

Forest Stewardship

Teaching Youth about Forest Stewardship

As we begin the twenty-first century, concerns abound for the health and well-being of our youth. Experts cite the loss of outdoor time and a disconnect with nature as serious threats to youth, as well as the future of our forests. No one can argue that more and more land is being developed for urban and suburban residences, businesses, utilities, and other structures. There are simply less open places to play, fish, hike, and explore. Unplanned growth threatens our land resources, and proper management of our natural resources, particularly forests, is a pressing need as well. To establish a tradition of forest stewardship for future generations, it is important to involve young people and provide them with information and an awareness about responsible land management. This publication is intended for parents, educators, and other adults who are interested in teaching youth about forest stewardship. The goal is to empower all youth, regardless of whether they are voters, visitors, or landowners, to meet the challenge to sustain our future forests and pass these forests on to their children in better condition than they received them.



What Is Forest Stewardship?

Forest stewardship is the wise management and use of our forest resources to ensure their health and productivity for years to come. Stewardship challenges us to look beyond our immediate personal needs and leave a living forest legacy for future generations. Stewardship is concerned with all components of the forest, living and nonliving. It involves the protection of biologically unique or important areas along with the responsible harvesting of trees for people's use, and it recognizes the role that forests play in the global environment.

Teaching Forest Stewardship: The Basics

You may think special expertise is needed to teach forest stewardship. While a degree in forestry, wildlife science, biology, or botany might be helpful, nothing is more important than enthusiasm and a willingness to learn. It is not necessary to have all the answers to be a good teacher. If you have a keen interest in youth and are receptive to learning, you have the essential ingredients for success. Mix these ingredients with sound information and age appropriate curriculum and you are off to a good start. Young people will enjoy working with you to discover the answers!

LEARNING AS A PROCESS

While people in different age groups learn differently, most learning occurs in three stages:

- gaining an initial awareness of a subject
- acquiring basic knowledge of the subject
- applying information and knowledge about the subject to a real-life situation

If you can stimulate individuals to be more aware of forests, to learn more about them, and to understand how forests function, both you and

your students will be on your way to success.

One of the best ways to begin the process is through a hands-on learning approach. You do not need to live in the forest or have access to a wilderness area to bring life to learning, but you should plan to take outdoor trips or excursions. City, state, and national parks, public forests, environmental centers, and private woodlands offer a wealth of opportunity to explore and learn. However, it is important to get permission from landowners before planning any activities on private land. Did you know that nearly 70 percent of Pennsylvania's forestlands belong to private individuals? Look around your community and you probably will find many other resources relating to forests and forest products that would provide excellent learning opportunities. You might find it useful to visit a sawmill, furniture factory, paper mill, or tree nursery to see how trees become the products we use every day.

Activities or excursions should be frequent, at least once a month, and should build on past lessons and experiences. Planting trees, constructing wildlife shelters, holding campfire sessions, and watching wildlife are a few activities that can make learning fun and interactive! Local foresters, wildlife conservation officers, naturalists, botanists, and other knowledgeable people may be willing to meet with your child or group. Let the resource specialist know in advance if you have specific learning objectives so these can be addressed in a presentation or activity.

ESTABLISHING GOALS AND OBJECTIVES

To begin, every instructor should write down age-appropriate goals and objectives that incorporate subject matter relevant to their audience. Most people want to teach youth about trees and wildlife, how they develop, and what makes one species different from another. But young people also should learn why trees, plants, animals, and even insects play important roles in forest ecology. When youth understand how various species fit into the environment, they begin to appreciate the interre-

latedness of all forest resources. The following are examples of specific, measurable goals for possible lessons.

- Distinguish ten local tree species by their leaves and bark and describe the environmental conditions that each prefers.
- Identify seven bird species that live in the forest and the types of food they eat.
- Discuss the essential components of wildlife habitat (food, water, shelter, and space), and explain how changes in these elements affect local species.
- Draw a simple food web that includes plants, insects, fish, amphibians, mammals, and birds.
- Gather five consumer products you use that originate from the forest.
- Explain the water cycle and how forests help filter and store precipitation.

