

# Protecting Your Woods

## Soils, Water, and Areas of Special Importance

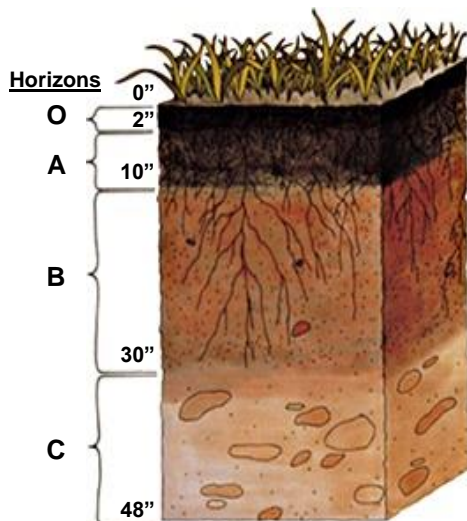
### Soil: The Foundation of Your Land and Woods

The types of trees and plants that will grow in a certain location is greatly determined by the soil. Further, the importance of healthy soil to a healthy forest cannot be stressed enough.

The basic ingredients of soil fall into two categories: **mineral soil** (silt, sand, and clay) and organic matter (decomposing plant and animal material). Soil varies from place to place, and the amount of sand, silt, clay, and organic matter affects its nutrient content and its ability to hold water. Soils with a lot of clay tend to be sticky, poorly drained, and vary in fertility. Sandy soils tend to be gritty, excessively drained, and low in fertility. Soils with a high ratio of silt feel smooth, have good drainage, and are generally fertile. **Loam** is a term that is commonly heard by landowners. But what is it? Simply put, it is soil with a fairly even mixture of sand, silt, and clay. To increase the nutrient content (fertility) of any soil type previously described, you might try adding some organic matter.

This may be advisable when establishing a rain garden, starting a wildlife food plot, or planting a mast tree. Soils with higher amounts of organic matter tend to be richer in nutrients.

If you've ever dug a hole on your property, you probably noticed different colored layers within the soil. These layers are called horizons and have been given universally accepted labels by soil experts. From the uppermost horizon down, these



Soil profile. Source: Natural Resources Conservation Service

layers include the O, A, B, C, and R horizons. The organic component of the soil is greatest near the surface and diminishes as depth increases. In contrast, the mineral component of the soil becomes greater with increasing depth. It is important to understand that soil layers take a long time to develop and aren't easily replaced. To illustrate this point, consider that it takes between 100 and 600 years to form 1 inch of topsoil. In areas devoid of vegetation, this topsoil can be eroded by wind and water in less than one year.

If you would like to know which types of soil can be found on your property, consider getting a soil survey map from the US Department of Agriculture (USDA). They have field offices all over the state and can provide you with a free **soil map**. Along with the map, you will get information about each type of soil found on your property. This information includes the suitability of each soil type to grow specific trees and plants. You may find this very helpful in planning improvements to the woods in your backyard.

These maps and the associated information about each soil type are also available online using the USDA Web Soil Survey at <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

To get an even better understanding of the soils in your woods, you can get a soil testing kit from the University of Maine Cooperative Extension offices (see Primary Resources, page 5). It is inexpensive and easy to send soil samples to the lab for analysis. A great benefit of the analysis is the recommendations you will receive to improve the soil for the plants you specify.



Gathering soil for a soil testing kit. Photo: Jan Santerre

## Protecting Soil and Water

The soils in undisturbed forested areas are generally well protected from erosive forces. These areas tend to act like sponges when it rains. Plant roots absorb water from the ground and release it slowly through a process known as evapotranspiration. In addition, leaves and woody materials that accumulate on the forest floor help hold soil in place when it rains.

Rain that hits ground with no vegetation to soak it up or leaf litter to disrupt its flow can quickly run off into waterways. Along the way, it can pick up soil particles and other pollutants that negatively affect water quality. Some

fish and aquatic life in Maine can live in muddy water, but most cannot. Mud in streams ruins habitat for fish, frogs, and other aquatic life. As anyone who fishes for trout knows, you can't catch a clear water fish in a muddy stream.

