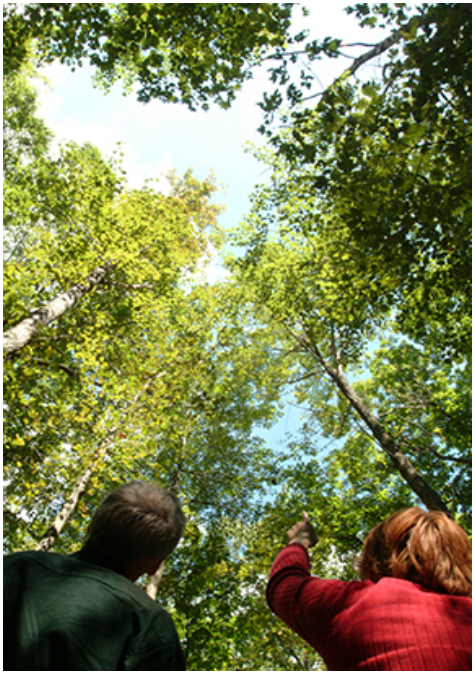

The Woods in Your Backyard Workbook

Designed for use with *The Woods in Your Backyard, 2nd edition*

www.extension.umd.edu/woodland/woods-your-backyard

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The Woods in Your Backyard Workbook

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How to Use this Workbook

This Workbook is designed for use with the guide, *The Woods in Your Backyard, 2nd edition* (or "the Guide"), and can assist your stewardship efforts in your natural areas. The Activities, Tables, Case Studies, and Appendices will aid you to achieve your objectives for taking care of your property and will enable you to enhance your personal values for your land.

The Workbook includes content that is directly related to concepts and practices presented in the Guide. Some activities contain references to content found in the Guide. Users should refer to the Guide for more information. Additionally, some activities refer the user to additional information within this Workbook. Consult the table of contents for the location of this information.

Because every property is different, and because every property owner wants different outcomes from his or her stewardship efforts, not every activity in the Workbook will apply to every natural area.

For more information about ordering "The Woods in Your Backyard" guide and the "Woods in Your Backyard" program, visit our website at http://extension.umd.edu/woodland/woods-your-backyard.

If you haven't done so, now is a good time to begin your Stewardship Journal, as outlined in the Guide. Your Journal will provide you with an opportunity to record your observations of and interactions with your property and your woodlands as you progress through the Activities outlined in this workbook.

Activity 1: Family Goals Assessment

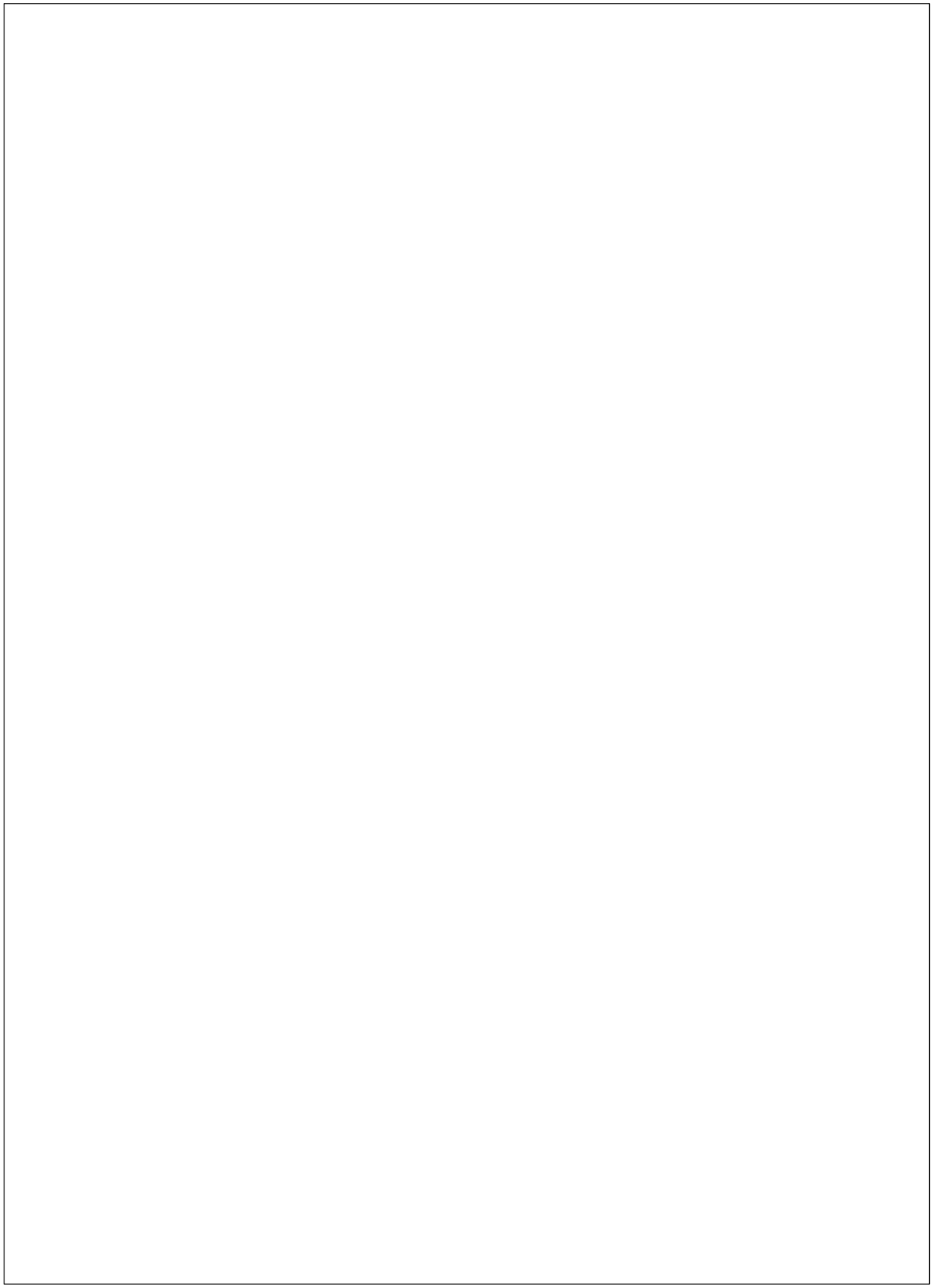
Print copies of this page for each member of your family or work team. Anyone who is or will be involved in your property should privately answer the questions below. (Note: Every statement may not apply to everyone's situation.)

	Agree	Disagree
I would like to have more natural areas and less mowed land.	☐	☐
I do not understand what kinds of land management projects are possible and what is involved with each.	☐	☐
I'm very enthusiastic about making changes to improve the land stewardship of our property.	☐	☐
Any new land management projects are too much for us to handle now.	☐	☐
I am worried about how land management projects will affect our time for other family and/or personal activities.	☐	☐
I am concerned that other family members do not understand what I value most about our property.	☐	☐
I believe we could handle the financial cost of carrying out some land management activities on our property.	☐	☐
It's important for the children to learn to work the land, even if other activities have to be reduced.	☐	☐
I believe my opinions and feelings about potential new projects on our property will be taken seriously.	☐	☐

After everyone has completed the questionnaire, gather to discuss the answers. Where do you agree and disagree? Is there adequate family support for devoting time and money to some natural lands management projects? If only one member of the family is really interested in pursuing land management, it may be best to start small and plan short-term projects. Maybe other family members will become interested as they see progress made. Reconcile misunderstandings or disagreements before proceeding.