WORKING WITH MIXED AGE-GROUPS

Teaching forest stewardship to mixed age groups can be challenging. Younger children (ages 8 to 11) should begin at the exploratory level. They will become more interested in learning basic facts and concepts as they approach their teens. Older youth (age 12 and up) who already know the basics may be ready for more advanced learning experiences. One way to keep a mixed age-group together is to involve the older members in teaching the younger ones. Those who help teach will learn the subject more completely. An instructor with mixed age-groups generally should work with no more than about ten individuals at a time. Instructors with larger groups may need additional help.

A First Step...Raising Awareness

Forest stewardship can be taught wherever you find trees. Trees grow in most town and urban environments, but we often do not think of the connection between these trees and the forest. Although 59 percent of Pennsylvania remains wooded, the traditional forests in and near town

and urban communities have become increasingly fragmented. Nevertheless, these “community forests,” with their street trees, parks, green spaces, and residential plantings, are unique biological communities that provide many learning opportunities for youth.

Accompanying a young person on a visit to a natural setting is often an effective way to spark awareness. You can search out different plant and wildlife species, spend time sitting quietly (“stump sitting”) and observing the forest, conduct an awareness activity, or participate in an outdoor sport together. At this stage, identifying individual species is unnecessary and may even reduce the value of the learning experience. Initially, your main objective should be to arouse curiosity and instill an appreciation for the forest. Fulfilling this objective will take perseverance and patience, not just a single field trip or activity. Having many planned experiences over a year or longer would be ideal. The number of experiences will depend on each student’s progress and desire to gain more detailed information. Guided exposure is a directed, purposeful process that can be accomplished easily by using existing educational resources.

Learning the Parts That Make the Whole

As children become more aware of the forest, their curiosity increases. They begin to ask specific questions. What tree is that? What’s that bird’s name? What do deer eat? Why do people cut down trees? Such questions may not be raised all at once, but each one reflects a growing desire to understand the forest and to learn more about the parts that make up the whole. Although there is no magic point from which to begin this voyage of discovery, the journey should accelerate slowly. Learning about the basics, or the major components of the forest, is a process that requires time. A teacher will need both patience and persistence to guide and direct students, making sure that the passage through the

education process is stimulating and rewarding. Here are a few ways to make the process successful.

A first step in investigating forest wildlife is to familiarize young people with the six major classifications of animals. Birds, mammals, fish, insects, amphibians, and reptiles are distinct groups with distinguishing traits. Knowing some of the common characteristics and the patterns of life for these groups can prepare students for learning about individual wildlife species.

Students may find that learning the differences among plant groups is more difficult than exploring one tree species at a time, especially when they begin to study the classification criteria for grouping trees. Over 100 native tree species are found in Pennsylvania, but in any one wooded area you will seldom encounter more than 30 species. In the early stages of learning tree identification, working in one location is recommended. Once students learn the unique characteristics (leaf, bark, buds, twigs, fruits, and seeds) of individual tree species, it will be easier for them to understand and recognize the similarities and differences among species.

Students also should learn about the less dominant plant species found in forests, such as some of the different types of wildflowers, ferns, mushrooms, and shrubs. When young people understand how these plants provide food for different forms of wildlife, they can begin to see the forest as a dynamic environment, full of intricate connections between living and nonliving things.

A Big Step...Putting the Pieces Together

While learning about the plant and wildlife species in the forest, youth and adults often form strong bonds. Many adults can recall the individual, or mentor, who took the time to teach them about forest plants and animals. This was often a parent, grandparent, or youth group leader. Children usually are prepared for this type of learning, or mentoring, by the age of 10 and up. Once they are familiar

with the many parts of the forest, they are ready to consider the forest as an integrated biological community that is more than the sum of its parts. The real challenge of teaching forest stewardship is to communicate the concept of society’s interaction with the forest community. As their mentor, you should encourage and stimulate youth to think beyond the specific information they have learned and comprehend the forest as a dynamic place where all species are interconnected in the web of life. This insight is necessary before an individual can understand and appreciate the forest stewardship ethic.

One way to cultivate this thought process is to encourage older youth (ages 13 and up) to discover what other people think about the forest. Recommended readings include Aldo Leopold’s *Sand County Almanac*, Jean Giono’s *The Man Who Planted Trees*, Rachel Carson’s *The Sense of Wonder*, and Gifford Pinchot’s *Breaking New Ground*. The writings of individuals such as John Muir and Theodore Roosevelt also have provided inspiration to many.