If you're planning to build a house or a nature trail near a waterbody, some planning is necessary to prevent or minimize erosion. Any



**B Stream in Houlton. Photo: Dan Jacobs**

actions you take to keep soil in place will also help keep the water clean. The conservation measures to keep soil in place and minimize the concentrated flow of water are collectively known as Best Management Practices (BMPs). For more information on BMPs, see the MFS publication *Best Management Practices for Forestry* listed on page ii.

Some of the BMPs you can use to protect water quality while making improvements to the woods in your backyard include:

- ☀ Diverting runoff on roads and trails into vegetated or forested areas before it reaches a waterbody.
- ☀ Planting trees and shrubs near streams, rivers, and ponds.
- ☀ Seeding newly built trails and forest roads with native grasses and clover.

- 🍁 Keeping chemicals, such as fuels and herbicides, away from any and all waterbodies.
- 🍁 Avoiding the need for stream crossings when building trails through your woods.

Keep in mind, using BMPs when working near water does not exempt you from the environmental laws and rules. When planning work near water, it is always wise to contact the local code enforcement officer (in organized towns) or the Land Use Planning Commission (in unorganized towns). For more information about LUPC and the contact information for field offices, visit <https://www.maine.gov/dacf/lupc/>. In short, following the regulations designed to protect water quality is an important component of being a responsible woodland owner.

## Sites of Special Importance

The woods in your backyard may contain special natural and historical features. Naturally occurring sites of special importance include wetlands; vernal pools; locations supporting rare, threatened, and endangered (RTE) plants and animals; and riparian areas. Sites of historical importance include cemeteries, stone walls, and old structures or buildings.

Wetlands (swamps) are areas underlain by frequently saturated soils and are home to a wide variety of specially adapted plants. They are like natural filters that help to keep streams and ponds clean. Runoff accumulates in wetlands, allowing sediment and pollutants to settle out before reaching streams and ponds. Wetland soils are easily damaged, so activities in these areas must be timed carefully to minimize disturbance. Winter, when soils are frozen, is often a good time to do work in and around wetlands.



**Wetland. Photo: Randy Lagasse**

If you have woodland areas that are wet in the spring but dry up in the summer, you might have a temporary forested wetland called a vernal pool. Vernal pools are generally 1/10<sup>th</sup> to 1 acre in size and provide important spring breeding sites for frogs, toads, salamanders, insects, and turtles. In addition, some vernal pools are home to rare and protected species. A great source of information on vernal pools is *Forestry Habitat Management Guidelines for Vernal Pool Wildlife*. This publication can be found at <http://www.maineaudubon.org/wp-content/uploads/2017/03/Forestry-Habitat-Management-Guidelines-for-Vernal-Pool-Wildl.pdf>.

RTE species and habitats are not confined to preserves and parks—they can occur right in your own backyard. Having an RTE species on your property can be a rewarding experience. However, keeping these species safe from harm is an important responsibility of a good steward and landowner. The Maine Natural Areas Program (MNAP) maintains a list of RTE plant species and habitats and can help you determine which ones might occur on your property (see Primary Resources, page 4).

Areas adjacent to waterbodies are called riparian areas. They both influence and are influenced by the waterbody. The trees in riparian areas provide shade that helps to support coldwater fish like brook trout. Riparian areas also provide travel corridors for a variety of wildlife and are often home to RTE plant and animal species. Because these areas are highly susceptible to damage, special consideration is necessary when undertaking activities such as cutting trees or building trails.

Activities in and adjacent to wetlands, vernal pools, RTE sites, and riparian areas are regulated by state and federal agencies and by municipal governments.

Before starting work in or around these areas, contact the MFS for help determining which agencies regulate your proposed activity. *The Forestry Rules of Maine* publication can help you get started (see page iii).

Sites of historical importance include stonewalls, cemeteries, cellar holes, old buildings, and



Eagle. Photo: Pam Wells

Native American sites. Though not a growing part of your woods, these features represent an important cultural legacy and can even provide clues about the land-use history of your property. With the exception of work requiring excavation, most forest management activities pose little threat to these cultural features. Improvements, such as walking paths, can even be built to observe these points of interest. To learn more about sites of historical importance that may be on your property, contact the Maine Historic Preservation Commission at <https://www.maine.gov/mhpc/home>.