Activity 2: Map It Out

Use the space on the following page to create your property map. If you choose to create a hand-drawn sketch, use about two-thirds of the space to draw your property, because you'll be adding to your map later. If you created a digital map from Google Earth or a similar mapping program, save the image as a file less than 5.5 inches wide by 8.0 inches high, as you will add to the map later.



Activity 3: Designate Habitat Units

These characteristics will help you identify habitat units:

- Vegetation maturity: tall (>30 ft/10 m.) or short (<30 ft./10 m.)? Young or mature?
- Vegetation type: **deciduous**, **coniferous** or **mixed**? (See the Glossary in the Guide for definitions.)
- Vegetation class: trees, shrubs, tall grasses, lawn, old field, stream, pond, other?

The habitat units you designate will likely differ by size and shape. Two patches of the same habitat unit type might be disconnected, such as two or more patches of lawn you want to stop mowing and plant in trees. See the case studies in the Appendix (on pp. 32-47) for further examples.

Write down the habitat units you see as you walk around your property (e.g., "shrubby area by back border," "eastern white pine stand behind wood shed," etc.). Ignore the intensive and intermediate-use areas of your property unless you want to stop mowing an area there as well.

1. ghhgjfghj _____
2. _____
3. _____
4. _____
5. rtrtn _____

Print Worksheet A, "The Vegetation on Your Land," found on page 10. Use your answers from this activity to fill in the "Habitat unit" and "Vegetation type" columns of Worksheet A with information related to your land. Use the Nelsons' worksheet in Chapter 1 of the Guide and the worksheets in the case studies in the Appendix for assistance. If you have more than four land management areas, use another sheet. You will fill in the remaining columns when you complete Activities 4 and 12.

Refer to the map you created in the “Map It Out” section (Chapter 1 of the Guide). Name, outline, and number your property’s various habitat units on the map. See the Nelsons’ Habitat Units sketch map in Chapter 1 of the Guide.

Worksheet A: The Vegetation on Your Land

Habitat Unit (Activity 3)	Vegetation Type (Activity 3)	Succession Stage (Activity 4)	Three most common tree species (Activity 12)	Three most common shrub species (Activity 12)
Habitat Unit 1 name				
Habitat Unit 2 name				
Habitat Unit 3 name				
Habitat Unit 4 name				
Habitat Unit 5 name				

Activity 4: Identify Successional Stages

What successional stages exist in each of the land management units in your natural area? Fill in your answers in the middle column of Worksheet A. Refer to the Chapter 2, Section Three, “The Dynamic Natural Area: Principles of Succession,” in the Guide for more information on successional stages. Note that Worksheet A will be completed with information from Activity 12.

Activity 5: Assess Competition Among Trees

Note: This activity is best done when leaves are on trees.

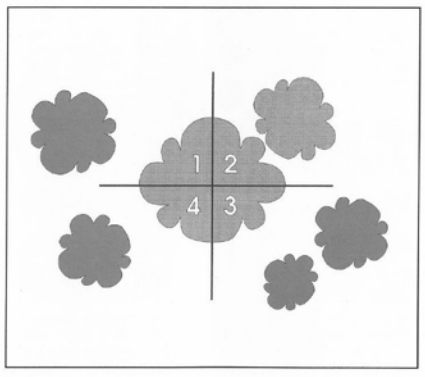
Choose a tree you want to keep (called a crop tree) because it meets your land stewardship objectives and has its crown extending into the main forest canopy. Stand underneath the tree and determine if there is open space around 0, 1, 2, 3, or 4 sides of the canopy. Is the crown distinct or does it touch others? Is there a patch of sky visible on any side of the crown? Record your observations in the Crown Competition table below. (Depending on how many forested habitat units you have, you may not need all the columns.) Repeat this process until you have assessed three or more crop trees in each forested habitat unit in your natural area.

Next calculate the average the number of open sides for each habitat unit (see the example below). In the bottom row of the crown competition table, answer "yes" or "no" to the question, "Is thinning recommended?" Answer "yes" if the average number of open sides per management unit is less than two. This information will also be used in the next Activity. See "Thinning" in Chapter 4, Section Two for more information about thinning.

Crown Competition

Example:

	Crop Tree 1	
Habitat unit	1	
Species, if known	yellow poplar	hickory
Canopy open on __ sides	2	0
Average open sides per habitat unit	1	



The crop tree in the middle has room to grow on three sides.

	Crop tree 1	**Crop tree 2**	**Crop tree 3**	**Crop tree 1**	**Crop tree 2**	**Crop tree 3**	**Crop tree 1**	**Crop tree 2**	**Crop tree 3**
Habitat unit	1			2			3		
Species, if known									
Canopy open on __ sides									
Average open sides per habitat unit									
Thinning recommended?									

	Crop tree 1	**Crop tree 2**	**Crop tree 3**	**Crop tree 1**	**Crop tree 2**	**Crop tree 3**	**Crop tree 1**	**Crop tree 2**	**Crop tree 3**
Habitat unit	4			5			6		
Species, if known									
Canopy open on __ sides									
Average open sides per habitat unit									
Thinning recommended?									

Activity 6: Assess Tree Reproduction

A healthy natural area will contain trees of all different heights. Walk your forested natural area. Are many trees less than 6 feet tall present? Using Worksheet B, "Natural Area Health," found on the next page, transfer your "Yes" or "No" answers from Activity 5 to the column labelled "Thinning Recommended?" Under "Young trees present?," mark "Yes" or "No" for each land management unit. If there are few young trees less than about six feet (two meters) tall, you may have an overpopulation of deer or you may need to do some thinning. (Note that you will also use Worksheet B for Activities 7 and 8.) See Chapter 4 for tips on dealing with deer and for information on thinning.

Worksheet B: Natural Area Health

Habitat Unit (Activity 3)	Thinning recommended? (yes or no) (Activity 5)	Young trees present? (yes or no) (Activity 6)	Broken or dead? (yes or no) (Activity 7)	Exotics/Invasives? (list names) (Activity 8)
Habitat Unit 1 name				
Habitat Unit 2 name				
Habitat Unit 3 name				
Habitat Unit 4 name				
Habitat Unit 5 name				

Activity 7: Survey for Broken and Dead Trees

Survey each forested habitat unit for broken and dead trees. Mark “Yes” or “No” in Worksheet B under the column “Broken or dead?” for each habitat unit. Broken or dead trees may result from wind or storm damage, or may indicate an insect or disease problem that needs attention.

When you have time to address any problems you find, deal first with trees that pose a danger to people or buildings. See “Pruning” in Chapter 4 for more information.

Activity 8: Assess Invasive and Exotic Plants

For each habitat unit, note in Worksheet B under the column “Exotics/invasives” the names of any invasives and/or exotic plants that are widespread. See Chapter 2, Section Four, “Principles of Forestry,” for more information on invasive and exotic species.

Activity 9: Water Resources Around You

Walk your natural areas and note on your Chapter 1 map any ponds, rivers, streams or lakes. Note areas where you could create or enhance a riparian buffer. Also note areas that are wet much of the year, where you suspect or know that a spring, seep, or vernal pool occurs. Print Worksheet C, "Assessing Your Land's Potential" (found on the following page). In the "Water resources" column, describe how you might improve water resources in any applicable habitat unit. Add these features to your map from Chapter 1.

