

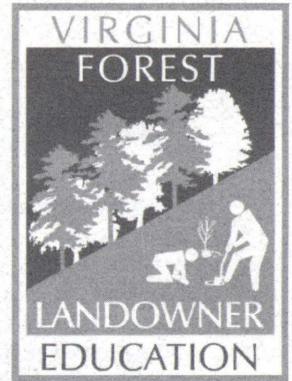
VIRGINIA FOREST LANDOWNER UPDATE

Events, news, and information promoting the stewardship of Virginia's natural resources.

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Welcome

to the *Virginia Forest Landowner Update!* You and your family or organization are invited to learn about your role in Virginia forest stewardship by attending the events listed within these pages. These programs will provide practical information to forest landowners, natural resource professionals, youth and other interested parties on the many components of sustainable forestry.



Calendar sponsors include:

Virginia Department of Forestry
Virginia Tech College of Forestry & Wildlife Resources
Virginia Cooperative Extension
Virginia Forestry Association (VFA)

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- Controlling Exotic Plants p.5

TO SUBMIT EVENTS AND INFORMATION....

If your organization is sponsoring a program or has information that would benefit forest landowners and/or natural resource professionals, please contact *Dylan Jenkins*, Virginia Tech Cooperative Extension, 216B Cheatham Hall (0324), Blacksburg, Virginia 24061 (phone: 540/ 231-6391; fax: 540/ 231-3330; e-mail: dylan@vt.edu).

Special Forest Products: Identifying Opportunities for Sustainable Forest-based Development

by **Tom Hammett**, Assoc. Professor of Forest Products Mktg. Virginia Tech Dept. of Wood Science and Forestry Products

Editor's note: This article is the second in a two-part series on special forest products (SFPs). Part 1 described SFPs and the importance of SFPs in local economies; this segment will review the historical use, value, and growth of SFPs, and describe a project at Virginia Tech designed to learn more about how these products can be useful tools for economic development.

Historical Perspective

Native Americans traditionally used plants and plant products for food and medicine, and shared this knowledge with early settlers. They used the bark of trees for housing, branches and stems for utensils and other household products, and the wood for containers and other useful items. These traditional forest products became an integral part of rural economies and many techniques are still in use today.

In the 1990's, there has been a dramatic increase in demand for natural products, including those made from non-traditional forest products. This can be traced to a number of factors, including a growing interest in alternative medicines and homeopathy. Environmentally conscious and responsible consumers actively seek ecologically friendly and socially correct products. The potential for special forest products (SFPs) as alternative income sources to a timber-based economy is expanding tremendously. These products will continue to play an important role in economic development of communities-especially those depressed by the decline of traditional industries such as timber in the Pacific Northwest and coal in Central Appalachia. The collection and processing of these products at the local level can help under-employed and displaced workers. Processing and marketing often requires low capital investment, but can employ or give partial support to thousands.

Resource Base

Special forest products are found on all timberlands. The increasing market demands for these products often exceed the capabilities of many

public and private agencies to provide sustainable supplies of these products. As more than 75 percent of the land in Virginia is held by non-industrial private landowners, it is easy to postulate that much of the SFP resources are found on private lands.

The eastern deciduous forest, much of which is located in the Central Appalachian region, provides the habitat for most of the American medicinal plants used in commerce today. One of the more popular eastern species, *Podophyllum peltatum* (mayapple), is found in forests from southern Quebec south through the Appalachian region to Florida. No other region in North America hosts so much living diversity than Appalachia. Some estimate that the temperate hardwood forests of Southern Appalachia may be one of the most diverse forest ecosystems in the world. More information is needed on this great diversity and its potential to produce SFPs on a sustainable basis.