## Invasive Species

### What Are Invasive Species?

Invasive species pose a serious threat to the forests of Maine and possibly to the health of the woods in your backyard. By federal definition, an invasive species is an organism that is not originally from an area and causes harm to the environment, the economy, or human health. Invasive insects, diseases, and plants all have the potential to negatively impact your woods. Examples of invasive species already impacting the health of Maine’s forests include emerald ash borer, winter moth, hemlock woolly adelgid, and Asiatic bittersweet. Maine’s web portal, [https://www.maine.gov/portal/about\\_me/invasives.html](https://www.maine.gov/portal/about_me/invasives.html), provides a jumping off point to learn more about invasive insects, diseases, and plants.



**Emerald ash borer. Photo: MFS**

### Recognizing and Managing Invasive Plants

Invasive plants are one of the biggest threats to Maine’s forests. That means they can be a significant threat to the woods in your backyard. Invasive plants can either grow in water (aquatic) or grow on land (terrestrial). The threats to Maine’s forests come primarily from terrestrial invasive plants, which often lack the natural predators and diseases that control their populations in their native habitat. These plants can move into an area and completely outcompete native forest vegetation. Because they grow very fast, they are able to hog sunlight, water, and nutrients—a big problem if you enjoy having trees in your woods. Invasive plants can also drastically

change animal habitat by crowding out native species that provide food, cover, and nesting sites.

You may be wondering how these invaders got here. Surprisingly, many of these plants were imported for landscaping and conservation uses. Although Maine now has a “Do Not Sell” list of invasive plants, accidental introductions through contaminated soil or equipment are still possible. Some invasive plant seeds can hitchhike in nursery stock, so always monitor new plantings.

## Recognizing Invasive Plant Species

Although many invasive plant species threaten the Maine woods, we can narrow the list down to the five that you are most likely to encounter on your property. MNAP provides detailed information on each of these species as well as many other invasive plants at [https://www.maine.gov/dacf/mnap/features/invasive\\_plants/invasives.htm](https://www.maine.gov/dacf/mnap/features/invasive_plants/invasives.htm).

### Asiatic Bittersweet

Asiatic bittersweet (*Celastrus orbiculatus*) is a deciduous vine that climbs by winding around and growing over other vegetation. These vines can strangle trees and shrubs and overwhelm entire plant communities.

Asiatic bittersweet can be found on a variety of sites but prefers forest edges. In these areas it can grow around and over other plants while receiving good amounts of sunlight. It is also commonly found in road ditches, abandoned fields, and **open woods**. Birds, that eat the fruit of Asiatic bittersweet in the winter, play a big role in the spread of this invasive plant. In addition, humans contribute to the problem by discarding flower arrangements that contain this plant in the woods.



Asiatic bittersweet ripe and unripe fruit. Photo: MNAP

## Japanese Barberry

Japanese barberry (*Berberis thunbergii*) is a woody shrub with numerous arching spine-bearing branches. This plant was a popular ornamental, because the leaves turn striking shades of red and orange in the fall. It usually grows about three feet high but can reach up to six feet.



Japanese barberry. Photo: MNAP

Because it tolerates both sun and shade, Japanese barberry can live in a variety of places. It is most often found in old fields, along powerlines, in road ditches, and within floodplains. However, it is also known to be successful in both open and dense woods.

## Shrubby Honeysuckles

Shrubby honeysuckles—both Morrow’s and Tartarian (*Lonicera morrowii* and *Lonicera tatarica*)—are upright deciduous shrubs that can grow as high as 16 feet.

Invasive shrub honeysuckles move into new areas quickly and form a dense layer that shades the ground. They prefer open locations but tolerate moderate to full shade. In addition, they grow in soils that range from moist to very dry. A short time ago people promoted them for ornamental use and erosion control.



Morrow’s honeysuckle flowers and fruit.  
Photos: MNAP

## Multiflora Rose

Multiflora rose (*Rosa multiflora*) is another highly aggressive colonizer of open land and forest edges. This rose is a prolific seed-producing perennial shrub with thorny stems.

Multiflora rose is capable of creating dense thickets that crowd out other vegetation, and its thorny branches snag on clothes and skin. Like many of the species we’ve discussed, multiflora rose continues to spread with the help of birds.