Are there any water bodies on your neighbors' property? Can you do anything on your property or in cooperation with your neighbor(s) to enhance wildlife use of those areas or to improve water resources?

_____

_____

_____

_____

_____

Worksheet C will help you assess your natural area's potential. Note that Worksheet C also will be used for Activities 9, 12 and 13.

Worksheet C: Assessing Your Land's Potential

Habitat Unit (Activity 3)	Water resources (Activity 9)	Wildlife and habitat elements (Activity 10)	Recreation (Activity 13)	Aesthetics (Activity 14)
Habitat Unit 1 name				
Habitat Unit 2 name				
Habitat Unit 3 name				
Habitat Unit 4 name				
Habitat Unit 5 name				

Activity 10: Habitat Elements on Your Land

Tour your natural area in search of habitat elements as described in Chapter 2's "Wildlife Ecology." You may discover edge habitats, brush piles, snags, streams, seeps, vernal pools, and more. Note them in Worksheet C for each habitat unit, and add them to your map from Chapter 1's "Map It Out."

Activity 11: Investigate the Legal Constraints on Your Land

Check your property deed and homeowners association documents for easements, rights-of-way, and covenants that govern the use of your property. (Some examples of these types of legal constraints were covered in the reading).

Record below any constraints you discover. Mark where they apply on the map you created in Chapter 1 of the Guide. If you find out that your property has none of these constraints, also note that.

Easements – _____

Rights of way – _____

Covenants –_____

Other constraints – _____

Optional – Talk with municipal or county officials about your area's zoning ordinance, or obtain a copy of a recent growth planning report. Find out where growth is planned or projected around you, what kinds of new facilities and roads are planned, and how they might affect your property and your ability to manage your land.

Activity 12: Get to Know Your Trees

Using the steps outlined in the Guide's Chapter 3 section, "Identify the Trees and Shrubs on your Land," and a tree and shrub identification guide, identify the three most common tree species and the three most common shrub species in each habiat unit of your natural area. If you cannot identify three kinds in each unit, do the best you can. Some units might contain only tree or shrub species (e.g., such as a pure stand of eastern white pines). Fill in the tree and shrub columns in Worksheet A. You may wish to consult the case studies in this Workbook which show some typical combinations of species of trees and shrubs in the Mid-Atlantic area.

Activity 13: Assess Your Natural Area's Suitability for Recreation

Take a walk around your natural area and assess where your recreational interests might be best accommodated. Note your results in Worksheet C. Mark your ideas on the property map from Chapter 1's "Map It Out."

Activity 14: How to Improve Your Natural Area's Aesthetic Appeal

Walk your natural area and assess its current state of physical beauty. Consider how it looks in each season of the year. Do any of the ideas mentioned in Chapter 4's "Land Care Practices" interest you? Note on Worksheet C and on your property map (from Chapter 1) how and where you could improve your natural area's aesthetic appeal.

Activity 15: Identify and Rank Your Objectives

Look back at your Family Goals Assessment (Activity 1). With those interests in mind, and what you've learned since then, print the table on the following two pages. Complete it to identify and rank your specific natural area objectives. If an objective interests you or you agree with the statement, and it seems possible for your natural area, given what you now know, mark an X in the "Potential objective" column. Then, for the entire table, rank your top five objectives if you choose. There is a space in each section for you to write your own objective. See the case studies in this Workbook for more examples of completed tables.

Objectives to meet your goals	Potential objective	Rank selected objectives
Natural area improvement I have a grassy field or lawn I want to plant in trees.		
I want to manage exotic and/or invasive species.		
I want to improve the health of my natural area.		
I want to improve forest regeneration (tree reproduction).		
I want my trees to grow faster.		
I want to cut dangerous dead or damaged trees.		
I want to cut vines that are strangling and/or weighing down my trees.		
Other:		
Other:		
Forest products I want to cut firewood for myself or others.		
I want to start a forest products enterprise for fun and a little extra money.		
Specific enterprise of interest:		
Other:		
Other:		
Wildlife habitat elements I want to create some snags for woodpeckers and other cavity-nesting animals.		
I want to create a soft edge between my lawn and forest to improve wildlife habitat diversity.		
I want to provide more shelter and/or food for wildlife.		
I want to have more reptiles and amphibians.		
I want to discourage deer.		
I want to attract more wildlife to my property.		
Specific species of interest, if applicable:		
Other:		

Water resources I want to create or enhance a riparian forest buffer.		
I want to protect the water quality in my waterway or spring/seep.	☐	
Other:		
Other:	☐	
Recreation I want to build a recreational trail.		
I want to build a road to provide or improve vehicle access.	☐	
I want to create a special place in the woods for reflection, campfires, etc.	☐	
I want to create a place for nature study.		
I want to build a tree stand for deer hunting and/or wildlife viewing.		
Other:	☐	
Other:		
Aesthetics I want to make my forest more colorful throughout the year.		
I want to block an unpleasant view or have more privacy.		
I want to create a scenic view.	☐	
I want to protect some special trees.		
Other:		
Other:		

Congratulations on completing a step-by-step assessment of your natural area resources and identifying your land management goals. Now, think about putting your ideas into practice.

Activity 16: Project Schedule and Details

Print the table on the following page and complete it for specific projects you want to complete. When it is done, you'll know where to begin on your land management projects. Do not get discouraged if you fall behind schedule. Remember that doing any well-planned land management work is better than doing none. Each little step you take will move you closer to your goals. Keep at it and re-adjust your timetable as needed once you have a better feel for how you're progressing.

Habitat Unit	Goal	**Project description** (Provide details and step-by-step activities)	Priority	Start date	Projected completion date	Who will do it?	Cost estimate

Activity 17: Record Your Progress

Take photos of your land as your projects progress, and place them in the pages below. Use the table on the third page of this activity to track your progress and record what you learn through practical experience.

Your Natural Area Photos

Your Natural Area Photos

Actual Project Completion Data				
Habitat Unit	Project	Date Completed	Actual cost vs. projected cost	Comments
1				
2				
3				
4				
5				

Case Study 1: The Lees

Property description and why we bought the land

We (my husband, Philip, age 55, and me, Gloria, age 57) bought our 1.5-acre lot 25 years ago as the site for our new home. We wanted to build a passive solar house, so the site had to have good sun exposure. We wanted to buy a lot large enough to have a canning garden, a small orchard, and a Christmas tree plantation yielding about 20 trees a year, and to be separate from our neighbors.

The lot we bought was just about perfect. It's long and relatively narrow, about 480 feet long and 130 feet deep. A wooded fencerow runs behind the house. Behind that on the north side, along the edge of our property, there's a narrow right-of-way that the local electric company keeps open. This provides a path through the thicket that has developed behind the house. We often see deer, turkeys, and rabbits along this pathway. On the west side there's a patch of mixed deciduous trees with some conifers in the back corner and lawn in the front corner. In the back corner on the eastern side we planted Christmas trees soon after we moved in. A stream, Trout Run, lies over the hill about 250 yards to the north on our neighbors' property. It isn't very wide, but it has some small pools—somewhere for animals to drink even in the driest years.