Value and Growth of the SFP Sector

Markets for non-traditional forest products and the capacity for SFP enterprises to add value at the local level are not well known, but are thought to have significant impact on rural economies. A few of the edible forest products are prominent enough to generate national economic data. In 1993 the United States exported about 77 tons of wild harvested American ginseng, worth more than \$21 million. Two years earlier, Virginia exported about 6.5 tons of ginseng collected from its forests, worth more than \$1.8 million.

The commercial U.S. herbal medicine market has been estimated to account for \$970 million of the global market, which is worth more than \$60 billion. In the Pacific Northwest, mosses, ferns, grasses and other plants have sustained the commercial floral products industry and contributed more than \$125 million to the region's economy. According to Nan Vance, a U.S. Forest Service research scientist who studies non-traditional forest products in the Pacific Northwest, American exports of commercial moss and lichen amounted to \$14 million in 1995. Most of the sheet moss used by the floral industry comes out of Tennessee and West Virginia. Apparently, the Netherlands alone imported moss valued at \$8 million in 1995, to use for natural packing floral products - many of which are exported to North America. Many new opportunities for value addition exist.

Specialty wood product markets are not well defined. The size of the retail handicraft market is projected to reach \$600 million in 1996.

SPECIAL continues on page 6

EVENTS CALENDAR

event contact	date/location	event/description (preregistration required unless noted otherwise; TBA = to be announced)	time	fee
Spring Forest Landowner Short Course Series.				
Two different courses offered at eight locations (see below). Courses will benefit forest landowners, farmers, vo-ag, science and biology teachers, loggers, and others interested in forest and wildlife management. Most courses are four three-hour evening sessions and emphasize sound sustainable natural resource management practices. Registration fee is \$35.00/person or couple (one set of materials). To register for a specific course, contact the course registrar.				
Introduction to Woodland Management Short Course:				
Overview of basic forest and wildlife management concepts and practices; topics include: management planning and objectives, assessing your resources, sources of management assistance, basic pine and hardwood forest ecology and management, and basic wildlife management.				
CC1	April 6,13,20,27	<i>Abingdon</i> - sponsored by the New River Highlands RC&D Forestry Committee	6:30-9:30 pm	\$35.00
SN	Apr. 28 - May19	<i>Manassas</i> - sponsored by the Northern Virginia Forest Landowner Education Committee	6:30-9:30 pm	\$35.00
GP	April 30	<i>Wintergreen Resort</i> - 1 day pre-conference seminar (see VFA Annual Convention below)	8:30 am-4:30 pm	\$35.00
CG	May 6,13,29,27	<i>Palmyra</i> - sponsored by the Northern Piedmont Forest Landowner Education Committee	7:00-10:00 pm	\$35.00
Introduction to Wildlife Management Short Course:				
Principles and techniques for enhancing game and non-game management on private lands; topics include: basic wildlife requirements, applied habitat ecology and management, forest practices, habitat structure, open field management, and riparian forests and corridors.				
RL	May (TBA)	<i>Warm Springs</i> - sponsored by the Alleghany Highlands Forest Landowner Education Comm.	6:30-9:30 pm	\$35.00