STEWARDSHIP CASE STUDIES

An excellent way to stimulate thinking is through stewardship case studies, which can motivate youth to think about the whole forest and the role of stewardship. You might give your student(s) a list of selected forestland ownership objectives, then challenge them to balance these objectives with the needs of present and future generations. Another case study might be related to a particular piece of forestland. Students could be asked how they would manage a forest wisely to receive multiple benefits while meeting the landowner’s desire for periodic income from timber sales. Such case studies could stimulate considerable insight and discussion.

Case Study 1: Multiple Uses or Preservation. Imagine a 56-acre tract of forestland on the edge of your community was just given to the town for a memorial park. You have been asked to serve on the park management committee that will decide how the park will be used. Some very vocal people in town want to

see the entire area kept as a preserve, where only trail walking will be permitted. They do not want any tree cutting or other uses of the park. Another group wants the property to have bicycle trails, horseback riding paths, fishing ponds, and picnic areas. They feel that some of the timber should be carefully harvested to pay for park maintenance and to make it safer for visitors. How would you approach this situation? What information should be gathered before any decisions are made? How should the park be managed?

Case Study 2: Uncle John's Bequeath. Pretend your great uncle John has died and left you a forest that was once part of his family's farm. The 167-acre parcel has mostly pole timber (trees about five inches in diameter at chest height), but some larger trees stand where fencerows used to be. Along the back portion of the property is a dirt road often used by snowmobiles and all-terrain vehicles. Your uncle's will states that he hopes you will manage this property as a wildlife sanctuary and care for the land properly. What would you do with this property? How might you begin to develop a management plan? Would you employ anyone to help you?

INTERVIEWS WITH EXPERTS

Case studies do not have to be imaginary situations. You can arrange for your student(s) to interview a professional forester, game land manager, or active woodland owner. In this way, they can learn from the direct experience of those who manage forestland. Another excellent contact is a participant in Pennsylvania's Forest Stewards volunteer program. These carefully selected and intensively trained volunteers (called PAFS) serve as ambassadors of forest stewardship to support both the education and service efforts of the Pennsylvania Forest Stewardship Program. Your county's Bureau of Forestry service forester or Penn State Cooperative Extension agent can tell you how to reach one of these volunteers. An interview with a PAFS or a natural resources professional can provide food for thought for both youth and adults.

Applying Knowledge

Knowledge alone is useless, unless we have a chance to use and apply what we have learned in a responsible manner. The application of knowledge is also the best test of true learning, and as students apply what they have learned, they learn even more. Opportunities for youth to get involved in forest stewardship activities are limitless. Many private and public organizations are active in improving wildlife and fish habitat, helping protect and conserve forest areas, and working with private woodland owners to educate them about how to properly manage the natural resources on their property. With the assistance of an adult, a young person or group can make connections with these organizations to get involved. Some good starting places might be a county Penn State Cooperative Extension office, the Pennsylvania Bureau of Forestry, the Pennsylvania Game Commission, the county Conservation District, Land Conservancies, or local chapters of private conservation organizations such as the Ruffed Grouse Society, Trout Unlimited, the National Wild Turkey Federation, Ducks Unlimited, Audubon Society, National Wildlife Federation, and the Rocky Mountain Elk Foundation, to name only a few.

The Final Ingredients

Teaching forest stewardship should be a step-by-step process involving love and respect. Our children and our forests deserve both. Although many young people have an affinity for the forest, they must better understand this important renewable resource if they are to become responsible stewards for future generations. Your mission is to raise their level of awareness, stimulate them to seek information and learning opportunities, and then get them involved in activities that will allow them to apply what they have learned and gain firsthand experience. Only then can they grasp the concepts and practices of forest stewardship and embrace its powerful ethic. As you

teach young people about forest stewardship, you are empowering them to meet the challenge to responsibly use and manage the forests they will inherit and pass on to their children. If you bring enthusiasm to your effort, a keen interest in young people, and a stewardship ethic, you will no doubt succeed in planting the seeds of stewardship in the young minds of those you teach.

Resources for Teaching Forest Stewardship

Various resources are available to help those interested in teaching forest stewardship to youth. Many of these resources are described below. The appendix provides information on cost, publisher, and where to order educational materials referenced in this publication.

