, and building roads. A digital copy of the guidelines is available for free on mndnr.gov/woodlands



Minnesota Forest Management Guidelines: Quick Reference Field Guide

A condensed version of the guidelines that focuses on timber harvesting is available in a durable, pocket-sized format. The field guide presents key guidelines for woodland, water, and soil protection in a concise, user-friendly format that includes picture examples, general rules of thumb, and a comprehensive resource directory. Request a free paper copy of the field guide from the Minnesota Forest Resources Council by emailing mfrc.info@state.mn.us



Financial Assistance

Because managing your woods can benefit nature and society, public financial assistance is available. Programs are always changing, so go to the website for the most up-to-date information mndnr.gov/woodlands

Cost-share programs:

Federal

- **Conservation Reserve Program (CRP)**—Administered through the Farm Service Agency, the CRP provides annual compensation payments to farmers who remove environmentally sensitive land from agricultural production and plant perennial species such as trees that improve soil and water quality and wildlife habitat. Contracts last 10 to 15 years.
- **Environmental Quality Incentive Program (EQIP)**—EQIP is a program of the Natural Resources Conservation Service (NRCS) that provides reimbursement to landowners who implement certain conservation practices. Technical assistance is also provided. Requirements include a “practice” plan or project plan that has a schedule of planned activities. Contracts last up to 10 years.

State

- **DNR Division of Forestry**—Cost-share funding may be available to help woodland owners complete projects to improve their woods and to get a Woodland Stewardship Plan.

County

- **Soil and Water Conservation Districts (SWCD)**—Cost-share funding may be available through your local SWCD, which receives cost-share funds from the Minnesota Board of Soil and Water Resources and can sometimes access funding sources such as those generated by Minnesota’s Legacy Amendment.

Tax and incentive programs:

Federal

- **Reforestation Tax Credit**—If you treat your woods like an investment or a business, you may be eligible for certain federal tax incentives. For example, the IRS allows landowners to deduct eligible reforestation costs from their income—up to \$10,000 per year—with the option to amortize (write off) additional expenses over seven years.

State

- **Sustainable Forest Incentive Act (SFIA)**—The SFIA was passed in 2001. Landowners receive a fixed annual payment per acre of land enrolled in the program. Requirements include a minimum enrollment of 20 qualifying acres, an 8-year minimum commitment, and a Woodland Stewardship Plan that was written in the last 10 years, is registered with the DNR, and includes a schedule of planned activities.
- **2c Managed Forest Land**—Created in 2008, 2c is a property tax designation that offers woodland owners a reduced rate of 0.65 percent on actively managed woodland. Requirements include a minimum enrollment of 20 qualifying acres and a Woodland Stewardship Plan that was written in the last 10 years, is registered with the DNR, and includes a schedule of planned activities.
- **Green Acres (2a Productive Agricultural Land) and Rural Preserve (2b Nonproductive Agricultural Land)**—These programs provide reduced taxes on woodland that produces agricultural products (maple syrup, biomass) or is adjacent to a landowner's farmland.

Minnesota State Forest Nursery

The Minnesota State Forest Nursery sells native, bareroot seedlings that are grown from seeds collected in Minnesota. Seed source locations are noted and tracked. When possible, seedlings are shipped to the same region from which the seeds were collected. This way the seedlings are well-adapted to local growing conditions and have a better chance of survival. Seedlings sales begin in mid-October and seedlings are shipped for planting in the spring. More information is available at mndnr.gov/nursery





Photo credit: Leslie Robertson/NASF

Conservation Easements

Some landowners sell or donate a **conservation easement** to make sure their land will never be developed or converted to another use. Conservation easements serve a variety of conservation purposes and are generally intended to protect important features of a property. They are voluntary, legal agreements by landowners to give up some of the rights associated with their property such as restrictions on the right to develop, divide, mine, or farm the land to protect the land, water, habitat, open spaces, and other conservation values. Agreements are tied to the land and not the owner so that the property remains in a largely natural state no matter who owns it in the future. Easements are visited regularly (usually annually) by the organization holding the easement to monitor the conditions of the property.

There are two kinds of easements. Perpetual conservation easements are intended to last forever. Term easements are for a specified length of time, up to 30 years or more, but most are permanent.

Public agencies and some nonprofit organizations whose purposes include conservation preservation can hold conservation easements. Interested landowners can either sell or donate an easement.