Multiflora rose. Photo: MNAP



## Norway Maple

Norway maple (*Acer platanoides*) is a deciduous tree common across the northeast. It usually grows 40 to 50 feet tall but can reach 90 feet on good sites. Unlike native maples, Norway maple's leaf stalks (or petioles) ooze white sap when broken.

Norway maple is capable of producing a large volume of seeds and the seedlings are very shade tolerant. In fact, the seedlings are often found growing in the forest understory. Treatments to control Norway maple should account for its ability to vegetatively sprout from cut stumps.

'Crimson King' is a cultivated variety of Norway maple that has purple-red colored leaves and is often (incorrectly) referred to as red maple. Although **the sale of any type of Norway maple is prohibited in Maine**, the 'Crimson King' is somewhat common throughout the state.



Norway maple tree and leaves.

Photos: MNAP

## Managing Invasive Plant Species

Dealing with invasive species on your property is very difficult. The first and most important step is to prevent new introductions of invasive plants whenever possible. Think about how invasive plants are arriving. Check with your garden supplier and ask if the plants you plan to purchase are native to Maine. Planting native species is always the best option. Then monitor areas where machinery or materials (mulch, hay, fill, etc.) were brought onto your property. These can carry invasive plant seeds or plant fragments.

The second step is to take time to properly evaluate the invasive plant situation on your property. Identifying which species you have and mapping the locations will make control efforts much more successful. Look for both large concentrations of plants and individual plants scattered throughout your woods. Taking this step to deal with invasive plants, before they become too firmly established, will save time and money in the long run.

The third step is to prioritize and set goals for your property. Controlling invasive plants can be a long, tiresome, and potentially expensive process. If you have a serious problem, it may not be economically feasible or even possible to deal with the situation all at once. Therefore, it's important to focus on high-priority areas such as significant timber stands, important

wildlife habitats, or historic sites. Setting realistic goals for managing invasive plants will help keep you on track and make the effort easier. A good approach is to treat isolated plants first and then make your way towards areas with greater numbers of invasives.

The fourth step is to implement manual, mechanical, or chemical control measures. Manual methods include pulling up or cutting plants by hand. Be sure to properly dispose of the plants, because they can resprout from the roots. Mowing is an effective type of mechanical control that works well for some invasive plants in certain locations. In many cases, chemical control with herbicides is the best option to reduce or eliminate invasive plant populations. It is important to follow the label instructions when using any herbicide. Remember, the label is the law. If you plan to apply herbicides over large areas or near waterbodies, first consult with a licensed pesticide applicator (see Maine Board of Pesticides Control, page 4). The fact sheets available on the MNAP website provide species-specific control methods that should increase your success (see [https://www.maine.gov/dacf/mnap/features/invasive\\_plants/inv sheets.htm](https://www.maine.gov/dacf/mnap/features/invasive_plants/inv sheets.htm)).

Finally, monitoring is extremely important to determine the effectiveness of control treatments. Controlling invasive plants is often a long process—especially when they’re well established. As you work and recreate in your woods, be on the lookout for invasive plants, and be prepared to take action if you find them.

## Keeping Your Woods Safe from Wildfire

### Maine Homeowners and Wildfires

In the northeast, wildfires are not as prevalent as in other parts of the country. On average, Maine’s Forest Rangers respond to nearly 500 wildfires that burn about 500 acres annually. That’s still a lot of fires and the data indicates that 75% of all Maine wildfires destroy, damage, or threaten structures. Although Maine may not have thousands of wildfires each year, like western states, we still have much to concern us.

Have you ever flown at a low altitude over the Pine Tree State and seen the vast green carpet of trees? Maine is the most heavily forested state and has thousands of homes built within the Wildland Urban Interface (WUI). The WUI is where homes and forests meet, and that presents challenges for both wildland and structural firefighters. Like many parts of the northeast, Maine’s WUI area is growing as people move away from cities to live in less populated and more heavily forested areas.

In other heavily populated areas along the East Coast, homeowners can expect the fire department to arrive within five or ten minutes. In contrast, most of the fire departments covering our WUI areas rely on local volunteer firefighters. During the afternoon, when most wildfires occur, these firefighters are at their jobs. This means that their response time is much slower than that of full-time firefighters.