Changes over time

Now, nearly 25 years after buying the lot, things have changed. We didn't really manage it, so the Christmas tree plantation (Douglas firs) no longer provides any trees. Some of these trees are now pushing 30 feet in height. The wooded patch on the west side of the property has a mix of European alder, Scotch pine, eastern white pine, American elm, basswood, black walnut, and a couple of red oak trees. The tallest trees are probably 40 feet tall. The fencerow behind the house is widening. It now extends about 25 feet in places into our property. The fencerow has some trees, mostly ash, black cherry, black walnut, elm, and bass- wood, but much of the greenery is bush honeysuckle and autumn olive—exotic, invasive plants.

Where to go from here

We'd like to convert the lawn area on the west side to trees for more privacy. We'd also like to keep all the native trees throughout the woods on the west side and encourage even more trees. We don't like the fact that the fencerow is full of exotic plants, because they are really pushy. Every year, they take over more of the lot and make it hard to see into the edges. We never planted these species; they just showed up on their own. We'd like to open a patch in the Christmas trees, creating a natural haven or quiet place to sit. Deer and birds use this small patch of trees—it is a special place on the property.

The Lees' statement of interests

1. Remove exotic plants as much as possible; keep native wildlife food plants (walnuts, oaks, some grapes).
2. Plant lawn on west side in trees for more privacy.
3. Develop a natural haven in the Douglas fir area.

Land Characteristics and Potential
(a combination of Worksheets A, B, and C)

Habitat unit	Vegetation type	Three most common tree species	Three most common shrub species	Succession stage	Thinning recommended? (yes or no)	Young trees present? (yes or no)
1	west woods–mixed hardwoods and a few conifers	European alder, Scotch pine, American elm	sumac	3	no	yes
2	north fencerow	ash, black cherry, walnut	bush honeysuckle, autumn olive, mile-a-minute vine	2–3	no	yes, mostly invasive and exotic species
3	Christmas tree planting	Douglas fir	grapevine blackberry, sumac	3	no	no
4	west lawn	n/a	n/a	1	n/a	no

Land Characteristics and Potential
(continued)

Broken or dead? (yes or no)	Exotics/ invasives (list names)	Water resources	Wildlife and habitat elements	Recreation	Aesthetics
yes	garlic mustard, English ivy	n/a	Soft mast; winter cover	Deer trails present, but no maintained trails for wildlife viewing or access.	Green foliage of pines all winter provides color in winter landscape.
no	bush honey-suckle, autumn olive, multi-flora rose	n/a; Trout Run downhill on neighbor's land; close enough to expect occasional wildlife moving to and from the stream.	Soft mast from brambles and shrubs, dense thicket for shelter, soft edge.	Good wildlife viewing opportunities but no main-tained trail access.	Invasive species and other vegetation smothering trees and making it hard for tree crowns to develop for fall foliage color.
Yes, some fir trees are dying or dead.	grapevine	n/a	Dense winter cover, soft mast, a few dense thickets.	Some existing deer trails could be developed as walking trails.	Secluded location provides for solitude.
4	lawn grass	n/a	none	Lawn games	Plant in trees for privacy.

Identify and Rank Your Objectives

	Potential objective	Rank selected objectives
Natural area improvement		
I have a grassy field or lawn I want to plant in trees.	X	2
I want to manage exotic and/or invasive species.	X	1
I want to improve the health of my natural area.	X	4
I want to improve forest regeneration (tree reproduction).		
I want my trees to grow faster.		
I want to cut dangerous dead or damaged trees.		
I want to cut vines that are strangling and/or weighing down my trees.		
Other:		
Forest products		
I want to cut firewood for myself or others.	X	
I want to start a forest products enterprise for fun and a little extra money.		
Specific enterprise of interest:		
Other:		
Wildlife habitat elements		
I want to create some snags for woodpeckers and other cavity-nesting animals.		
I want to create a soft edge between my lawn and forest to improve wildlife habitat diversity.		
I want to provide more shelter and/or food for wildlife.	X	5
I want to have more reptiles and amphibians.		
I want to discourage deer.		
I want to attract more wildlife to my property.	X	
Other: I want to attract more hummingbirds and butterflies.	X	
Water resources		
I want to create or enhance a riparian forest buffer.		
I want to protect the water quality in my waterway or spring/seep.		
Other:		
Recreation		
I want to build a recreational trail.		
I want to build a road to provide or improve vehicle access.		
I want to create a special place in the woods for reflection, campfires, etc.	X	3

Identify and Rank Your Objectives
(continued)

	Potential objective	Rank selected objectives
I want to create a place for nature study.		
I want to build a tree stand for deer hunting and/or wildlife viewing.		
Other:		
Aesthetics I want to make my forest more colorful throughout the year.		
I want to block an unpleasant view or have more privacy.	X	
I want to create a scenic view.		
I want to protect some special trees.		
Other:		

Project Schedule and Details

Habitat unit	Goal(s)	Project description (Provide details and step-by-step activities)	Priority	Project start date	Projected completion date	Who will do it?	Cost estimate
4-west lawn	plant to trees	Use Roundup herbicide on the grass in the fall before planting in the spring. Use some conifers for winter privacy. Use mainly shade-intolerant trees, including eastern white pine, yellow poplar, black locust, red oak, black cherry, gray dogwood, and loblolly pine. Order bare root seedlings from state nursery in late fall. Plant on a 10' x 10' spacing in this ¼-acre area (~75 trees).Install a tree shelter and a wooden stake around each hardwood seedling to protect it from deer browsing. Conifers typically do not need shelters because deer tend not to eat them. If necessary, use wire mesh to protect them. Re-spray the grass between the hard- wood rows with herbicide in the summer after planting if needed. Mow around conifers instead of using herbicide. If desired for a neater appearance, mow between rows until canopy closes.	1	This fall	End of next spring	Phillip and Gloria with help from their child Robin.	$100 for plants at ~$1.35 per plant; $30 for Roundup herbicide and backpack sprayer. $250 for tree shelters and stakes at $4–5 each (50 shelters; ~25 conifers)
through- out the property	manage exotic species	The various exotic plants are competing with native species. Herbicide invasive species on ground using Roundup in a back-pack sprayer in early spring, late summer, and fall. Cut most grapevines. Start in the north fencerow, then west woods, then Christmas tree grove. Clear trail as necessary to access invasives and to provide access to property.	2	This spring	Continuous in growing season	Phillip, Gloria, and Robin	Estimated $35 per year for herbicides and $50 for saw maintenance
3-Christmas tree grove	create a natural haven	Create an opening by removing dead or dying trees. Install a bench and plant some flowering trees and shrubs. If time allows, create openings for a campfire circle or camping area.	3	Next spring	End of next spring	Phillip and Robin will create the opening and Gloria will do the planting.	$100 for bench materials; $100 for trees and shrubs
1-west woods	white pine planting	As exotics are cut, replace them with white pine.	4	This spring	Continuous	Gloria	$50 for seedlings

Case Study 2: The Rothmans

Property description and why we bought the land

Recently, we (my wife, Aliza, age 44; me, Hirsh, age 45; our children, Jody, age 17, and Chris, age 15) purchased a site for our new home. We call it the Pine Woods. For several years, we'd been searching for the ideal place to build. We wanted a forested tract with good access into the woods and the home site, yet isolated enough that we felt we were in the woods. We also wanted a relatively large tract with diverse tree species and wildlife management opportunities.

The Pine Woods meets our needs perfectly. The total area is about 10 acres. The lot is on a dirt road off the road to town. Once the dirt road enters the woods, it loops completely around the property and we own the entire loop. This will give us a place to walk and easy access to firewood to help heat the house.