DH	May (TBA)	<i>Riner</i> - sponsored by the New River Valley Forest Landowner Education Committee	6:30-9:30 pm	\$35.00
KB	May (TBA)	<i>Accomac</i> - sponsored by the Eastern Shore RC&D Forestry Committee	6:30-9:30 pm	\$35.00
JR	May (TBA)	<i>Louisa</i> - sponsored by the Northern Piedmont Forest Landowner Education Committee	6:30-9:30 pm	\$35.00
RE	April 21-22 VMI Lexington	1999 Environment Virginia Conference. Conference will focus on Virginia sustainability issues in the 21st century. Sessions to cover problems and conflicts in land use, housing, transportation, waste disposal, air and water quality, and recreation. Conference will feature technical presentations, poster sessions, displays, and workshops. Conference website: http://www.vmi.edu/civil/conf/ev98d.html	all day each day	\$125.00
GP	Apr. 30 - May 2 Wintergreen Resort	Virginia Forestry Association Annual Convention. Join VFA member landowners and resource professionals for informative, educational programs and family fun! Keynote speaker US Congressman Robert "Bob" Goodlatte (R) 6th District will provide national perspective on the environment and forestry. Other elected officials review the 1999 Virginia legislative session and give overview of future forestry issues.	all day each day	\$170.00 \$230.00 per couple
AL	May 2-4 Roanoke Airport Marriott	Governor's Conference on Greenways and Trails. Comprehensive program will include workshops with experts from around the country on topics such as trail design standards, funding, legal issues, partnerships, crime prevention, environmental considerations, and greenway maintenance. Many workshops and optional excursions to choose from. Keynote speaker Governor James Gilmore. Continuing education units available.	all day each day	\$104.00
FLA	May 6-8 Opryland Hotel Nashville, TN	58th Southern Forestry Conference: Forestry & Wildlife - It's a Natural. Conference focus on forestry and wildlife management in the southeast. Workshops include: successful wildlife management strategies; tax tips to protect forest investments, and building good hunt club/landowner relations. Emerging issues forum to cover international environmental treaties, protecting private property rights, countering environmental groups, and industry mergers and acquisitions. Tradeshow will showcase current forestry services and technology.	all day each day	\$189.00 (basic) \$249.00 (full)
CC2	May 7-8 Holliday Lake 4-H Center	State 4-H Soils, Forestry, and Wildlife Judging Contest. State contest for 4-H forestry judging, wildlife habitat evaluation, and soils judging. Winners represent Virginia at national contests.	2:30 pm (5/7) to 2:30 pm (5/8)	\$25.00
LC	May 7-9 Wintergreen Resort	16th Annual Spring Wildflower Symposium. Exciting mix of hiking, slide presentations, and practical hands-on work with noted scholars and naturalists. Participants will learn plant ID, hike Blue Ridge forest coves, and practice wildflower photography. Explore traditional uses of native flora, propagation, and gardening. Lodging extra. Visit the Wintergreen Nature Foundation website at: http://www.twnf.org	3pm-9pm (5/7) 8am-9pm (5/8) 7am-3pm (5/9)	\$85.00 \$70.00 members
DD	May 12 Lexington HoJo I-81, Exit 195	Rockbridge Area Forestry & Wildlife Association Dinner Meeting. Enjoy dinner and discussion with local landowners and natural resource professionals. Harold Olinger, Forest Landowners Association, will speak on woodland security for landowners.	6:30-9:00 pm	\$11.00

