For your information...

The idea of looking beyond one’s own boundaries is part of the definition of a term resource managers use called “connectivity.”

Connectivity is defined as “the extent and means by which various resources connect.” Here are two examples:

- Migratory songbirds need continuous habitat corridors along rivers in order to make their migratory trips from the tropics to the northwoods of Minnesota (and back).
- The red-shouldered hawk, a species of special concern in Minnesota, needs large blocks of forested habitat for nesting and hunting. This hawk cannot survive in a landscape with only small “scraps” of wooded lands scattered here and there. By maintaining woodlands or other forest types that cross your property, you can retain this critical connectivity.

For more information on fragmentation, check out Natural areas: Protecting a Vital Community Asset, a Source Book for Minnesota Local Governments and Citizens, by Laurie Allmann. For more information on fragmentation, see YP-66.

II. The Big Picture

A. Interconnections

So, you think you are living “on the edge?” You probably are if you own one to 20 acres of land next to a community, or a lake, or in the country next to a forest or cropland. This is a special area, and an area of concern for resource managers and landowners. Human populations continue to grow and new residential subdivisions and commercial centers continue to develop. Wooded areas and farmlands are being fragmented; wildlife habitat for many species of animals is being lost.

If this “edge” is where you find yourself, and you want to restore, take care of, or recreate the natural world in your back yard—your problems are unique. Your property is but a piece of the puzzle that makes the “big picture” of a landscape. The activities you undertake on your property can benefit, or degrade, your neighbor’s land and their neighbor’s land.

1. Biome

Determine Your Biome!

Minnesota is the meeting ground for three of North America’s eight major ecological regions (also known as “biomes”). Climate and geography largely define them. They are:

- deciduous forest biome in the middle of the state;
- prairie/grassland biome along the western border; and
- coniferous forest biome in the north.

Minnesota is fortunate to be such a meeting place of vegetation types. When combined with the state’s wealth of rivers and lakes a wide range of habitat conditions are available. And that means a tremendous variety of plants and animals!

Knowing approximately which biome your land is in may give you a start to understanding your land’s soils, plants, wildlife, and the land’s capabilities. As you look at goals and management alternatives, keep in mind which biome you live in. Some goals may not be possible because of your biome. For example, a pine windbreak won’t grow well in a prairie/grassland biome because of temperatures and rainfall characteristics. Similarly, plants suited to the deciduous forest biome may have a tough time in the coniferous forest biome. (The growing season isn’t long enough. See YP-1.)
2. Neighborhood Yards; Neighborhood Landscapes

As you think about what you want on your own land, keep in mind that fences don’t necessarily make good neighbors. Take a “landscape” kind of view; look beyond the boundaries of your land to your neighbor’s land (and beyond that neighbor’s land to his or her neighbor’s land).

We may not be able to save the entire world (or even one butterfly species) on one acre or 20. For most of us, the property we own may be too small in itself to sustain more than a few individuals of any specific wildlife population. But you can increase the positive effects of your land management activities by looking across boundary lines into your neighborhood and surrounding community by taking a look at the “bigger picture.”

You ARE unique (and so is your property). Fragmented areas (e.g., one- to 20-acre lots) have their own unique problems AND opportunities. Think of connected natural areas and open space as natural infrastructure. Usually we think of infrastructure as systems of transportation, communication, and power supply—systems we depend on for our daily lives. If one node, like a power station, is damaged, the power supply for an entire region can be affected.

Natural areas work the same way. Every living thing, including humans, depends on the systems of clean air and water, productive soils, and intact ecosystems. Natural areas are part of a larger system and must remain connected.

Anything you can do to retain, restore, reconnect, or recreate native landscape components on your property will be meaningful. It will be even more meaningful if those activities can extend beyond the boundaries of your own land.