Here are some examples of organizations that offer conservation easement programs. Visit mndnr.gov/woodlands for more information.

- **Agricultural Conservation Easement Program (ACEP)**—Administered by the Natural Resources Conservation Service (NRCS), ACEP protects agricultural and nonindustrial private woodlands from development through agricultural conservation easements. The easements can be temporary (30 years) or permanent. The program also offers wetland conservation easements that are purchased and then maintained by NRCS. Easement plans are required.
- **Forest Legacy Program (FLP) and Minnesota Forests for the Future (MFF)**—The FLP and MFF programs are administered by the DNR to prevent the conversion of forests to nonforest uses. Working forests provide an array of public benefits including habitat, clean water, recreational opportunities, timber, and other forest products. The FLP is a national program administered in partnership with the USDA Forest Service while the MFF is strictly a Minnesota easement program. Both programs are intended to conserve and protect private forests that provide economical, recreational, and environmental benefits to the state and its citizens. Conservation easements are permanent and easement rights are either purchased or donated.
- **Reinvest in Minnesota (RIM)**—RIM is administered by the Minnesota Board of Water and Soil Resources and local soil and water conservation districts. The program focuses on restoring wetlands and sensitive agricultural lands such as those along rivers. An easement plan is mandatory. The landowner is responsible for maintaining any conservation projects in the plan, but the program can provide financial assistance. Conservation easement rights are purchased. Most easements are permanent, but some may be temporary (20 years or more).
- **Nonprofit organizations**—Some nonprofit organizations purchase or accept donated conservation easements on land that fits certain criteria. Examples include Minnesota Land Trust, Ducks Unlimited/Wetlands America Trust, and The Nature Conservancy.





Transferring Land to the Next Generation

If you want to keep your woods in the family and make sure it remains intact, consider creating a family limited liability company (FLLC or LLC) for your land. An LLC is a business entity that can hold and manage land while shielding the owners from certain personal liability issues. Placing woodland in an LLC also helps landowners transfer their property to the next generation while minimizing the risk that the property will be forcefully sold upon demand of one of the heirs—known as “avoidance of partition” in legal terms. Rather, the land is titled in the name of the company and divided into units of membership, similar to the way a corporation is divided into shares. You as the owner can gift portions of the value of the land in the form of company units to your heirs over time. You retain decision-making power over the land as a majority partner until such time that you see fit to pass on responsibility. Bestowing land as annual gifts below a certain maximum value can help landowners potentially decrease the estate taxes associated with high-value property.

Importantly, LLCs offer opportunities to engage the next generation in caring for and managing the land during your lifetime, and may provide a good platform to pass on your goals and values. While LLCs are easy to create, you may need to take many steps to ensure that the LLC functions as you intend. Further, inheritance and tax law can be complicated and may change frequently. For these reasons, it is important to work with a certified public accountant or attorney who is familiar with the specific needs of Minnesota woodland owners. Again, visit mndnr.gov/woodlands for details.

Now that you know more about investing in and protecting your land, continue to Chapter 7 to connect with other landowners and become more involved in your local landowner community.

Chapter 7: Your Landowner Community

Many activities are more fun when you are part of a community. Anglers, stamp collectors, sports fans, book lovers, birders, and ballroom dancers all have their own communities. Woodland management is no different. There are more than 190,000 private woodland owners like you in Minnesota. This chapter outlines some programs and organizations that can connect you with other woodland owners and local natural resource professionals.

Minnesota Forestry Association (MFA)

MFA is a private, member-funded woodland owner organization. It is Minnesota's oldest conservation organization, founded in 1876. Working on behalf of family forest owners through education and advocacy to promote woodland stewardship, MFA offers educational opportunities such as field days on member properties. minnesotaforestry.org

Minnesota Women's Woodland Network

The Minnesota Women's Woodland Network (MNWWN) recognizes women play a vital role in keeping Minnesota's forests healthy. The MNWWN focuses on engaging women woodland owners in sustainable woodland management by creating peer-learning opportunities. These small groups offer informal and supportive education on topics that include trees, nature, and land management. The MNWWN also helps build relationships between women woodland owners, their families, and technical professionals through local networks. The Northeast Women's Woodland Network is the local network that exists in your neck of the woods. mnwwn.org



"I'm just learning about this Women's Woodland thing. I've got to get involved."