RAISING AWARENESS

Numerous educational resources are available to help raise awareness. Among the more effective references are two activity guides, *Sharing Nature with Children* and *Sharing Nature with Children Volume II*, by Joseph Cornell. Both books present ideas for simple, inexpensive activities that teach and inspire. Though most of these activities are better conducted outside, some can be carried out indoors. Sample activities include spotting and attracting animals, learning about nature's balance, and staging discovery adventures. Prepared for both parents and educators, these guidebooks are adaptable to various instructional situations.

Another excellent resource for raising awareness is the Pennsylvania Junior Forest Steward Program. This program encourages youth ages 8 to 12 to explore the idea of forest stewardship through reading, discussion, and a hands-on activity. It raises awareness of stewardship concepts and the importance of being a steward of the natural world. Youth read and discuss the *Junior Forest Steward* publication, answer the "thinker" questions, and participate in a forest stewardship activity. In return, they earn an embroidered patch.

The entire program is free and facilitated through Penn State Cooperative Extension and the Pennsylvania Bureau of Forestry.

Two Pennsylvania 4-H publications for youth also deserve special consideration. The first, *Treetop*, is a beginner level forest resources book that teaches young people about the forest as a community and about the natural cycles that occur there. It is designed for children ages 8 to 12, and it has wonderful graphics and activities. The second is the *Adopt-A-Tree Album*, which can be used to help children ages 8 to 12 explore the annual cycle of a single tree. Each student selects and “adopts” a tree, and they progress through the seasons, engaging in a variety of activities centered around the tree, such as bark rubbings, leaf prints, twig drawings, and wildlife observations. Children enjoy these publications, especially doing them with others! Both publications are well organized and easy to follow, and they are available free through county 4-H programs. 4-H is the main youth program of Penn State Cooperative Extension; it is active in every county of the state. These materials, as well as the 4-H materials referenced below, are available to everyone, but the 4-H program does require a minimal level of commitment and accountability for their use.

Finally, several other excellent resources are *Project Wild*, *Project Learning Tree*, *Aquatic Project Wild*, and *Project Wet*. These manuals were developed for national environmental education programs administered in Pennsylvania by the Pennsylvania Game Commission, the Bureau of Forestry, the Department of Education, and the Fish and Boat Commission. Although designed for the classroom teacher, these manuals suggest activities appropriate for all youth educators. The materials are available only to those who complete a daylong training session for each project. Offered several times a year across the state, the sessions acquaint participants with activities suggested in the manuals. Additional information on these programs is available from the respective agencies noted above.

DEVELOPING TEACHING SKILLS

Individuals who lack confidence in their ability to teach youth should not despair. Experience is the best teacher, and working with and assisting educators who are more experienced is where to begin. Opportunities abound for assisting at environmental education centers, nature centers, state parks, and with youth organizations such as 4-H, Scouts, Ys, camps, and schools. When making contacts with any of these groups, be sure to stress that you are trying to develop and enhance your teaching skills in regard to forest stewardship and conservation. Be prepared to go through some initial screening and perhaps a background check. These procedures for the protection of youth are standard with all credible organizations today. If you bear with the process, it will not be long before you have as many opportunities to develop your teaching skills as you can handle and you will gain the confidence you seek.

USING FIELD GUIDES

To teach youth about the many plant and animal species in the forest, you may want to use field guides, such as the Peterson, Audubon, Sibley, Newcomb’s, or Golden Book Guides. These guides provide good introductions to plant or animal identification. They generally use dichotomous or color keys for plant identification and list distinguishing characteristics for animal identification. Before showing youth how to use a particular guide, educators should read the introductory chapters and understand the system themselves. Many people try to use a guide simply by flipping through the pictures and making sight comparisons. Though this may work for simple identification, the distinguishing characteristics of individual species are seldom apparent.

Once youth and educators are familiar with a field guide, they can begin to have fun with it. Some activities to help students learn about plants include:

- gathering fruits and seeds and matching them to their plant sources

- collecting and pressing leaves
- making bark rubbings
- identifying plants by smell, color, or stage of growth
- identifying different types of wood scraps from lumberyards or sawmills
- planting or transplanting trees in suitable locations

Wildlife activities might involve:

- collecting pictures or making drawings of each wildlife species studied
- observing wildlife from a hidden location
- making plaster casts of animal tracks
- scouting for wildlife signs and foods
- constructing bird feeders and recording bird species observed
- learning about species in zoos and museums
- identifying insects by habitats or preferred foods

In addition to learning the name of a plant or animal species, youth should learn a few facts about the species. This will help them remember it more easily and understand its role in the forest environment. Most guidebooks provide information on where a species occurs or lives, what it eats, how it looks at different times of the year, and what other species are related to it. Guidebooks also note whether the species is endangered or threatened.