3. Systems

Your land is part of a “system,” or “ecosystem,” with parts that interact. Living things (plants and animals) interact with each other and with their nonliving environment (water, soil, and topography). Each action, whether by human or nature, affects the system and interactions within it. On a large scale, like the blow-down of a forest that occurred in the Boundary Waters Canoe Area Wilderness in 1999, forest dynamics can be changed from those of an old forest to a young regenerating forest. A large-scale fire could further affect those dynamics.

What happens to one part of the ecosystem, even on a small scale like your property, can have a noticeable affect. For example, if you create a small landscaping pool, you will attract birds, frogs, and the insects they eat. Filling in such a pool could result in less wildlife visiting your property.

“Looking across the fence”
Are there regional or local recreational opportunities you can tie into such as trails? waterways?

Think about your neighborhood:
• Are there special natural features on your land that your neighbors do not have (a wetland with a variety of native wildflowers?)
• Do you have natural features in common with your neighbor (wooded areas that span several properties)?
• Does your neighbor have a key natural feature (like a lake or stream) that neighbors may want to rally around to protect or enhance?

Thinking at a “neighborhood level” can help you achieve your own goals (and your neighbors’) by taking advantage of the amenities and features of one another’s properties. “Neighboring” provides opportunities to protect and enhance larger blocks and corridors of woodlands than any single landowner can accomplish on his or her own.
B. Ecosystems Are NOT Static!

Change is constant on the land. Nature does not stand still. It may be your intent to keep the woods as they are, but this is not nature’s way. Without direct intervention, succession will continue, and insects and disease will take their toll, possibly altering the composition of the forest. Oaks may give way to maples; birch may give way to balsam fir.

This change is called “succession.” Nature has a basic progression of plant and animal communities. Cleared land will grow grasses and forbs, which give way to shrubs and pioneer trees like aspen and jack pine. Eventually these pioneers give way to other trees like maple and red pine. However, both nature and people’s activities can interrupt this progression. Windstorms, fire, and flooding can set back the progression closer to a situation like cleared land. Similarly, people can change and alter progression with such activities as logging and fire. So, whether you do something—or nothing—your land will change over time.

The types of animals found on a particular piece of land depends largely on the stage of succession that land is in. Quail and grouse feed on seeds of annual and perennial weeds and grasses occurring in young stands of timber where sunlight reaches the forest floor. This is early successional habitat. Pileated woodpeckers depend on dead and rotting trees found in mature forests. This is late successional habitat. Still, other wildlife, like squirrels and tanagers, prefer midsuccessional habitat.
III. Planning

A management plan is a working guide to good land stewardship. It allows a landowner to maximize the wildlife, timber, recreation, aesthetic values, and other benefits of owning land. A good plan helps a landowner combine the natural and physical characteristics of the land with his/her interests and objectives—and helps to produce healthy, vital, enjoyable, and productive land for future generations.

A management plan includes:

- List of your goals for your property.
- Map of your property.
- Inventory of your property (description of important features and vegetation types).
- List of management options for your property (from list of potential options based on your property inventory).
- Schedule of activities (what you plan to do, when).

Want natural beauty?

*Beauty is in the eye of the beholder.*

Assessment questions

- Think of your yard as more than “space” around your home.
  It’s an extension of your home.
- Imagine the acres around your home as a series of outdoor “rooms”:
  - Fences, hedges, and shrubs create walls of the rooms.
  - Lawns, ground covers, and decks form the floor.
  - Trees, arbors, and the sky are the ceiling.
  - Think “native.” Are the plants and animals that inhabit your land, natural to Minnesota?

Plan

- Consider how your site is to be used (entertainment? play? public or private?)
- How much time do you have available to take care of your land?
- What kinds of trees, shrubs, flowers, and grasses are “beautiful” or pleasing to you? Consider colors and what they will be at different times of the year.
- Use plants to create spaces within your yard. Rather than planting individual trees and shrubs, arrange groups of plants to define room boundaries.
- Remember, lawns with panoramic views can be very attractive, but they have undesirable features, too. Through their maintenance and the use of fertilizer and pesticides, their care can negatively affect streams and lakes. Large lawns can change runoff patterns and volume of runoff. Large lawns are not necessarily “bad”; but care should be taken in their planning and upkeep.