– Deb Pomroy, Duluth

Photo credit: Barb Spears

University of Minnesota Extension Woodland Owner Programs

The University of Minnesota Extension provides opportunities for landowners to learn how they can be the best stewards of their land and improve forest health in their community. myminnesotawoods.umn.edu

- **Master Woodland Owner**—This program offers training to landowners who want to become better stewards of their woods. Participants complete self-paced, online educational courses on a range of woodland stewardship topics, as well as in-person field tours and workshops. Participants complete a capstone exercise designed to help them implement a project on their property.
- **Forest Pest First Detector**—This program trains citizens to become community leaders who identify, detect, and report on Minnesota's most threatening forest invasive species.
- **Woodland Transition Workshops**—The University of Minnesota occasionally offers workshops on how to bestow your woodland legacy to the next generation. These workshops shows woodland owners how to develop a vision for their property, share their vision and goals with family, and learn about wills, trusts, and limited liability companies.

Urban and Community Forestry Organizations

To help protect the trees that grow in urban and community areas, consider these organizations:

- **Minnesota Shade Tree Advisory Committee (MnSTAC)**—MnSTAC advocates for the interests of Minnesota's public and private community forests and serves as a forum for sharing ideas and information. The committee works with policy makers and community leaders to identify legislative priorities and leads initiatives to protect urban and community trees and forests. mnstac.org
- **Tree City USA**—Tree City USA is a national program of the Arbor Day Foundation. It recognizes communities with tree management plans and programs, and encourages action and public education around sustainable community forests. To see if your city has a Tree City USA designation, visit arborday.org/treecityusa
- **Minnesota Tree Care Advocate**—Minnesota Tree Care Advocate is a program committed to enabling volunteers to create healthy community forests. The program, administered by the University of Minnesota's Department of Forest Resources, trains and connects volunteers to opportunities within their community. They also work directly with communities to develop locally based volunteer programs to meet needs of the community. To learn more, go to www.mntca.umn.edu
- **Minnesota Tree Inspector**—Certified tree inspectors identify and manage disease and insect problems in communities and counties. mndnr.gov/treeinspector

Minnesota Forest Resources Council (MFRC)

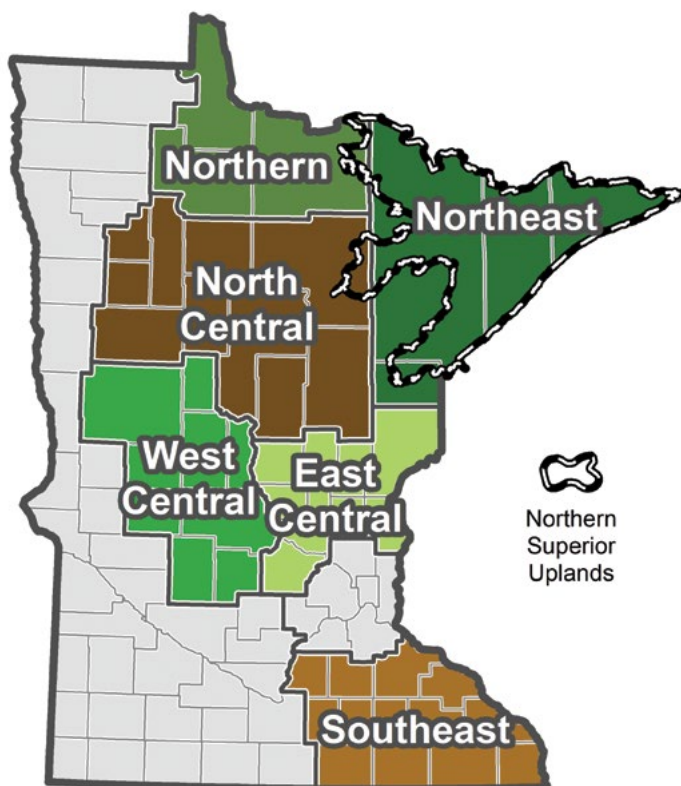
Landscape Committees

The MFRC is a state-appointed council established by Minnesota statute that exists “to promote long-term sustainable management of Minnesota’s forests.” The Council consists of 17 members who represent forest-related interests in the state including timber, conservation, and private woodland owners. Staff manage several supporting programs including a Landscape Program that supports and guides six regional Landscape Committees spanning the forested areas of the state.

Each Landscape Committee contains volunteers from the public and private sectors including natural resource professionals, landowners, and other interested community members. Committees partner with local natural resource groups to coordinate and support forestry projects based on the broader landscape plans that the MFRC has designed for the regions.