The property has three streams that flow year- round. Two of them (Rocky Run and Stony Creek) originate from springs on the property. The one on the east side (Farm Creek) starts at a spring just over the property line. We thought maybe we could make a pond on the property, but the soil has limestone under it and we've been told that building a pond here would not be easy. That's okay because we like the streams.

Land management history

The Pine Woods is on the north side near the bottom of a large hill. In some areas there are lots of rocks on the surface, but we are told that the soil is really productive. Because of the rocks, the site was never cleared for farming; however, there is wire in some of the trees, so we think that parts of it may have been pastured.

The previous owner, Chuck Brown, who still owns some of the land to the southwest of us, had done some timber harvesting in the woodlot over the past 20-some years. He had worked with a state forester on each occasion to meet his specific objectives. His

objectives closely paralleled our interests, except we don't need to earn income from timber sales. How- ever, if sometime in the future we make some timber income, that'd be fine.

Anyhow, Mr. Brown did some cutting for wildlife. On the north side, near our neighbor's cornfield, there's a small cut (less than an acre in total) done in the early 1980s to leave nut-producing hickory trees and to make some wildlife cover. This has come back mostly in eastern white pine. Two of the remaining hickories have since blown over, and the area where they stood is full of what we've been told are "exotic invasive plants." Most of them are honeysuckle, multi- flora rose, barberry, and autumn olive. We don't know anything about these plants, but have been told that they are not desirable.
In the southeast corner of the property is a 2-acre clearcut that Mr. Brown did for two reasons: first, to make some money to pay for the road that loops through the woods, and second, to open the forest around some aspen trees. Again, we don't know much about these trees, but are told they are important for ruffed grouse. Many little aspens have sprouted in this area, but another invasive plant, Asian bittersweet, is quickly crowding them out. We've been cautioned that we should cut the Asian bittersweet, but we want to leave a bit of it because this fall the plants were full of pretty orange berries that work really well in dried flower arrangements.

To the west of this clearcut, there is another area of cutting. Mr. Brown liked this spot because it's near an old foundation that he says dates back to the late1700s. In about 1984, Mr. Brown decided to cut most of the black birch trees in this area and to leave some really tall eastern white pine trees. Now, about20 years later, the whole area is full of young white pine trees that are 6 to 25 feet tall. It's so quiet and restful among all those trees. We plan to build our house among these pines, near the old stone foundation, which we intend to work into our landscaping, preserving its historic value.

The biggest portion of the property is encircled by the road. It consists of a mature deciduous stand with quite a few white pine mixed in. This kind of vegetation also runs along the northern border of the property. The area along the streams is shrubby and

dense. There are some standing dead trees with large holes in them. The kids have seen birds flying in and out of these holes. There are some areas of broken and damaged trees.

We've learned a lot about the woods from Mr. Brown. He really loved the area. Like we said earlier, his objectives and ours mostly mesh. He wanted to produce firewood, encourage wildlife, have a place to hunt deer, and earn some income. We need the firewood, welcome the wildlife, and will still allow Mr. Brown to hunt with a bow on the property as long as he tells us when he'll be out there. We want to keep the deer population in check. We know we have a lot to learn.

The Rothmans' statement of interests

1. Produce one to two cords of wood annually to heat the house and woodshop.
2. Encourage a variety of wildlife.
3. Maintain a healthy forest.
4. Maintain stream culverts in good repair.

Land Characteristics and Potential

(a combination of Worksheets A, B, and C)

Habitat unit	Vegetation type	Three most common tree species	Three most common shrub species	Succession stage	Thinning recommended? (yes or no)	Young trees present? (yes or no)
1	north edge hickory wildlife cutting (early 1980s)	hickory, white pine, red oak	honeysuckle	3	no	yes
2	1997 aspen clearcut 2 acres)	aspen, elm	Asian bittersweet, grapevines	2–3	no	yes
3	1984 Pine Woods cut	white pine, red oak, black birch	spicebush	3	no	yes
4	bulk of property	white pine, elm, black birch, red maple, sugar maple, hickory	hop hornbeam	4	yes	yes

Land Characteristics and Potential
(continued)

Broken or dead? (yes or no)	Exotics/ invasives (list names)	Water resource	Wildlife and habitat elements	Recreation	Aesthetics
2 toppled hickories	honeysuckle, autumn olive, multiflora rose, barberry, grapevines	Farm Creek is near edge of this patch.	Hickory and oak mast trees, white pine, grapevines. Farm Creek nearby.	Good place for wildlife watching, but there's no place to sit. Invasives cover up old hiking trails and make access difficult.	n/a
no	bittersweet, grapevines, multiflora rose	n/a	Aspens, grouse habitat, early successional habitat, grapevines.	Good for wildlife watching. Lack of maintained trails to provide easy access.	n/a
no	barberry	Rocky Run and Stony Creek originate here. Dense thicket.	White pine, oak mast, black birch, early successional habitat. 2 springs.	Lack of main- tained trails for access.	Clear around old foundation and integrate into yard.
a few	barberry	Rocky Run and Stony Creek pass through. They pass under the dirt road in culverts.	Hard and soft mast. A few snags and cavity trees. Some dense thickets. Stream habitat.	Deer trails but few maintained hiking trails for access. Many secluded areas with open under- story that could be used for camping or fire circle. A few old hunter's tree stands scattered through- out the area.	Good fall color from sugar maple.

Identify and Rank Your Objectives

	Potential objective	Rank selected objectives
Forest improvement I have a grassy field or lawn I want to plant in trees.		
I want to manage exotic and/or invasive species.	X	4
I want to improve the health of my natural area.	X	3
I want to improve forest regeneration (tree reproduction).	X	
I want my trees to grow faster.	X	
I want to cut dangerous dead or damaged trees.	X	
I want to cut vines that are strangling and/or weighing down my trees.	X	
Other:		
Forest products I want to cut firewood for myself or others.	X	1
I want to start a forest products enterprise.	X	
Specific enterprise of interest:		
I want to commercially harvest high-value trees.	X	
Other:		
Wildlife management I want to create some snags for woodpeckers and other cavity-nesting animals.	X	
I want to create a soft edge between my lawn and forest to improve wildlife habitat diversity.		
I want to provide more shelter and/or food for wildlife.	X	2
I want to have more reptiles and amphibians.	X	
I want to discourage deer because they eat understory vegetation.		
I want to attract more wildlife to my property so I may enjoy viewing them.	X	
Other:		
Water resources I want to create or enhance a riparian forest buffer.		
I want to stabilize a stream bank that is eroding.		
Other: I want to protect the road in the woods from erosion.	X	5
Recreation I want to build a recreational trail.	X	

Identify and Rank Your Objectives

(continued)

	Potential objective	Rank selected objectives
I want to build a road to provide or improve vehicle access.		
I want to create a special place in the woods for reflection, campfires, etc.	X	
I want to create a place for nature study.		
I want to build a tree stand for deer hunting and/or wildlife viewing.		
Other:		
Aesthetics I want to make my forest more colorful throughout the year.		
I want to block an unpleasant view or have more privacy.		
I want to create a scenic view.		
I want to protect some special trees.		
Other:		