STUDYING FORESTRY

When approaching the study of forestry with youth, it is best to concentrate first on the forests that are familiar to the student. Many people, including youth, have misconceptions about their local forests based on media reports of forests in other areas of the world. *Trees + Me = Forestry* is a 4-H publication that can be used to teach basic, sound Pennsylvania forestry knowledge to youth ages 12 and up. It covers topics such as tree identification (dendrology), tree growth, forest succession, orienteering, and forest measurements. This publication is being used by many youth organizations in addition to

4-H groups. It is filled with suggestions for activities and projects for hands-on learning. *Summer Key to Pennsylvania Trees* is a supplementary 4-H publication that goes along with *Trees + Me = Forestry*. It enables individuals to identify more than 40 trees by their leaf characteristics. This key is a good starting point for developing tree identification skills. Both of these curriculum pieces lead into the final 4-H publication on this topic, *Advancing In Forestry*.

Advancing in Forestry was prepared for high school students. It focuses on current Pennsylvania and national forestry topics, including forest stewardship, silviculture, forest products, forest insects and diseases, and the role of fire in forests. *Advancing in Forestry* is clearly written and presents a balanced overview of these topics. As with all the new 4-H forestry publications, it is extensively illustrated and attractive; it details many activities and projects for additional learning. There currently are no similar books written specifically for youth who want to study Pennsylvania forestry. All the publications described above are highly recommended.

Penn State Cooperative Extension also has several other important educational resources for youth. The first, *Planting Trees in Your Community Forest* by Sylvan and Friends, is for everyone interested in urban and community forestry. This colorful and extensively illustrated manual is designed for young people of all ages, but it appeals to adults as well. Interactive and enjoyable to read, *Planting Trees* covers everything a person needs to know about tree biology, community trees, planting sites, purchasing trees, planting methods, tree care, and tree protection. The second is a series of short, full-color, flyers in the *From the Woods* series. This series is for Pennsylvania middle and high school youth. The flyers provide a quick overview of many important topics. Current titles in the series include *Sustainable Forestry*, *American Chestnut*, *Maple Syrup*, *Incredible Wood*, *Harvesting Trees*, *Watersheds*, *White-Tailed Deer*, *Forest Stewardship*, *Paper!*, *Hardwood Veneer*, *Community Forests*, *Harwood Lumber*, and *Ten Important Hardwoods*. Lesson

plans are also available on the Web for these flyers.

STUDYING WILDLIFE

Wildlife Is All Around Us, the first unit in Pennsylvania's 4-H wildlife conservation project books, provides a good introduction to wildlife biology. This resource is intended for children between the ages of 8 and 12. It includes a variety of activities for all seasons, such as building your own birdhouse, taking a bird song field trip, collecting nest materials, scouting for wildlife tracks and food, and tracking in the snow. The first book in the unit, *The Wildlife Detective*, should be completed before any of the other books are introduced. The remaining four books—*Spring*, *Summer*, *Fall*, and *Winter*—are seasonal, but they can be completed in any sequence. Many of the activities are appropriate for group field trips or individual study projects.

For youth ages 12 to 18, two excellent 4-H publications address wildlife ecology and management. The first, *The Wildlife Ecologist*, covers the fundamentals of habitat, wildlife populations, wildlife communities, and individual species requirements and wraps these topics together with nine different activities recorded in a nature journal. The second publication, *The Wildlife Manager*, introduces youth to the application of wildlife ecology, called wildlife management, and gives an overview of the major habitat types in Pennsylvania, introduces the concept of management practices, and teaches youth how to develop a management plan for either a rural or an urban setting. Both of these books will give educators and youth plenty of practical knowledge and suggestions for hands-on activities that make learning come alive.