## Reducing Wildfire Risk

You can reduce the risk of a wildfire damaging your home with a few simple, low-cost measures. If your house is fairly new, some of these recommendations may already be in place.

Maine's Forest Rangers recommend an average of 30 feet of "defensible space" between any structures and forested areas. This area doesn't have to be devoid of all trees and shrubs, but you can manage it to minimize risk. Properly executed, "fire resistant landscaping" could save your home from a wildfire. One method is to make pockets of shrubs and vegetation separated by well-watered grass and gravel paths that function as firebreaks. Another idea is to use the three **R**s to lessen the amount of flammable vegetation near structures. These include: **R**educing the amount of vegetation, **R**eplacing softwood trees with less volatile hardwoods, and **R**emoving most of the trees and shrubs within 30 feet of structures.

By studying how houses burn when wildfires erupt in the WUI, fire scientists discovered that such fires don't create a "wall of flames" that burns every house in an area. Typically, only certain houses catch fire. Once



they investigated these devastating fires, they concluded that many houses caught fire from airborne embers. Wind can carry these hot embers up to half a mile. They land in nooks and crannies that retain fine combustible materials such as needles, leaves, and bark mulch. Once these fine particles ignite, they spread to other parts of the structure. To reduce this risk, keep needles and leaves off roofs and away from decks and foundations.

## **Reducing Brush on Your Property**

Reducing the amount of brush near your home and other structures is another way to lessen the risk. Take it to the transfer station, rent a brush chipper, drag it further into the woods, spread it out to decompose, or have a controlled and safe brush-pile fire. If you decide to burn your brush, make sure to obtain a burn permit by contacting your local fire department or go to the Maine Burn Permit System website ([www.maineburnpermit.com](http://www.maineburnpermit.com)), and be sure to follow Maine's open-burning laws.

Although burning your brush pile during a light rain or in the evening doesn't sound like fun, those are generally the safest times. Most escaped brush-pile fires occur during the mid-afternoon, when temperatures are highest, the relative humidity is lowest, and the winds are the strongest.

Focus your time and energy on removing "fine forest fuels" such as needles, leaves, and woody material smaller than your wrist. Larger tree limbs and stumps may look unsightly, but they're actually less of a fire hazard. This type of material tends to be dense and hold a lot of moisture.

## **Thinking Like a Wildland Firefighter**

"Situational awareness" means being aware of the risk of wildfire at all times. Wildland firefighters learn to always maintain situational awareness to protect themselves, the public, and Maine's forest resources.

You should also be aware of the fire conditions in your area. Identify possible ignition sources (such as powerlines, illegal campsites, etc.) and be able to direct the fire department or a Maine Forest Ranger to the nearest water source. Under no circumstances should you attempt to fight a wildfire yourself.

To keep informed on the dryness of the forest (and the potential for a wildfire), visit <https://www13.informe.org/burnpermit/public/index.html> and click on the "Forest Fire Danger Report." This report comes out each day at 9:00 am and indicates the fire danger classification for 12 zones throughout Maine.

# “Good Fences Make Good Neighbors”

## Establishing Boundaries

Robert Frost’s observation that “Good fences make good neighbors” is as true today as when he wrote it. With higher land and timber values, clearly marked boundaries are even more important today than they were in the past. The following information about boundary lines will help you avoid disputes with your neighbors:

- ❁ An “established boundary line” means a line identified by monuments, blazed trees, signs, pins, reference points, or other markers that show a change in ownership between abutting properties. The abutting landowners must agree on the placement of these established boundary line markers, or they must be established by a licensed surveyor.



Corner post. Photo: Dan Jacobs

- ❁ Only a licensed surveyor can establish a boundary line if no blazes or monuments currently exist. Land surveyors are specialists in measuring land, the recognition of field evidence, and the laws for the surveying of real property. The licensing law and a list of licensed surveyors are available from the State Board of Licensure for Professional Land Surveyors at <https://www.maine.gov/pfr/professionallicensing/professions/surveyors/index.html>.