Landowners bring important on-the-ground perspectives to these committees. Your region is represented by the Northeast Landscape Committee. The committee meets quarterly and is open to the public.
mn.gov/frc/regional-landscape-committees.html

MFRC LANDSCAPE REGIONS





“Tree Farm tours are really good things for people, especially when they’re starting out. I went on lots of Tree Farm tours when I first got started.”

– Deb Pomroy, Duluth

Minnesota Tree Farm

Minnesota Tree Farm is a chapter of the American Tree Farm System, a program of the American Forest Foundation. The program recognizes woodland owners who adhere to a set of sustainable forestry principles including protecting forests from disease and grazing, protecting soil and water quality, growing productive forests, and maintaining biodiversity and wildlife habitat. Applicants must have at least 10 acres of woodland and a management plan for their property. Membership is free and includes benefits such as free technical advice from volunteer foresters during inspections, and also opportunities to network with other landowners and educators through workshops, field days, seminars, and an annual national convention. Email info@minnesotaforests.com for more information.

Landowner Cooperatives

Woodland owner cooperatives provide services to members such as education, equipment-sharing, and access to markets. One example is the Northwoods Forestry Cooperative, whose motto is “To promote sound woodland management and assist members in wood products marketing.”

Throughout this handbook, you have read the perspectives and experiences of some of your fellow landowners. Getting involved in one or more of these landowner organizations will help you meet, learn, and share your knowledge and experiences with your woodland neighbors. You may also meet local natural resource professionals, such as foresters, loggers, and scientists, who may help you throughout your woodland-owning journey.



LANDOWNER LEADERS SPOTLIGHT

Peggy Meseroll—Esko, Minn.
NORTH SHORE HIGHLANDS

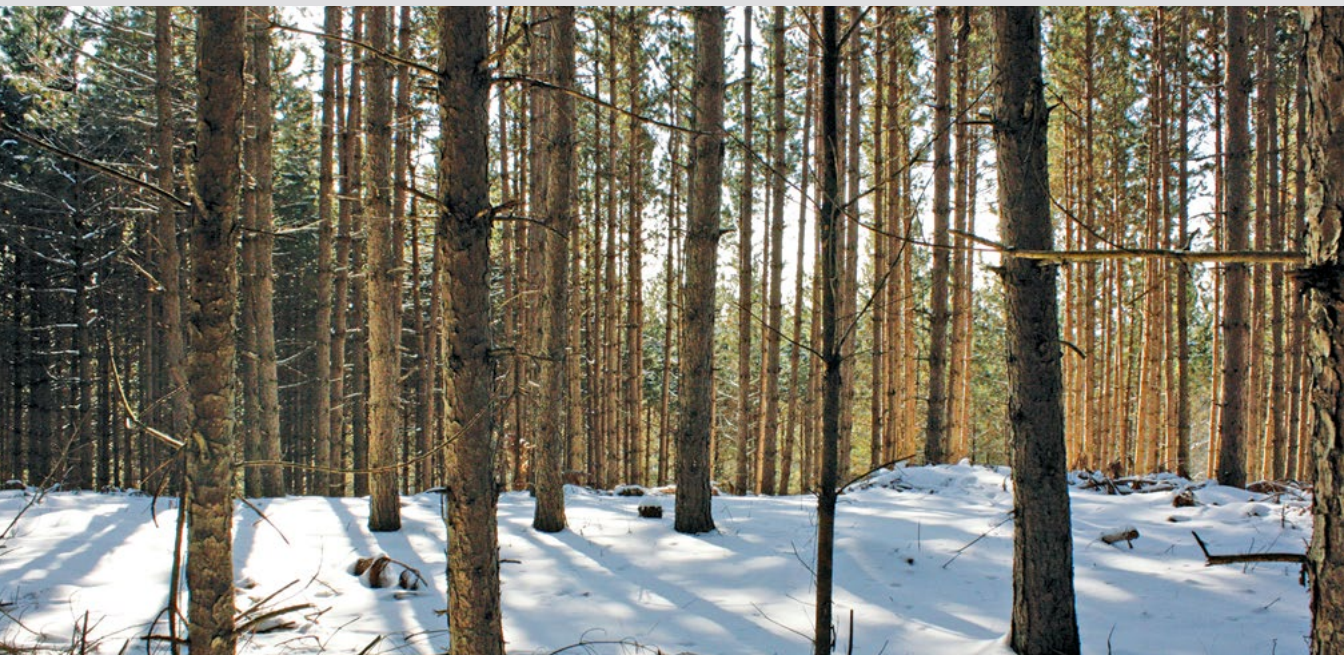
Landowning is a family affair for Peggy Meseroll, who co-owns 227 acres near Esko with her brother and sister as part of the “Maki Family, LLC.” “It’s a joint venture for all of us,” says Peggy. “We all can work together to decide what we’re going to do as far as logging and selling trees.” Her parents had previously raised beef and dairy cattle on the land. But when farming became too difficult in the 1960s, her parents converted the land into a tree farm that Peggy and her siblings enjoy to this day. Peggy is always interested in learning more about her woods. “I have bird books, and plant books, and tree books. So, I take them in the woods,” she says. “There’s the pileated!” she whispers excitedly, pointing to the large red-headed woodpecker at her birdfeeder.