USING THE CALENDAR

For more information or to register for a specific event, identify the event contact (whose initials are to the left of the event), by referring to the "Event Contacts" information box (for example **DH** = Doug Harris).

event contact	date/location	event/description (preregistration required unless noted otherwise; TBA = to be announced)	time	fee
FT	May 12-14 Waverly	Virginia Certified Prescribed Burn Manager's Program. This course will fulfill all requirements to become a certified burn manager. A test will be given at the completion of the course; those who pass will become certified. This certification will provide added liability protection for professionals involved with prescribed burning.	1:00 pm (5/12) to 2:00 pm (5/14)	\$50.00
AT	May 14-16 Hungry Mother State Park Marion	Appalachian Natural History Field School. A full weekend of field study featuring the natural history, ecology, and geology of the Southern Appalachian Region. Programs will focus on field biology, ornithology, geology, herpetology, botany, ichthyology, and dendrology. Registration fee includes lodging.	4:00 pm (5/14) to 5:00 pm (5/16)	\$225.00 \$155.00 commuters
LN	May 14-16 Holiday Lake 4-H Center Appomattox	Becoming an Outdoors Woman Workshop. Weekend offering courses in firearms, fishing, hunting, map & compass, hunting, archery, outdoor photography, forest ecology, wilderness survival, dutch oven cooking, and more. Registration fee includes lodging, equipment, and instruction.	all day each day	\$150.00
DS	May 23-24 Seashore S.P. Virginia Beach	Virginia State Envirothon Competition. Team-style natural resources competition for Virginia high school students. Top three teams from the six Soil and Water Conservation District Regions will compete in natural resource areas including soils, forestry, wildlife, aquatics, current issues, and problem solving.	all day each day	TBA
MM	June 16-18 Richmond	Virginia's Sustainable Future Conference. Participants will learn about energy-efficient building, low-impact development, new materials and technologies, and innovative leadership strategies. Website at: http://www.deq.state.va.us	4pm-9pm (6/16) 7am-9pm (6/17) 7am-2pm (6/18)	\$95.00 \$120.00 (after 6/1)
DC	June 21-26 Holliday Lake 4-H Center Appomattox	Holliday Lake Forestry Camp for Youth. For campers ages 14-16. Instruction by professional natural resource managers in forest management, tree improvement, fire control, tree identification, environmental protection, reforestation, and wildlife management. Students accepted by nomination/application from local foresters, school teachers, Soil & Water Conservation Districts (SWCD's). Sponsored by VA Dept. of Forestry, VA SWCD's, VA Forestry Educational Foundation, and Virginia's forest industry.	all day each day	\$35.00
DS	July 11-16 Blacksburg	Youth Conservation Camp. One week camp for high school students (14-18 years old) on natural resource issues. Hands-on learning in areas including forestry, wildlife, water quality, erosion and sediment control, soils, and urban and agricultural issues. Contact your local Soil & Water Conservation District for a scholarship application.	all day each day	TBA

EVENT CONTACTS

for more information or to register for a specific event, please contact:

event contact	name/affiliation	phone	fax	e-mail
AL	Angela Lacombe, Virginia Greenways & Trails Conference	804/798-0045	804/798-0433	VAGwayConf@aol.com
AT	Angela Thorpe, Hungry Mother State Park	540/783-7172		vsphmcric@netva.com
CC1	Charlie Conner, Smyth County Cooperative Extension	540/783-5175	540/783-2151	conner@vt.edu
CC2	C.J. Conner, Pittsylvania County Cooperative Extension	804/432-2041	804/432-7777	cconner@vt.edu
CG	Charley Goodman, Fluvanna County Cooperative Extension	804/589-8122	804/589-4976	cgoodman@vt.edu
DC	David Coffman, Virginia Department of Forestry	804/977-6555	804/296-2369	coffmand@hq.forestry.state.va.us
DD	Don Drake, Virginia Department of Forestry	540/463-5253	540/463-5253	draked@r5.forestry.state.va.us
DH	Doug Harris, Montgomery County Cooperative Extension	540/382-5790	540/382-5729	rdharris@vt.edu
DS	Dawn Shank, VA Association of Soil & Water Conservation Districts	804/559-0324	804/559-0325	vaswcd@erols.com
FLA	Forest Landowners Association	800/325-2954	404/325-2955	
FT	Fred Turck, Virginia Department of Forestry	804/834-2300	804/834-3232	turckf@r1.forestry.state.va.us
GP	Glenda Parrish, Virginia Forestry Association	804/741-0836	804/741-0838	vafa@erols.com
JR	Jim Riddell, Louisa County Cooperative Extension	540/967-3424	540/967-3489	jriddell@vt.edu
KB	Keith Boyd, Eastern Shore RC&D Council	757/787-2786	757/787-9534	
LC	Laura Covert, The Wintergreen Nature Foundation	804/325-8172		wtgnf@aol.com
LN	Libby Norris, Virginia Department of Game & Inland Fisheries	757/253-4180	757/253-4182	lnorris@dgif.state.va.us
MM	Marty Malloy, Virginia Department of Environmental Quality	804/360-1500		malloymsm@aol.com
RE	Ronald Erchul, Virginia Military Institute	540/464-7743	540/464-7043	conference@vmi.edu
RL	Rodney Leech, Bath County Cooperative Extension	540/468-2225	540/839-5893	rleech@vt.edu
SN	Sue Naille, Loudoun County Cooperative Extension	703/777-0373	703/771-5844	ex107@vt.edu