- ❁ A landowner or a licensed forester may maintain a boundary line where some monuments or blazes still exist. If you cannot see from one blaze to another, you should probably hire a licensed surveyor.
- ❁ Monuments, like stone posts or iron bars, are relatively permanent features established by surveyors. In contrast, tree blazes are not permanent and only mark the approximate location of the boundary line. Blazes, however, may be considered monuments when they are mentioned in your deed.
- ❁ If any part of a tree lies on a boundary line, it may only be harvested with permission from the abutting landowner.

## Maintaining Boundaries

Once your boundary line has been established by a licensed surveyor, it will need periodic maintenance to stay visible. You should plan to check the condition of your line periodically, and also plan to do some maintenance work every five to ten years. The following suggestions will help you properly maintain your boundary line over time:

- ❁ Clear a path along the boundary line for easy traveling and line visibility. Prune limbs to head height and cut small trees. Make sure to throw the brush onto your own property and to get permission before cutting vegetation on your neighbor's side of the line.
- ❁ Avoid blazing well-formed, large, or valuable trees. Blazes should be about four to five inches in diameter and located about five feet above the ground. Blaze often enough so that it is possible to see from one blaze to another easily.
- ❁ Don't blaze over old blazes. They are important supporting evidence of the original location of the line. It's acceptable to blaze directly above or below an existing blaze, as long as there is a large portion of the original blaze showing.



Old tree blazes. Photo: MFS

- ❁ Paint boundaries with high-grade, durable paint. Use colors that are easy to see and visible for long distances. Paints specifically formulated for marking boundaries are available from forestry supply companies. To ensure your work is long-lasting, paint trees only when the bark is warm and dry.
- ❁ Paint both the blazed surface and the surrounding one to two inches of bark. This will ensure that the paint stays visible as the tree grows over the wound (blaze). Repaint only the outer edge of old blazes to make them more visible.
- ❁ Pile rocks at your property's corners and coat the rocks with paint to make the location easier to find. In addition, blaze trees near the corners (and rock piles) as witnesses.
- ❁ If properly applied, high-quality paint should last at least ten years in the woods—axe blazes should last longer. Check your boundary lines periodically and make sure family members know where the lines are located.

### Commonly Used Painting and Blazing System for Boundary Lines

1. If the boundary line passes through the middle of a tree, blaze and paint on both sides of that tree where the line passes through it (Tree A).
2. Where the line passes adjacent to the tree, blaze and paint one point only, immediately adjacent to the line (Tree B).
3. Be sure to blaze and paint both sides of the line so that it can be seen from either side. This will help prevent accidental trespass.

**Taken from MFS's "Information Sheet 4: Boundary Line Information"**

## Timber Harvesting and Boundaries

Maine law protects adjoining landowners from timber trespass and damages that occur during logging operations. If you're considering harvesting timber, you should know and understand the timber harvesting regulations.

You can find summaries of boundary line, timber trespass, and slash disposal regulations in the MFS publication *The Forestry Rules of Maine* (see page iii). In addition, MFS's "Information Sheet 4: Boundary Line Information" at [https://www.maine.gov/dacf/mfs/publications/information\\_sheets.html](https://www.maine.gov/dacf/mfs/publications/information_sheets.html) is a great resource.

## Planning for the Future

Your land is part of your legacy. As a good steward, it is important to plan what will happen to your land after you are gone. In fact, planning for the future may be the most important action you can take as a landowner.

### Why Plan?

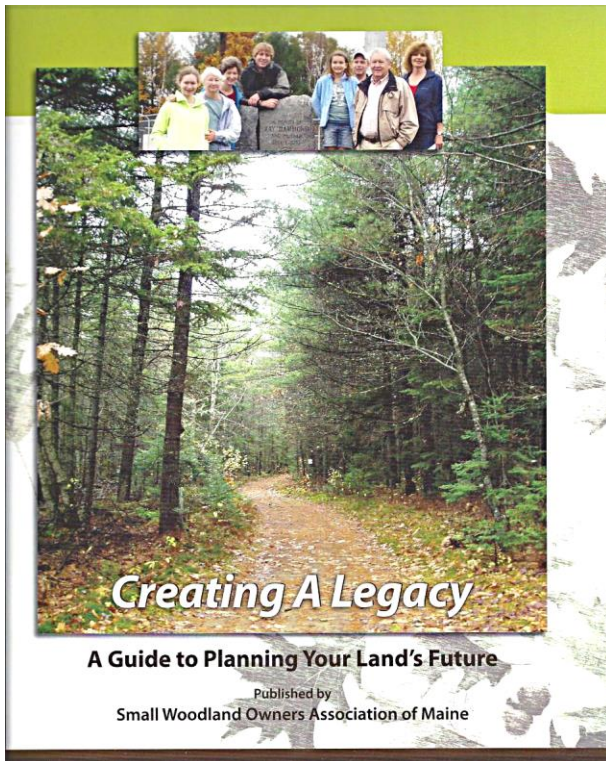
Your "estate" is the total value of all your assets. These include your land, house, bank accounts, and investments. An estate plan ensures that your assets are distributed in a way that will meet the financial and personal needs of you and your heirs.