Peggy's thirst for knowledge is part of what led her to become involved in the Minnesota Forestry Association (MFA). She first learned about the organization by attending MFA's Spring Field Days. Peggy has continued to attend in years since. "We had chain saw safety, we've had invasive species things, tree identification, different harvest methods," she recounts. Peggy and her family have even hosted their own field tour in Cloquet where they brought other landowners to their woods to show a recent harvest.

"Minnesota Forestry Association advocates to our legislature for the private woodland owners, the small woodland owners," Peggy notes. "MFA was crucial in getting the Sustainable Forest Incentive Act passed, and the 2c tax breaks for the landowners. They lobbied down at the state capitol. So that's helped a lot of us defray some of the taxes; otherwise I don't think we could afford to have our two 40-acre plots up on our north side, if we didn't have a tax break."

In addition to Spring Field Days, MFA offers a bi-monthly informational newsletter and a variety of other programs including a new service called "Boots on Your Ground." As Peggy describes it: "you can call up and have a forester come and walk through your property with you, giving advice. It's on a voluntary basis, and we're trying to cover the whole state." Currently, volunteer foresters are available in 55 Minnesota counties. MFA members can also follow-up with a forester via the free "Phone a Forester" phone line.

A local forester encouraged Peggy to run for the MFA board. She was elected and served for two terms. She encourages others to get involved and seek out one of MFA's local affiliate chapters. "If you can't learn something every day, it's a sad situation." When is a good time to join MFA? "The sooner the better!" she says. "I think they have 600-plus members and are always, always looking for more people."



Part 3 Vocabulary

Biological control

The use of natural enemies (e.g., insects, pathogens) to control nonnative pests.

Conservation easement

Voluntary land protection agreements that restrict development while ensuring biological diversity, sustainable timber management, and in some cases, public access.

Food plot

A small area planted to annual or perennial agricultural crops to provide a supplemental food source for wildlife. They have less value to native wildlife than *wildlife opening*.

Forb

An herbaceous, flowering plant that is not a grass, sedge, or rush.