Want wildlife?

Provide: food, water, shelter, and space.

Assessment questions

- Is there a large diversity of vegetation on the property?
- Do you have accessible year-round water sources? (Does your neighbor’s land have a source of water?) Ponds, swamps, and birdbaths are great sources.
- Are there dead trees, brush piles, or rock piles across the landscape?
- Is year-round food provided with diverse plantings of grasses, shrubs, and trees?

Plan

- Decide which native wildlife you would like to manage for and learn as much as possible about its requirements.
- Determine habitat enhancement needs on your property.
- Design short- and long-term plans for habitat improvements.
- Select plants that provide shelter and food.
- Plant a variety of plant types; intersperse them, creating a mixed stand.
- Plant to create protected nesting areas.
- Plant in locations that form corridors or connections between different, larger habitat plantings.
- Promote and plant woodland, grassland, riparian, and wetland habitats.
Invasive species of greatest concern

Although there are millions of plants not native to Minnesota, there are a few that land managers are most concerned about because of their invasive qualities.

They are:

In woodlands: European buckthorn—a shrub species that dominates the understory, crowding out a variety of native shrubs and spring wildflowers. It is easily identified in the fall as the last to drop its leaves. For more information on buckthorn identification and control, see YP-62.

In wetlands: Purple loosestrife—a pretty purple-flowered plant that dominates a wetland, choking out all other plants and filling in open water. For more information on purple loosestrife identification and control, see YP-63.

A. Goal Setting

1. General Considerations

Understanding how a natural area “works” is the first step in managing that land. Doing something with this understanding is the second. Land is found in a range of conditions. But there are some guidelines that will typically apply in nearly every instance—from one acre to 20 or more.

Encourage Native Species

Native plants have evolved for thousands of years with the local soil and climate. Although the appearance of your land and the landscape around it have changed over time, you can help create quality natural areas for the future by encouraging, planting, and maintaining native plants.

Native plants provide essential elements of food, shelter, and space for wildlife and fish. They also act as efficient sponges, soaking up rain and snowmelt runoff and maximizing groundwater recharge.

When considering plants to add to your property, not only is it important to choose plant species native to your part of Minnesota, but also plant seeds that come from your area. For example, the native range of red oak stretches from northern Minnesota to central Louisiana. However, seed from red oak in Louisiana comes from trees adapted to much milder winters that would not survive our harsh Minnesota winters. For more information on native plants, see YP-33.

Discourage Invasive Species

Is it a wildflower or a weed? Sometimes it depends on your point of view. One definition of a weed is “a plant growing where it’s not wanted.”

Many plants not native to Minnesota add beauty and variety to our landscape. But did you know they can cause harm to the landscape, too?

For example, ox-eye daisies are not native to North America. They arrived in the 17th century from England, where they were thought to be a charm against lightning. However, they are so numerous now that it is assumed they have always grown here. In fact, in disturbed or over-grazed areas ox-eye daisies can become so numerous they crowd out other species of plants. Other species have become highly invasive and destructive. Many natural controls, such as disease and insects that normally kept these species “in check” in their homeland, do not exist or are not as effective here. Lack of natural controls gives a non-native species an advantage, making it easier for them to become invasive and take over the habitat of native species.
Minimize Runoff

Roofs, driveways, sidewalks, and patios are impervious surfaces that do not allow rain to soak (or infiltrate) into the ground. Instead, storm water goes directly into lakes, creeks, and rivers or ends up there via a storm-sewer system. Unfortunately, this water picks up pollutants, like fertilizers, herbicides, and oil residues, as it washes over impervious surfaces and your lawn. Directing storm water to vegetated areas will help filter pollutants from the water.

Avoid Construction Damage

It takes many years to replace trees and vegetation lost to construction damage. It takes courage (and planning!) to save trees from a bulldozer, natural areas from being compacted, and waterways from being rerouted.