Hemlock Woolly Adelgid: A Major Threat to Eastern Hemlock

by **Scott M. Salom**, Assistant Professor of Forest Entomology
Virginia Tech Department of Entomology

Our Beloved Tree

Eastern hemlock, *Tsuga canadensis*, is an important species of eastern forests. It occurs naturally from the North Atlantic and New England, down south along the coast and along the Appalachians, reaching Tennessee and Georgia at the higher elevations. It also extends west to the Great Lakes, and midwestern U.S. Eastern hemlocks are long-lived, late successional climax trees that will eventually dominate stands if left undisturbed. They normally occupy habitats characterized as humid and cool, with year-round moisture. Their stands produce a dense canopy, resulting in a cooler understory microhabitat than found under adjacent hardwood stands. This combination of habitat location and microhabitat quality makes eastern hemlock a critical component of the riparian ecosystems. Brook trout are found more commonly in streams bordered by hemlocks because of the cooling effect of the canopy. Hemlock stands provide important field cover for ruffed grouse, turkey, snowshoe hare, and rabbit. Numerous bird and plant species are associated with natural hemlock stands.

Although hemlock is not among the most valuable timber species, it is used widely for pulpwood and for building barns, sheds, and other structures. Hemlocks are greatly valued for their beauty and are a very important landscape tree. There are 274 cultivars of eastern hemlock, making it one of the most cultured and cultivated landscape trees in the United States.

A Nasty Invasion

In the early 1950's hemlock trees in the Richmond area started sprouting white cottony masses at the base of the needles. Tiny insects living under these cottony masses were identified as the hemlock woolly adelgid (HWA), *Adelges tsugae*. This was the first report of HWA in eastern North America. It was first observed in western North America on western hemlock in the 1920's, and is believed to have originally arrived from China or Japan. Hemlocks in Asia and western North America appear resistant to HWA, however eastern and Carolina hemlocks are highly susceptible. Significant problems from this insect did not appear until the mid-1980's when the distribution of the insect started to spread rapidly up and down the east coast. The insect is currently found from Massachusetts to North Carolina, and is expanding its range on an average of 15 miles per year. It has caused extensive and widespread mortality to hemlocks of various ages (figure 1). Once it is found in a hemlock stand, it is not long before all the trees succumb to it.

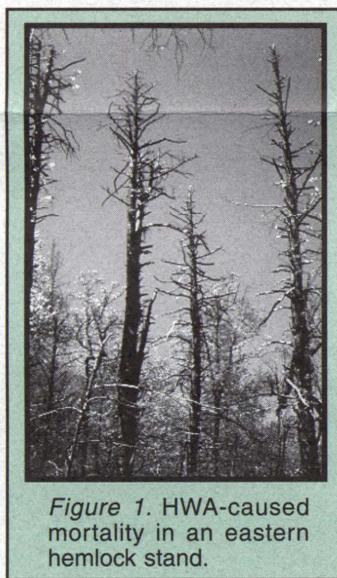


Figure 1. HWA-caused mortality in an eastern hemlock stand.

When They Do It

Adelgids tend to have complex lifecycles. HWA is no exception. HWA have two separate generations per year on hemlock. Both these generations reproduce asexually. As a result, their numbers increase very quickly. The spring generation develop from April - June. There are two



Figure 2. HWA damage on eastern hemlock twigs.

forms: an asexual stage that stays on hemlock and a sexual stage that flies to spruce. No spruce in North America have been found to be a suitable host, so this form of HWA dies off. Spring generation adults lay numerous eggs under the large white woolly sacs (produced by the insect) in June. The eggs hatch and crawlers from the second generation move to attach themselves to new needles. Once they find a site, they settle in, and then become dormant (no feeding) until October. At that time, they break dormancy and begin to feed and develop through the fall and winter. By March, adults are present, laying eggs in their woolly sacs.