Fragmentation

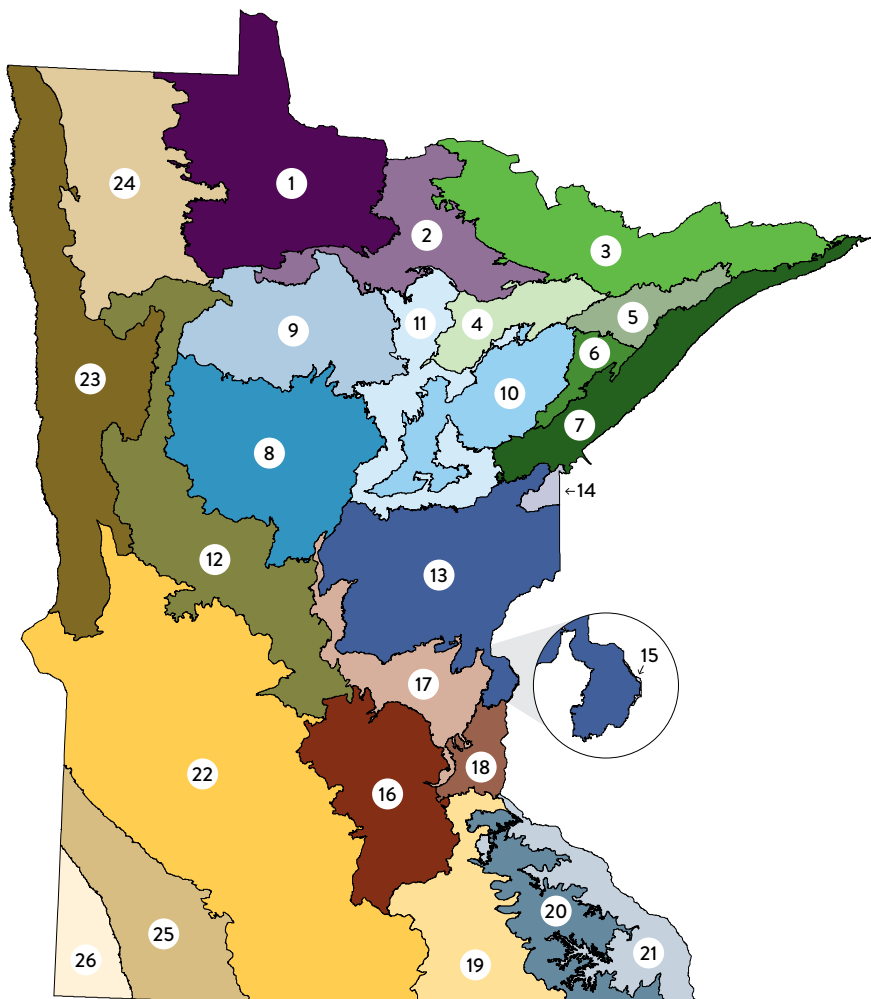
The splitting or isolating of *patches* of similar habitat.

Prescribed burning

The controlled application of fire to naturally occurring vegetative fuels, under specific environmental conditions and following appropriate precautionary measures, to achieve clearly-defined objectives such as controlling brush, producing high-quality browse, or reducing fuel hazards.

Ecological Subsections Within Minnesota

1. Agassiz Lowlands
2. Littlefork–Vermilion Uplands
3. Border Lakes
4. Nashwauk Uplands
5. Laurentian Uplands
6. Toimi Uplands
7. North Shore Highlands
8. Pine Moraines–Outwash Plains
9. Chippewa Plains
10. Tamarack Lowlands
11. St. Louis Moraines
12. Hardwood Hills
13. Mille Lacs Uplands
14. Glacial Lake Superior Plain
15. St. Croix Moraine
16. Big Woods
17. Anoka Sand Plain
18. St. Paul–Baldwin Plains and Moraines
19. Oak Savanna
20. Rochester Plateau
21. Blufflands
22. Minnesota River Prairie
23. Red River Prairie
24. Aspen Parklands
25. Coteau Moraines
26. Inner Coteau



Woods Workbook

You can print a user-friendly version of this workbook at mndnr.gov/woodlands

About my property

Begin by answering a few background questions. Visit mndnr.gov/woodlands for information about your watershed and ecology of your land.

How many acres do I have? _____

Is my property in multiple parcels? If so, how many? _____

What county or counties is my property located in? _____

What Ecological Classification System subsection is my land in?

- ☐ Border Lakes ☐ Laurentian Uplands ☐ Nashwauk Uplands
☐ North Shore Highlands ☐ Toimi Uplands ☐ Other:

What major watershed is my land in? _____

What minor watershed is my land in? _____

Evaluating my property

Take a leisurely walk through your woods. What do you notice? Consider these questions and take notes:

- What kinds of trees are there? Are they old, young, or a mix of ages?
- How dense is the tree cover in my woods? Has there recently been a harvest? Are there openings from trees that have died or blown over?
- Are there ‘islands’ of woods surrounded by open land or is all of my woodland connected?
- What is the understory like? Is it thick with shrubs and brush or is it open?
- What wildlife is there?
- Are there any invasive species? Which species? Where are they located?
- Are there any ponds, wetlands, swamps, springs, or streams within my woods or nearby?
- What is the terrain like? Is it hilly or flat?

[illegible]

Consider repeating this exercise with each new season. You may notice different plants and animals in different seasons.

Identifying what interests me about my woods

First, note topics. Then, set goals. Here is a list of topics that may interest you as a woodland owner. Check any that apply to you. This isn't an exhaustive list, so add any additional topics that are important to you.