When dividing assets among family members, it can be challenging to account for their emotional as well as financial needs. The good news is that land is a flexible asset that lends itself to creative solutions to meet your goals. The planning process takes time, and the earlier you start, the more options you will have for your land. According to the Maine Woodland Owners' (MWO) publication *Creating a Legacy: A Guide to Planning Your Land's Future*, the six succession planning steps are:

1. Get started: Estimate the value of your property.
2. Look to the future: Establish your vision and goals.
3. Expand the conversation: Engage others.
4. Create a succession plan.
5. Create an estate plan.
6. Create a calendar.



Although there are a variety of resources available on succession planning, the MWO guide is a great publication to help you get started. Included in this guide are seven worksheets to help landowners record the essential elements used in succession planning. These include a personal balance sheet and worksheets on values and goals, strategies for succession, and legal and financial instruments. The guide is free with a MWO membership. To order the guide, see MWO listed in Primary Resources on page 5 or go to <https://www.mainewoodlandowners.org/store#!/Creating-a-Legacy-A-Guide-to-Planning-Your-Lands-Future/p/43784141/category=2796145>.



Source: Maine Woodland Owners

## Do You Know?

#4. The name of the private logging road that extends 96 miles from Millinocket, Maine to St. Zacharie, Quebec?

Answer on page 120

# Backyard Family Activity #6: Getting Down and Dirty— The Soil Beneath Your Feet



The soil beneath the woods in your backyard is full of hidden life. Tiny soil microorganisms (and bigger animals like earthworms and millipedes) are the original recyclers. They turn old leaves, dead trees, and other organic matter into nutrient-rich soil. They also create tiny spaces within soil that allow oxygen and water to flow through it.

It can be a lot of fun to poke around beneath the mysterious surface of the soil to see what's below. At the same time, you can determine the quality of your soil in a more scientific manner by collecting a sample and sending it in for analysis. The University of Maine Cooperative Extension offices have soil testing kits with instructions (see Primary Resources, page 5). A lab in Maine will analyze your soil for a small fee and give you some ideas about what you can grow on your property. But first, you get to play in the dirt!

## Items Needed

- ✿ Shovel or garden trowel
- ✿ Several small glass jars (mason or jelly jars with lids work great)
- ✿ Magnifying glass
- ✿ Pen or pencil
- ✿ Soil Checklist (next page)
- ✿ Compass (optional)
- ✿ A photocopy of your Master Map (optional)

## Getting Ready

If you didn't do "Backyard Family Activity #1: Scouting Your Land" (page 24), now is a great time to go back and do this activity. It will be useful if you want to put all the Backyard Family Activities together to make a plan.

## The Activity

In this activity you will collect soil samples and assess their properties. You will also look for differences among your soil samples and differences in vegetation among your sample locations.

## Soil Checklist

- Describe what grows on the site. Are there softwoods (like pine and spruce), hardwoods (like oak and maple), ferns, or mosses?
- Describe the terrain. Is the site on a hill or slope? Is it in a flat area or depression?
- Describe the soil's color. Is it orange-brown, the color of coffee grounds, or khaki-colored? Does it look more like chocolate ice cream or whole wheat bread?
- Describe the soil's smell. Does it smell fresh, clean, rich, or like rotten eggs?
- Describe the feel and texture of the soil by rubbing it between your fingers. Does it feel gritty like sand or sticky like clay? It may also feel smooth like silt.
- Describe the soil particles. Look closely with a magnifying glass. Are they large, small, or both? Can you see them easily?
- Describe any little creatures in the soil. What do you see? Draw them if you don't know what they are.
- Describe the organic components you see in the soil—such as pieces of leaves, twigs, small roots, seeds or nuts.