What Can We Do About HWA?

From a practical standpoint, insecticides are available for use against HWA in urban landscape setting. If trees are treated before too much defoliation, they can be saved, and maintained in a healthy state. This will require periodical spraying of insecticides. Traditional insecticides registered for HWA with timing of application are listed in the VA Cooperative Extension Pest Management Guide (PMG). These are foliar sprays that last at most one year. A new material on the market called Merit (imidacloprid), is a systemic that can be applied to the soil and taken up by the tree, and appears to have a longer residual time than the foliar sprays. A good source of information for this product is Dr. V. Bruce Steward, Bayer Corp., Agric. Division, 104 Davenport Rd., Kennett Square, PA 19348. His phone number is (610) 925-0472.

In the forest, there are fewer options. Spraying is not viable due to the sensitive and often isolated location of hemlock stands. Currently, research is focusing on the evaluation and introduction of natural enemies. Dr. Mark McClure, Connecticut Agric. Exp. Station, in Windsor, CT., has imported a small beetle, *Pseudoscymnus tsugae* (Coleoptera: Coccinellidae), that preys specifically on HWA. Lab and field tests have shown that this insect can survive our climate and has been able to eat large numbers of HWA eggs and nymphs. Limited releases throughout the range of HWA are planned for 1999. Dr. Michael Montgomery is studying several beetle species, *Scymnus* spp. (Coleoptera: Coccinellidae), from China that also prey specifically on HWA. Laboratory tests for these beetles have been promising. At Virginia Tech, Ph.D. student Gabriella Zilahi-Balogh is studying another small beetle species, *Laricobius nigrinus* (Coleoptera: Derodontidae), a host-specific predator of HWA in western North America. Ms. Zilahi-Balogh has been able to rear this beetle successfully on HWA in a laboratory setting and found that it feeds on all stages of the spring generation. Early indications are that this beetle's life history is synchronous with the spring generation of HWA. Host feeding preference studies will follow as we hope to introduce this beetle into eastern hemlock forests in the future.

Although hemlocks are suffering throughout the eastern U.S., we are hopeful that natural enemies will help stem the tide of this invasion and save our beautiful hemlock legacy.

Find out what's bugging your trees on the
Virginia Tech Dept. of Entomology web page:
<http://www.ento.vt.edu/>

The Aliens Are Among Us.....

by **Jim Parkhurst**, *Extension Wildlife Specialist*
Department of Fisheries and Wildlife Sciences

Throughout the last decade, we have witnessed a tremendous increase among landowners in the amount of interest in and actual on-the-ground implementation of management efforts to improve the quality of their lands. One area where substantial activity has occurred falls within what we might generically call "wildlife habitat improvement." People enjoy wildlife for a variety of reasons: viewing, photographing, hunting, feeding, or just knowing that they are out there; and many landowners have made great strides toward creating the kinds of habitats that will allow them to pursue the types of activities related to wildlife that they desire. However, in the rush to create that "perfect" habitat, we often tend to overlook some of the subtle consequences that may result from our actions. I believe most people today do recognize that any purposeful tinkering they impose upon a system will cause associated ripples back through that system. We have all heard and recognize that jingle of "...for every action, there is an equal and opposition reaction." Well, this is especially true when we start tinkering with habitats. Although we may have specific objectives relating to what we want to create or improve for the benefit of a specific species (or group of species), we tend to forget that, as a direct result of the actions we take to "help" that species, other animals will be affected negatively. The specific habitat needs of these other resident animals can no longer be satisfied by the "new" habitat. Therefore, as a part of any sound management planning effort, consideration also must be given to the potential existing benefits that might be lost while you eagerly anticipate the new benefits obtained as a direct result of your habitat improvement work.