Topics:

What are your top three topics? _____

- | | | |
|--|--|---|
| <input type="checkbox"/> Game wildlife | <input type="checkbox"/> Invasive species | <input type="checkbox"/> Intergenerational land transfer |
| <input type="checkbox"/> Non-game wildlife | <input type="checkbox"/> Forest health | <input type="checkbox"/> Carbon capture |
| <input type="checkbox"/> Rare plants and animals | <input type="checkbox"/> Protecting important habitats | <input type="checkbox"/> Nontimber forest products (mushrooms, maple syrup, etc.) |
| <input type="checkbox"/> Recreation | <input type="checkbox"/> Wetlands | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Timber harvest | <input type="checkbox"/> Shoreline management | |
| <input type="checkbox"/> Tree planting | <input type="checkbox"/> Water quality | |
| <input type="checkbox"/> Cost-share | <input type="checkbox"/> Prescribed burning | |
| <input type="checkbox"/> Tax incentive programs | <input type="checkbox"/> Investment | |

Identifying my management theme

After looking at your top three topics, your theme may be managing for wildlife habitat, recreation, income, or something else.

My goals

Write a short goal statement about each of your top three topics. Example: If "game wildlife" is one of your top three topics, then your goal might be to "Make sure my property supports more wild turkeys."

Goal 1: _____

Goal 2: _____

Goal 3: _____

Other goals: _____

Consult a professional forester

A professional forester can give advice and can walk your property with you to discuss your goals and write you a voluntary, non-binding, personalized Woodland Stewardship Plan.

Describe a work project

First, choose a goal you want to tackle that may involve setting up a work project. Example: If your goal is to “Make sure my property supports more wild turkeys,” then your project may be to “Locate existing openings and enhance them by removing trees and planting native species that turkeys eat.”

Describe a work project that will help you achieve your woodland goal:

Identify action steps

If possible, break down your project into smaller action steps. Take as many steps as you need. Use extra sheets if necessary. **Example:** Step 1—Locate existing openings by examining aerial photos. Step 2—Schedule walk with forester to visit openings I want to enhance. Step 3—Ask my forester to recommend times to mow or burn. Step 4—Conduct mowing or burning. Step 5—Plant shrubs and trees that are good for wildlife (ask my forester for recommendations).

Step 1: _____

Step 2: _____

Step 3: _____

Step 4: _____

Step 5: _____

Pull it together

For each work project, use the Action Step Work Project template to list individual action steps, set a time to do each step, estimate budget needs, and record notes and observations about how things are going along the way. Remember to take before and after photos!

ACTION STEP CONSIDERATIONS:

Date/Season

- For action steps within a project, consider the season, the order of action steps, and amount of time you need to complete each step. Example: Most harvests occur in winter when the ground is frozen to minimize damage to the soil.
- In what order will you tackle your work projects? Example: Control invasive species at trail entrance—year one; Enhance wildlife openings—year two; Incorporate as an LLC—year three; etc.

Tools needed

- You might include aerial photos, chain saw, management plan, project plan, shovel, seedlings, etc. You may want to note where you might get these tools.

Partners/Contacts

- List names and phone numbers of people who could advise on or help with each step such as your local forester, a neighbor, etc.

ACTION STEP WORK PROJECT

Work project name and description: _____

Year: _____

Steps (describe): _____

Date/season: _____

Tools needed: _____

Partners/contacts: _____

Budget estimates: _____

My contribution: _____

Financial assistance: _____

Notes: _____

Acknowledgments

Special thanks to the landowners who contributed their time and wisdom: Ray Barnes, Ron Brodigan, Dennis Chilcote, Paul Knuti, Peggy Meseroll, and Deb Pomroy.

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This publication made possible through a grant from the USDA Forest Service.

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WOODLANDS OF MINNESOTA LANDOWNER HANDBOOK



If you own woods in northeast Minnesota, your decisions can impact the future of this rich and unique forest landscape.

This handbook is a foundation for taking care of your woods and connecting your property to the larger landscape. It helps you:

- Identify what you have in your woods.
- Plan for what you want your woods to be in the future.
- Understand what you can do to keep your woods healthy.
- Consider strategies for accomplishing goals in your woods.

From learning about plant communities to connecting with local foresters and sources of funding, this book shows you how to get a management plan written just for your woods so that your dreams can become reality. Your choices will leave a mark on your future woods.

What will your woodland owning legacy be?



This handbook series is a collaborative project of the Minnesota Department of Natural Resources' Division of Forestry and the Minnesota Forest Resources Council with funding from the USDA Forest Service.

mndnr.gov/woodlands