The Pennsylvania Game Commission and the Pennsylvania Fish and Boat Commission also have many educational resources available to the public. Both commissions distribute materials designed for conservation education, including posters and brochures that depict and describe terrestrial and aquatic species found in Pennsylvania. The Game Commission publishes *Wildlife Notes*, a set of fact sheets on every major mammal and

some bird species found in the state. This set is perhaps the most complete collection of such information available. Comparable information for fish is provided in the Fish and Boat Commission's two publications *Fishes of Pennsylvania* and *Pennsylvania Amphibians and Reptiles*. For those who like to do woodworking projects, the Game Commission's *Woodcrafting for Wildlife* is a good resource. It provides a collection of design plans for a wide variety of wildlife feeders and shelters. Lastly, *Living with Wildlife and Nature: Doing Our Part* is an excellent publication on wildlife management distributed by the Wildlife Management Institute. It outlines the basic needs of wildlife and explains how to improve habitat.

Finally, the Pennsylvania Bureau of State Parks has a songbird curriculum developed in partnership with the Pennsylvania Game Commission and the National Audubon Society. *Pennsylvania Songbirds: A K-12 Teacher's Guide for Activities in the Classroom* is the first curriculum of its kind in the state, with Pennsylvania-specific activities and information geared toward the classroom teacher and other educators. The guide focuses on songbirds, their habitats, and issues affecting bird species.

STUDYING WATER

Once again, 4-H has great educational materials for teaching youth. *Water Conservation with The Water Lion (Unit 1)* is the first of Pennsylvania's 4-H water project books. It provides an introduction to the importance of water for life, water distribution around the world, and home water usage. This resource is intended for children between the ages of 8 and 12. It includes a variety of water conservation activities such as measuring daily water usage, calculating the water wasted by a drippy tap, and adopting water saving practices. *Incredible Water with The Water Lion (Unit 2)* follows for the same age-group and teaches youth about the three forms of water, the unique properties of water, and the workings of the water cycle in fun and interesting ways. Lastly, *Water Quality Matters (Unit 3)* is designed for older youth (ages 13 and up) and covers the critical concept of evaluat-

ing water quality by examining physical, chemical, and biological criteria. It does this by following two cousins as they compare the water quality in a large river with a mountain stream in Pennsylvania. The activities in the book are doable at minimal cost with simple household materials.

There are also several curriculum packages that teach lessons about water and water quality, though only a few focus on the important role of forests in watersheds. *Project Wet* and *WOW Wonders of Wetlands* are two publications that do, and both come highly recommended for classroom teachers and nonformal educators. In addition, the Pennsylvania Bureau of State Parks has an interdisciplinary Watershed Education program for students in grades 6 through 12. *Watershed Education* promotes classroom and field research, hands-on ecological investigations, partnerships, stewardship, and community service in an effort to produce environmentally literate citizens. *Watershed Education* takes a comprehensive approach to learning about this natural resource.

Additional Resources

Several additional resources are available to help instructors teach youth about forest stewardship. Information on price and where to order these publications is also provided in the appendix.

The publication in your hands, *Teaching Forest Stewardship to Youth*, is part of the Forest Stewardship series—informational bulletins covering wildlife management, forest terminology, proper timber harvesting, and other stewardship subjects. The complete series is available at no cost through the Pennsylvania Forest Stewardship Program.

The *Woodland Steward*, by James Fazio, is a practical guide to managing small private forests. It covers a broad range of topics, such as woodlot improvement, forest protection, harvesting trees for logs and firewood, maple syrup production, and community leadership for forest stewardship.

Woodlands and Wildlife explains how to establish and maintain a

variety of forest habitats for different wildlife species. Although Penn State's School of Forest Resources, with the assistance of the Pennsylvania Game Commission and the Bureau of Forestry, prepared this publication for forest landowners, it is a valuable resource for anyone interested in the subject.

Lastly, while not specifically about teaching youth forest stewardship, *Last Child in the Woods, Saving Our Children from Nature Deficit Disorder*, by Richard Louv, is a must-read for anyone interested in the importance of children spending time outdoors and how this affects their physical, social, emotional, and psychological well-being.

Appendix: Selected Resources

Titles are in alphabetical order. Web sites are listed where materials can be downloaded or ordered as hard copies. Prices and Web addresses are subject to change. Publications available through Penn State Cooperative Extension are listed separately at the end.