On a plat of your property, show the location of trees, plants, and other natural features that are important to you. Consider them in deciding the location of buildings, driveways, walks, and patios. Sometimes changing the angle of a building or road can preserve essential natural areas of your property.

Remember Your Neighbor

Look beyond neighborhood fences and township and county lines. Natural areas rarely have precise boundaries. The wildlife, plants, and waterways interact with, and are affected by, the characteristics and land use of adjacent properties. The land beyond your yard may be host to other natural communities and land features not found within your boundaries. Take advantage of this “extended” back yard and work with neighbors to accomplish mutual resource management goals.

2. Specific Goals

<table>
<thead>
<tr>
<th>(Step 1) Write down the reasons you purchased the land. Perhaps it may be to serve as a homesite, investment, getaway retreat, or source of firewood. Perhaps it’s for recreation. Writing down your goals will help you focus on just what is important to you.</th>
<th>(Step 3) Check your goals against your reasons for purchasing the land. Do they complement one another? You may want to revise one list or the other.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Step 2) Write down what you want from your land in the future. Consider these your “overall goals.” They might include increased wildlife, improved fishing, cross-country ski trails, income opportunity, or others. Spend just minimal time on this; your goals will probably be revised after you assess your land.</td>
<td>(Step 4) Now, take a look at your land to see which of your goals are possible to achieve, taking into consideration the soils, waters, topography, and other features of your land.</td>
</tr>
</tbody>
</table>
A topographic map may be useful to help you appreciate the slope of your land. Slope and aspect, as well as soil and drainage, can affect plant communities. A topographic map can help you determine slope, aspect, and drainage. A few dollars spent for a compass and “topo” map can lead to hours of enjoyment and learning. For sources of topographic maps, see YP-5.

A single parcel of land may contain several different soils. A soil survey provides detailed information on soil type, expected productivity, and limitations for various uses. To obtain a soil survey, see YP-3.

Soil texture refers to the size of particles that make up the soil. Particles are classified by size as sand, silt, and clay. Clay particles are very small. Silt particles are moderate in size. Sand particles are relatively large. Loam refers to a mixture of these categories.

**Different soils have different proportions of each particle size**

- Sands have large pore spaces between soil particles. Water drains through them quickly; thus they tend to be drier. Sand feels gritty and doesn’t stick to your hands.
- Clay soils have a large water-holding capacity, but water adheres so tightly to the soil particles that much of the water is unavailable for plant use. Clay soils don’t drain well. They have a smooth texture which sticks to itself (and your hands) when wet.
- Silt soils have the most favorable texture for moisture absorption and drainage. Wet silty soils feel slippery and smooth.

You can get a good idea of how well your soil drains by walking around after a long, soaking rain. Watch for areas of standing water, which indicate areas that don’t drain quickly. Conversely, look for areas that dry out quickly.

**B. Assessing/Inventory**

1. **In General**

   The natural characteristics of your land can either constrain or enhance your opportunities to use that land in the ways you desire. For instance:

   **Soils**

   Soil is much more than just “dirt.” Soil is alive! It teems with germinating seeds, the roots of plants, and a great variety of tiny organisms. It provides nutrients for plant growth and anchors those same plants. Soil surveys are available that show you the types of soil on your land. Keep in mind; however, that the property you own may have been altered through development and construction and therefore the soils may have been altered.

   It may be helpful to get your soil tested for nutrient deficiencies. For information on obtaining a soil test, see YP-4.
Vegetation

Everything is connected in some way to everything else. If you carefully observe a piece of land and the creatures inhabiting it, you will reach that conclusion: things are related. These relationships help us predict the type of plants that will grow on a parcel by knowing the soils and the climate. The type of soil can often be predicted by looking at the plants that grow there naturally. For example, jack pine and oak grow on sandy soils. Only a few tree species, and often-dense shrubs, grow on these poor and droughty soils. Dense stands of hardwood trees with a thick understory indicate rich soils with some clay or silt. White cedar or black spruce indicate wet soils, while tamarack and white pine often indicate “sour,” or acidic soil.