## Timeframe

One to two hours.

## Steps

1. Follow the compass bearings established in “Backyard Family Activity #1: Scouting Your Land,” or simply walk through your woods until you notice a change in vegetation type. If you made a Master Map, stop and draw the vegetation boundary line on it. For example, the transition from a hardwood forest to a mossy area with ferns may indicate a soil change.
2. Dig a small hole in both areas. Although soil pits are usually three feet deep, a foot or less should be sufficient for this activity.
3. Take samples of the topsoil from each location (about three or four inches down) and put them in separate jars. Do not fill the jars

completely or pack down the soil in the jars. A half cup of soil from each site should be enough.

4. Label the jars Site #1, Site #2, and so on. Write the site numbers down on the Master Map if you're using one.
5. With your magnifying glass, look closely at the soil samples and describe what you find. You may find earthworms, parts of leaves, pebbles, and/or twigs in your sample. Then compare your samples to one another using the "Soil Checklist." If you have a copy of the Master Map, write your soil notes on it in the appropriate locations for each soil-sample site.
6. Take your samples home and add enough water to almost fill each jar. Then put the lids on and shake hard for several minutes—until all the soil is suspended in water. No clumps should remain. Then let the samples sit overnight without moving them.
7. The soil will settle in layers with the largest particles (like pebbles) reaching the bottom first. The largest particles will be followed by sand, silt, and clay (on top). Organic matter may float. Once the soil has settled and the layers are established, you can compare your samples. Compare the thickness of the soil layers in each sample. Look for organic matter floating in the water in one or more of your samples. Take your time to study the samples and have fun making comparisons.
8. Now think about how the differences in your soil samples may relate to the differences in the vegetation between the sample locations. Why do you think you found certain trees and vegetation in one site but not the other? Does the soil give you any clues?
9. Send your soil samples to the lab for analysis using a kit from the University of Maine Cooperative Extension office (see Primary Resources, page 5). When you get the results, compare them to what you observed.

This Backyard Family Activity was adapted from American Forest Foundation, Project Learning Tree, *Soil Stories* (1993).



Source: Rondi Doiron

## Follow-Up Activity: Digging a Soil Pit

This follow-up activity is intended to expand upon the work you did in “Backyard Family Activity #6: Getting Down and Dirty.” It will give you a better understanding of the soils found in your woods and soil properties in general.

In this activity, you will dig one or more holes (pits) in your woods that are deep enough for you to see the different soil layers. The layers (or horizons) will vary in color and should be fairly easy to distinguish. Starting below the leaf litter, these layers include the organic layer (O horizon), the topsoil (A horizon), and the underlying mineral soil layers (B and C horizons).

A soil pit allows you to see and feel the texture of the different colored soil layers. Try to make some observations about the ratio of sand, silt, and clay in each layer. Comparing the properties of the different soil layers can be challenging and informative.

Selecting the location of your soil pit or pits should be a fun and thoughtful process. If you observe a significant change in vegetation in your woods, you may want to dig more than one pit to compare the soils. In this case, the sample locations from the previous activity can be re-used. The result will be one soil pit located in each of the two vegetation types. If you dig only one pit, think about choosing a place that’s representative in slope and vegetation to the rest of your property.

To complete this activity, you’ll need a sharp-edged shovel to dig a pit with clean, sharp sides. This will allow you to clearly see the different soil horizons. Stop digging when you’ve reached a depth of about three feet. Remember, the soil will change color and texture from layer to layer.

Now it’s time to create a sketch of the layers in your soil pit (or pits). Estimate the thickness of each layer and note it on your sketch. The Soil Checklist from the previous activity can help you gather information and better understand the soil layers you uncover. In addition, *The Soils of Maine* by Ferwarda, et al. (1997) will be useful as you make observations about the soil and its various layers (see [https://digitalcommons.library.umaine.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1001&context=aes\\_misreports](https://digitalcommons.library.umaine.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1001&context=aes_misreports)).

The information you gathered in this activity will be helpful as you plan and implement projects in the woods in your backyard.