4-H PUBLICATIONS

Penn State Cooperative Extension county offices
www.cas.psu.edu/directory

Breaking New Ground (\$25.00)
by Gifford Pinchot, 1947
www.islandpress.org

Common Trees of Pennsylvania
www.dcnr.state.pa.us/forestry/commontr

Forest Leaves (free newsletter)
Forest Resources Extension
School of Forest Resources
The Pennsylvania State University
320 Forest Resources Bldg.
University Park, PA 16802
1-800-235-9473
rnnext.cas.psu.edu

Living with Wildlife and Nature: Doing Our Part (\$4.00)
by Del Benson, 1999
www.wildlifemanagementinstitute.org

Keystone Aquatic Resource Education (KARE)
Aquatic Project Wild Education Coordinator
Pa. Fish and Boat Commission
Bureau of Education and Information
PO Box 6700
Harrisburg, PA 17105-7000

Junior Forest Steward Program Materials (free)
Forest Resources Extension
The Pennsylvania State University
320 Forest Resources Bldg.
University Park, PA 16802
1-800-235-9473
sftrc.cas.psu.edu/JuniorForest.html

Last Child in the Woods, Saving Our Children from Nature Deficit Disorder (\$14.95)
by Richard Louv
www.childrenandnature.org

The Man Who Planted Trees (\$10.00)
by Jean Giono, 1985
www.chelseagreen.com

Pennsylvania Fishes (\$9.43)
Pennsylvania Amphibians and Reptiles (\$9.43)
www.fish.state.pa.us

Pennsylvania Forest Stewardship Series
Forest Resources Extension (free)
School of Forest Resources
The Pennsylvania State University
320 Forest Resources Building
University Park, PA 16802-4705
rnnext.cas.psu.edu

Pennsylvania Songbirds: A K-12 Teacher's Guide for Activities in the Classroom
Pennsylvania Bureau of State Parks (DCNR)
Environmental Education and Interpretive Section
Rachel Carson State Office Building
PO Box 8551
Harrisburg, PA 17105-8551

Project Learning Tree Sustaining Penn's Woods
Environment and Ecology Adviser
Pa. Department of Education
333 Market Street
Harrisburg, PA 17126-0333

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Project Wet

WOW Wonders of Wetlands

Environment and Ecology Adviser
Pa. Department of Education
333 Market Street
Harrisburg, PA 17126-0333

Project Wild

Pa. Game Commission
Bureau of Information and
Education
2001 Elmerton Ave.
Harrisburg, PA 17110-9797

Sand County Almanac (\$7.99)

by Aldo Leopold, 1986
www.randomhouse.com

Sharing the Joy of Nature (\$9.95)

Sharing the Joy of Nature II (\$9.95)

by Joseph Cornell
www.dawnpub.com

Watershed Education

Pennsylvania Bureau of State Parks
(DCNR)
Environmental Education and
Interpretive Section
Rachel Carson State Office Building
PO Box 8551
Harrisburg, PA 17105-8551

Wildlife Notes

www.pgc.state.pa.us/pgc/cwp/
view.asp?a=458&q=160464

The Woodland Steward (\$14.95)

by James Fazio, 1985
www.smokeybeargifts.com

Woodcrafting for Wildlife

www.pgc.state.pa.us/pgc/cwp/
view.asp?a=458&q=161150

**PENN STATE COOPERATIVE EXTENSION
PUBLICATIONS**

Pennsylvania Forest Stewardship
Series

*Planting Trees in Your Community
Forest* by Sylvan and Friends

From the Woods Series Flyers

(all the above are free)

Woodlands and Wildlife (\$4.00)

Publications Distribution Center
College of Agricultural Sciences
The Pennsylvania State University
112 Agricultural Administration
University Park, PA 16802
Phone: 877-345-0691

or contact your Penn State Coopera-
tive Extension county office

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The Forest Stewardship Program is administered nationally by the USDA Forest Service and is directed in Pennsylvania by the DER Bureau of Forestry with assistance from a statewide steering committee. The Forest Stewardship Program assists forest landowners in better managing their forestlands by providing information, education, and technical assistance. For more information about program services, contact the Pennsylvania Forest Stewardship Program, DCNR Bureau of Forestry, PO Box 8552, Harrisburg, PA 17105-8552; phone: 814-364-5157. For more information about publications, contact the Pennsylvania Forest Stewardship Program, Penn State School of Forest Resources, 320 Forest Resources Building, University Park, PA 16802-4705; phone: 800-235-9473.

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