Climate

The length of the frost-free growing season, cold temperature extremes, amount of precipitation, and the duration of droughts are some of the elements of climate that influence your land—what plants will grow and survive, and what animals will live and reproduce there. If you have located your biome on page 4, you will have the basis for determining your climate considerations.

If you live in the prairie biome, you will be very limited in the tree species you can grow. Similarly, those in the coniferous forest biome will have plant survival limitations. When choosing plants for establishing on your property you will also want to consult the USDA plant hardiness zone map to determine which plants will grow in your area. Most plant nurseries and even many seed packets will have a copy of this map.

For a good perspective on Minnesota's native vegetation prior to European settlement, see YP-2.
2. Making a Map From a Photo

- Secure an aerial photo of your property and a USGS quad map. To obtain aerial photos, see YP-6. For USGS quad maps, see YP-7.
- At the kitchen table overlay your photo with tracing paper or write-on plastic (matex). Mark your lot with a light or dotted line, noting how your property connects to adjacent properties. Outline/delineate and number the main cover-type stands on your working map, marking the boundaries where the shades of color and texture on the photo change.

3. Inventory

Materials needed:
- Map and photo of your land
- Compass
- Stand inventory sheets—one for each forest type or stand plus two more
- Pencil and clipboard
- 50-foot tape measure
- Plant identification books (many good ones are available at your local library)
- Diameter tape

a) Take your map on a “walk” of your property with a clipboard. See if your outline correctly includes areas (stands) that are similar (e.g., big hardwood trees or open grasslands). Mark on the overlay what the delineated areas are:
- Open: Grasslands, pasture, crops, brush/shrubs?
- Forests: Deciduous or evergreen? Young or old? Plantation (trees in rows)? What are the predominant tree species? Are there fruit trees? Wet forest (bog, bottomland, seasonally wet forest area)?
- Homesite (sketch in and label gardens, buildings, trees, driveways, etc.)
- Mark unique features such as roads, trails, bird nests, animal dens, beaver dams, fences, buildings, utilities, steep slopes, particularly large trees, large fallen trees on the ground, seeps, small wet holes, scenic vistas, mast-producing (acorns, fruits, large seeds) species, and other details you notice.
b) At each stand, take notes of its characteristics. Use a copy of the inventory sheet in this guidebook's appendix for each stand. What plants are present? What is the height and diameter of trees? What are the predominant tree species and ground cover, etc? Make notes on what type of management activity you may want to do in the area. Stop at two or three different places in the cover type to see if your findings are consistent. Record any variations. Divide stands into smaller types if you find great differences in species or size during your woods walk. Reevaluate your goals after making your land assessment.

In forested stands, taking some basic measurements can give you information on "quantity" and "quality" of your woodland. (For basic measurements to take, see page 17.) For more information on measurements, see YP-8.

c) In stands that are adjacent to your property line, take a look “over the fence” and assess the type of stand on your neighbor’s land. Is it the same as yours? What is different? Fill out a stand sheet as needed.

C. Develop a Plan Based on Goals and Resources.

Now that you have an inventory of your property, what do you do with it?
1. Back at the kitchen table, prepare a description of each stand (those delineated areas on your map).
2. Refer to the guide on page 14 to find management options for each stand; write those on the stand description sheet.
3. What are your financial and time limitations? Write those on the stand description sheets.
4. Now that you have a basis for making some management decisions on your property, look out over the next five to 10 years and ask yourself: Which projects do you want to do next year? The year after? Think in “small chunks of time,” like planting only a part of a field the first year.
5. Make a schedule of events for your land. For each event make a list of resources you need (information, plants, professional advice, other materials).
6. Take action! Do the first thing you have scheduled; revise your plan as needed along the way.