Project Schedule and Details

Habitat unit	Goal(s)	Project description (Provide details and step-by-step activities)	Priority	Start date	Projected completion date	Who will do it?	Cost estimate
Mainly 4, some 3	Cut 1 to 2 cords of firewood annually; remove black birch trees	Birch occurs throughout units 3 and 4, often competing with more desired trees (e.g., white pine, oak). We will remove various kinds of trees that compete with desired species and good trees, but we will concentrate on cutting birch. We will also cut storm- damaged trees and trees that interfere with good mast-producing trees.	1	Annual	Annual	The family will all participate in cutting as they are able. If we find that it is too much work for us, we may hire a tree expert to help some-times.	$150 per year for chainsaw depreciation and fuel.
	Improve wildlife nesting opportunities	Create 2–3 snags per acre by girdling live trees; cut dangerous trees for firewood.	2	ASAP	1 month after start	Hirsh and Chris	$25 for chainsaw fuel
Through-out the property	Manage exotic species	It is now apparent that exotic species are a problem, occurring in all the stands on the property. Continually remove all invasive plants along road. Apply herbicides to all other invasive plants as found, except around springs and streams.	3	This summer	Continuous in growing season	Aliza and Jody will cut. Hirsh will apply herbicide.	Estimated $100 per year for herbicide.
4	Maintain road for travel around the woods	There are 3 culverts on the road system and some are starting to wash out. Hire a consultant every other year or as needed to check for necessary repairs. If the headwalls are damaged, they can be repaired with materials from the property. Heavy equipment may be required to reshape the road so water drains properly.	4	This spring, then every other year	Maintenance as needed	Hirsh will monitor culverts and oversee consultant.	3 hours of machine time at $100 per hour, as needed.

Resource List

Web addresses are provided for many publications here. Most can also be obtained in hard copy, often for free, by contacting the publisher. We have provided contact information for the University of Maryland, Penn State, and Virginia Tech Cooperative Extension publications offices because those are the most common sources listed here. However, Extension organizations in other states should be checked for their available resources. The Web addresses listed here represent just a few of the many possible sources of information. Web searches will bring up many additional sources. Resources from ".edu" sites are unbiased and research-based. Government Web sites (".gov") also provide good sources of unbiased information. The website addresses were current as of October, 2015. Please visit the "Beyond the Workshop" page at www.extension.umd.edu/woodland for the most current list.

University of Maryland - AGNR Publications

Room 0300 Symons Hall, Bldg 076
College Park, MD 20742

http://extension.umd.edu/learn/pubs

E-mail: agnrpublications@umd.edu

Ph: 301-405-4582

The Pennsylvania State University Publications Distribution Center

112 Agricultural Administration Building
University Park, PA 16802-2602

http://pubs.cas.psu.edu

Ph: 814-865-6713

Fax: 814-863-5560

E-mail: agpubsdist@psu.edu

Virginia Polytechnic Institute and State University Extension Distribution Center

112 Landsdowne Street (0512)
Blacksburg, VA 24061

Ph: 540-231-1320

Virginia Forest Landowner Update. www.cnr.vt.edu/forestupdate/

Woodland Stewardship Education program. University of Maryland Cooperative Extension. http://extension.umd.edu/woodland/maryland-woodland-stewards

Tree identification

Virginia Trees. Virginia Department of Forestry. www.dof.virginia.gov/edu/resources/pub_Native-Trees-Va_2009.pdf

Common Trees of Pennsylvania. Pennsylvania Bureau of Forestry. www.dcnr.state.pa.us/forestry/commontr/index.aspx

Leaf Keys to Common Trees in Maryland (Extension Bulletin #238). Maryland Cooperative Extension. http://extension.umd.edu/sites/default/files/_docs/programs/woodland-steward/EB238_LeafKey.pdf

Apsley, D.K., and K.L. Smith. 2002. Leaf identification key to eighty-eight Ohio trees. Ohio State University Extension. Bulletin 899. http://ohioline.osu.edu/b899/

Index of Ohio's Trees. Ohio Department of Natural Resources. http://ohiodnr.com/tabid/5361/Default.aspx

Virginia Tech Tree ID Key. http://dendro.cnre.vt.edu/

Virginia Tech vTree app for Android. https://play.google.com/store/apps/details?id=org.pottssoftware.agps21&feature=search_result#?t=W251bGwsMSwyLDEsIm9yZy5wb3R0c3NvZnR3YXJlLmFncHMyMSJd

Virginia Tech vTree app for Apple iPhone. https://itunes.apple.com/us/app/vtree/id576191197?mt=8

Many states make available through county cooperative extension offices a guide to the common trees of the state. In addition, there are dozens of commercially available guides such as the *Peterson Field Guide to Trees and Shrubs*, which has an excellent key that will help you through the identification process step by step. The Audubon Society's Guide to Trees contains excellent pictures but lacks a good key for identifying trees and shrubs. Look for these and other guide books in your local library or book store.

Tree selection

Virginia Tech Forest Landowner Fact Sheets. http://dendro.cnre.vt.edu/LandownerFactSheets/index.htm

Arbor Day Foundation tree guide. www.arborday.org/trees/treeguide/

U.S. Department of Agriculture, Forest Service Handbook 654. Silvics of North America. http://www.na.fs.fed.us/spfo/pubs/silvics_manual/table_of_contents.htm

Virginia Urban Street Tree Selector. http://dendro.cnre.vt.edu/treeselector/search.htm

Planting trees

Tree Planting. U.S. Department of Agriculture, Natural Resources Conservation Service. www.nrcs.usda.gov/wps/portal/nrcs/detail/national/newsroom/features/?cid=nrcs143_023591

Relf, D. 2001. Planting Shrubs. Virginia Tech. Pub. 426-701. www.ext.vt.edu/pubs/envirohort/426-701/426-701.html

Relf, D. 2001. Planting Trees. Virginia Tech. Pub. 426-702. www.ext.vt.edu/pubs/envirohort/426-702/426-702.html

Appleton, B.L., and S. French. 1996. Pub. 430-295. Tree and Shrub Planting Guidelines. www.ext.vt.edu/pubs/trees/430-295/430-295.html

Geist, K., S. Pick, and M. Brittingham. 2001. Neighborly Natural Landscaping: Creating Natural Environments in Residential Areas. (Describes how to convert lawn to forest even if you have restrictive covenants). Pennsylvania Wildlife No. 10. Penn State University, University Park, PA. http://pubs.cas.psu.edu/pubtitle.asp?vartitle=neighborly+natural+landscaping&submit=go

Ochterski, Jim, P. Smallidge and J. Ward. 2009. Northeastern Tree Planting and Reforestation. Cornell University Cooperative Extension, USDA Renewable Resources Extension Program, USDA Forest Service Northeastern Area State and Private Forestry, & NY State Dept. of Environmental Conservation. http://www2.dnr.cornell.edu/ext/info/pubs/management/TreePlantingBulletin12-09.pdf

USDA Forest Service, Northeast Area State Foresters, and Department of Forestry and Natural Resources, Purdue University. Planting Hardwood Seedlings. FNR 134. www.extension.purdue.edu/extmedia/FNR/FNR-134.pdf

Pruning trees

Here's how to prune woodland trees. https://www.safnet.org/lp/howto_prune.pdf

Relf, D. 2001. Managing Winter Injury to Trees and Shrubs. Pub. 426-500. Virginia Tech.www.ext.vt.edu/pubs/envirohort/426-500/426-500.html

USDA Forest Service. How to Prune Trees. NA-FR-01-95. www.dec.ny.gov/docs/lands_forests_pdf/prunetree.pdf

French, S.C., and B.L. Appleton. 1999. A Guide to Successful Pruning: Pruning Basics and Tools. Pub. 430-455. Virginia Tech. www.ext.vt.edu/pubs/nursery/430-455/430-455.html

Forest health

Forest Pest Management. Pennsylvania Department of Conservation and Natural Resources.www.dcnr.state.pa.us/forestry/insectsdisease/index.htm

Maryland Forest Health Highlights 2005. Maryland Department of Natural Resources. http://fhm.fs.fed.us/fhh/fhh-05/md/md_05.pdf

Virginia Forest Health Update http://www.dof.virginia.gov/health/index.htm

Crop tree release

Brittingham, M.C., and C.A. DeLong. 1998. Management Practices for Enhancing Wildlife Habitat. Penn State Cooperative Extension. http://pubs.cas.psu.edu/freepubs/pdfs/uh107.pdf

USDA Forest Service. Crop Tree Management in Eastern Hardwoods. NA-TP-19-93. www.na.fs.fed.us/pubs/ctm/cover_to_toc.pdf

USDA Forest Service. Crop Tree Management: Quick Guide. http://na.fs.fed.us/stewardship/pubs/ctm_quick_ref.pdf

Apsley, D.K., and R. Heiligmann. Crop Tree Management: A New Tool to Help You Achieve Your Woodland Goals in Eastern Hardwoods. F-50-02 http://ohioline.osu.edu/for-fact/0050.html

Firewood cutting

Marcouiller, D., and S. Anderson. Managing Your Woodlot for Firewood. Oklahoma Cooperative Extension Service. F-9439. http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Rendition-2631/unknown

Maryland Department of Natural Resources. About Buying Firewood. www.dnr.state.md.us/forests/forester/firewoodinfo.html

Wildlands fire safety

Virginia Department of Forestry. Living in the Wildland Urban Interface. www.dof.virginia.gov/fire/firewise-index.shtml

Enhancing wildlife habitat

Habitat at Home. http://www.dgif.virginia.gov/habitat/habitat-at-home/

USDA Natural Resources Conservation Service, National Association of Conservation Districts, and Wildlife Habitat Council, 1998. Backyard Conservation. www.nacdnet.org/education/backyard

Hobson, S.S., J.S. Barclay, and S.H. Broderick. 1993. Enhancing Wildlife Habitat: A Practical Guide for Forest Landowners. NRAES-64. Northeast Regional Agricultural Engineering Service. Ithaca, NY. http://palspublishing.cals.cornell.edu/nra_order.taf?_function=detail&pr_booknum=nraes-64

Picone, Peter M. 1995. Enhancing Your Backyard Habitat for Wildlife. Connecticut Department of Environmental Protection, Bureau of Natural Resources Wildlife Division. http://www.ctenvirothon.org/studyguides/wildlife_docs/Picone-BackyardHabitat.pdf

Windstar Wildlife Institute. http://www.windstar.org/

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Brittingham, M.C., and C.A. DeLong. 1998. Management Practices for Enhancing Wildlife Habitat. Penn State Cooperative Extension. http://pubs.cas.psu.edu/freepubs/pdfs/uh107.pdf

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Mitchell, J.C., and K.A. Buhlmann. 2003. Sustaining America's Aquatic Biodiversity: Turtle Biodiversity and Conservation. Pub. 420-529. Virginia Tech. www.ext.vt.edu/pubs/fisheries/420-529/420-529.html

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Decker, D.J., J.W. Kelley, T.W. Seamans, and R.R. Roth. 1990. Wildlife and Timber from Private Lands: A Landowner's Guide to Planning, Information Bulletin 193. Cornell Cooperative Extension, Dept. of Natural Resources, Ithaca, NY. Resource Center 607-255-2080

Henderson, C.L. 1987. Landscaping for Wildlife. Minnesota Department of Natural Resources. Nongame Wildlife Program. St. Paul, MN. www.comm.media.state.mn.us/bookstore/mnbookstore.asp?page=viewbook&BookID=68196&stocknum=276

Sargent, M.S., and Carter, K.S., ed. 1999. Managing Michigan Wildlife: A Landowners Guide. Michigan United Conservation Clubs, East Lansing, MI. 297 pp. www.michigandnr.com/publications/pdfs/huntingwildlifehabitat/landowners_guide/habitat_mgmt/backyard/index.htm

Virginia Tech Fisheries and Wildlife. http://web1.cnre.vt.edu/extension/fiw/index.html

Brush piles

Tjaden, B., and J. Kays. 2003. Wildlife Management: Brush Piles. University of Maryland Cooperative Extension. Fact Sheet #599. http://extension.umd.edu/sites/default/files/_docs/programs/woodland-steward/FS599_WMgtBrushPiles.pdf

Food plots

Wade, R. Wildlife Management: Planting Crops for Wildlife. University of Maryland Cooperative Extension. Fact Sheet #598. http://extension.umd.edu/sites/default/files/_docs/programs/woodland-steward/FS598-WMgtPlantCrops4Wildlife.pdf

Mowing/Landscaping

Bakermans, M.H., and A.D. Rodewald. 2002. Enhancing Wildlife Habitat on Farmlands. W-14-2002. http://ohioline.osu.edu/w-fact/0014.html

Maryland Department of Natural Resources. 2004. Creating a Wild Backyard--Mowing Cycles. www.dnr.state.md.us/wildlife/Habitat/WildAcres/wamowing.asp

Chesapeake Conservation Landscaping http://www.chesapeakelandscape.org/

Increasing the Use of Virginia Native Plants. http://www.deq.state.va.us/Programs/CoastalZoneManagement/CZMIssuesInitiatives/NativePlants.aspx

Managing wildlife damage

Center for Human-Wildlife Conflict Resolution. http://humanwildlife.cmi.vt.edu/index.html

Virginia Wildlife Conflict Helpline. http://www.dgif.virginia.gov/news/release.asp?id=386
Managing Wildlife Damage Series. http://pubs.ext.vt.edu/category/wildlife.html

University of Maryland Extension Forest Stewardship Education Publications Library.
http://extension.umd.edu/woodland/your-woodland/publications-library

DeNicola, A., K. VerCauteren, P. Curtis, and S. Hygnstrom. 2000. Managing White-Tailed Deer in Suburban Environments: A technical guide. Cornell Cooperative Extension, Dept. of Natural Resources, Ithaca, NY. Resource Center 607-255-2080

Penn State Cooperative Extension. Wildlife Nuisance and Damage Series.
http://extension.psu.edu/wildlife/wildlife-nuisance-and-damage

Kays, J., M.V. Bartlett, and L. Curtis. 2003. Wildlife Damage Management: Resistance of Ornamentals to Deer Damage. Maryland Cooperative Extension. Fact Sheet #655.
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Kays, J. 2003. Managing Deer Damage in Maryland. Maryland Cooperative Extension Bulletin #354. http://extension.umd.edu/sites/default/files/_docs/programs/woodland-steward/EB354_ManagingDeerDamage.pdf

Sharew, H., and J.S. Kays. 2005. Vole Damage Control in Forest Plantations. Maryland DNR Forest Service. http://www.dnr.state.md.us/forests/download/vole_damage.pdf

Wildlife tracks

Animal Tracks. http://42explore.com/animaltracks.htm

Wildlife Tracks. http://www.lifedraw.com/tracks/tracksport.html

Murie, O.J., M. Elbroch, and R.T. Peterson. 2005. Peterson Field Guide to Animal Tracks. Houghton Mifflin.

Animal Tracks–and how to know them.
http://www.dgif.virginia.gov/wildlifemapping/handouts/animal-tracks.pdf

Water-based habitat management

Brittingham, M.C., and C.A. DeLong. 1998. Management Practices for Enhancing Wildlife Habitat. Penn State Cooperative Extension.
http://pubs.cas.psu.edu/freepubs/pdfs/uh107.pdf

The Vernal Pool Association. www.vernalpool.org/

Riparian buffers

Understanding the Science Behind Riparian Forest Buffers: Planning, Establishment, and Maintenance. Virginia Cooperative Extension. http://pubs.ext.vt.edu/420/420-155/420-155.html

Series of publications from University of Maryland. http://extension.umd.edu/riparianbuffers

Invasive and exotic plants

Center for Invasive Species and Ecosystem Health. http://www.invasive.org/

Nonnative invasive plants of southern forests: a field guide for identification and control. http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs062/

Invasive Alien Plant Species of Virginia. http://www.dcr.virginia.gov/natural_heritage/invspinfo.shtml

Invasive Plants and Insects Publications. University of Georgia and U.S. Department of Agriculture-Forest Service, and Animal and Plant Health Inspection Service. http://www.invasive.org/

Invasive Plants and Insects Publications. Penn State Cooperative Extension. http://rnrext.cas.psu.edu/fs/fsinvasive.htm

Invasive Plants in Pennsylvania. Pennsylvania Department of Conservation and Natural Resources. www.dcnr.state.pa.us/forestry/wildplant/invasive.aspx

National Park Service and U.S. Fish and Wildlife Service. Plant Invaders of Mid-Atlantic Natural Areas. Chesapeake Bay Field Office. www.nps.gov/plants/alien/pubs/midatlantic/toc.htm

Native Plants for Wildlife Habitat and Conservation Landscaping in Maryland. www.nps.gov/plants/pubs/nativesmd/info.htm

Pannil, P. Tree of Heaven Control. Maryland Department of Natural Resources Forest Service. http://extension.umd.edu/sites/default/files/_docs/programs/woodland-steward/DNR_TreeOfHeaven.pdf

Trail and road design and construction

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Harkins, L., and M.A. Megalos. 1994. Recreational Forest Trails: Plan for Success. North Carolina Cooperative Extension Service. http://www.ces.ncsu.edu/nreos/rrea/rectrail.pdf

Natural lands income options

Forest Farming. http://www.extension.org/forest_farming

Agroforestry. http://nac.unl.edu/forestfarming.htm

Non-Timber Forest Products. Virginia Polytechnic and State University. www.sfp.forprod.vt.edu/special_fp.htm

Forestry and Natural Resource Enterprise Opportunities. University of Maryland. http://extension.umd.edu/woodland/forestry-and-natural-resource-enterprise-opportunities

Natural Resource Rural Enterprise Opportunities with downloadable budgets. University of Maryland Cooperative Extension. http://extension.umd.edu/woodland/your-woodland/resources

Penn State Agricultural Alternatives. Penn State University. http://agalternatives.aers.psu.edu/

Missouri Alternatives Center. University of Missouri. http://agebb.missouri.edu/mac/

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Forest and backyard woods management

Sullivan, K. L., P.J. Smallidge, et al. Forest Resource Management: A Landowner's Guide to Getting Started. NRAES-170. Natural Resource, Agriculture, and Engineering Service (NRAES). www.nraes.org/publications/naturalresources.html

Fazio, J.R. 1994. The Woodland Steward: A Practical Guide to the Management of Small, Private Forests. Available from: The Woodland Press, Box 3524, University Station, Moscow, ID 83843.

Beattie, M., M., C. Thompson, and L. Levine. 1993. Working with Your Woodland: A Landowner's Guide. University Press of New England, Hanover, NH. www.upne.com/0-87451-622-6.html

USDA Forest Service. 2005. Backyard Woods: Bring Your Vision to Life. NA-IN-02-05. 44-page guide and tip sheets on variety of topics. www.arbor.org/backyardwoods/

Tree shelters

Jacobson, M., and D. Jackson. 2004. Tree Shelters: A Multipurpose Forest Management Tool. http://ecosystems.psu.edu/research/chestnut/breeding/pests/deer/tree-shelters/view

Buy seedlings from state nursery

Virginia State Nursery. 1-540-363-7000. http://dof.virginia.gov/nursery/index.htm

Maryland State Nursery. 1-800-TREESMD. http://dnr2.maryland.gov/forests/Pages/nursery.aspx

Howard Nursery-Pennsylvania Game Commission makes seedlings available for state residents. www.portal.state.pa.us/portal/server.pt?open=514&objID=636779&mode=2

County cooperative extension offices

Virginia Directory of Local Extension Offices. http://www.ext.vt.edu/offices/

Local Maryland Cooperative Extension Offices. http://extension.umd.edu/locations

Penn State Cooperative Extension County Directory. http://extension.psu.edu/counties

State forestry departments

Maryland Department of Natural Resources, Forest Service. www.dnr.state.md.us/forests

Pennsylvania Bureau of Forestry. www.dcnr.state.pa.us/forestry/index.aspx

Virginia Department of Forestry. http://www.dof.virginia.gov/

State wildlife departments

Maryland Department of Natural Resources Wildlife Division
http://www.dnr.maryland.gov/wildlife/

Pennsylvania Game Commission.
www.pgc.state.pa.us/portal/server.pt/community/pgc/9106

Virginia Department of Game and Inland Fisheries. http://www.dgif.virginia.gov/wildlife/

Aerial photos and topographic maps

For Virginia: www.lib.virginia.edu/scholarslab/cgi-bin/scripts/pagewriter.php?ors%5B%5D=17&ands%5B%5D=4&title=Virginia+Aerial+Photo s

For Maryland: http://mdmerlin.net/

For the U.S.: www.terraserver.com/

Soil surveys

U.S. Department of Agriculture-Natural Resource Conservation Service – Soil Surveys. Access to all soil surveys online with user-friendly mapper. http://websoilsurvey.nrcs.usda.gov/app/

Soil testing

Contact the agriculture or forestry department at your state's university to locate a soil testing lab and get directions for collecting soil.

USDA Service Center. This site will help you to find the nearest USDA Service Center, where you can ask about soil surveys, cost share program, and other assistance. www.sc.egov.usda.gov/

Forestry equipment

Ben Meadows

www.benmeadows.com/

800-241-6401

Forestry Suppliers

www.forestry-suppliers.com/

800-647-5368

Bailey's, Inc. www.baileys-online.com

For more information

Forests For The Bay – working with landowners to keep the Chesapeake Bay and its watersheds healthy. https://www.forestryforthebay.org/index.cfm

Virginia Forest Update. http://forestupdate.frec.vt.edu/

Links to federal, Maryland and non-profit woodland-related organizations. http://extension.umd.edu/woodland/your-woodland/resource-links

Maryland Department of Natural Resources, Forest Service. Tree Experts List. http://dnrweb.dnr.state.md.us/forests/oflists/lte/treeexpert.html

Volunteer Opportunities

Maryland Woodland Stewards program. http://extension.umd.edu/woodland/maryland-woodland-stewards

Pennsylvania Forest Stewards program. http://paforeststewards.cas.psu.edu/

Virginia Master Naturalist. http://www.virginiamasternaturalist.org/