An area of growing concern relates specifically to one type of tinkering that we routinely undertake, namely the use of plant materials to "enhance" a site. How we use plant materials in habitat work can take many forms. Landowners have long been interested in creating food plots as a means to attract wildlife or provide increased opportunity to view animals. Alternatively, in cases where properties have been disturbed as a part of conducting other management practices (e.g., timber harvest), there is need to quickly revegetate and stabilize these areas before erosion problems arise. Finally, there may be a simple desire to add a couple of new "wildlife" plants to the home landscape with hopes that some new critter might show up. The concern today lies in the selection of plant materials we choose to use. In recent years, there has been an alarming increase in our reliance upon exotic (non-native) species to fulfill these needs (see Table 1). Early on, few people recognized the impact these exotics were having on the native flora, but now we can see very clearly the negative consequences of our previous actions. Certainly no one needs to be reminded of what impact kudzu (*Pueraria lobata*) or tree-of-heaven (*Ailanthus altissima*) can have on the ecology of a site. In some areas, these plants have taken over completely or placed the survival of the native flora in jeopardy. And, as we learn more about biodiversity and what this ecological concept truly encompasses, the devastation inflicted by invasive exotics becomes clear.

Recently, Robert Paratley, curator of the University of Kentucky Herbarium, published an excellent overview article on the effects of invasive exotics that all landowners should learn more about. He paints an ominous picture of problems down the road, one where the problems inflicted upon our landscapes unfortunately seem to be getting worse instead of better. Certainly, the headline cases involving kudzu and purple loosestrife (*Lythrum salicaria*) are fairly well

known by most landowners. However, a large number of plant materials commonly used in habitat improvement projects over the years fall into the same list of exotics. Few landowners realize that most honeysuckles (*Lonicera spp.*), most lespedeza (*Lespedeza spp.*), Russian and autumn olives (*Eleagnus angustifolia* and *E. umbellata*), and fescues (*Festuca spp.*) - species promoted since the 1950s for wildlife enhancement - are exotic, and sometimes invasive, species. Mr. Paratley identified a number of characteristics that describe exotics, including the following:

- They produce small, but numerous, seeds;
- They reproduce within the first years of life;
- Most are capable of both seed and vegetative reproduction;
- Most seeds produced are dispersed widely by animals;
- They have very few specific or unique germination needs;
- These plants often are self-pollinating;
- There have few, if any, close relatives native to this country;
- Capable of surviving a wide north-to-south gradient of conditions;
- They have been introduced on a very large scale.

Given this impressive list of competitive advantages, it is obvious why they have become so successful in areas where they have been introduced and why there is growing concern over the effects these plants will have on our native ecosystems. Animals that are dependent upon native plant species may suffer as these plants become scarce or vanish.

My purpose in bringing this issue to your attention is two-fold: (1) we need to raise level of awareness among landowners, natural resource managers, consultants, and others involved in management planning about the serious consequences resulting from the invasion of exotic plant materials in this country, and (2) when habitat "improvement" objectives are being fulfilled, we need to make our selections for plant materials from among those items that are indigenous to this area, rather than from those outside the system. Once established, these exotics are extremely difficult to remove or control. It is far better to never let them achieve a foothold than to try to eradicate after the fact. Biodiversity is an important concept, but its emphasis is, and should be, on diversity within the native system, not diversity based on the import of exotic biological material.

Table 1. Exotic (non-native) plants now known to exist in the Southeast that become invasive and that many ecologists consider as species that should not be planted as part of any habitat enhancement project.

scientific name	common name	scientific name	common name
<i>Ailanthus altissima</i>	tree-of-heaven	<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Alliaria petiolata</i>	garlic mustard	<i>Lonicera maackii</i>	shrubby honeysuckle
<i>Allium vineale</i>	wild onion	<i>Lonicera tatarica</i>	tartarian honeysuckle
<i>Carduus nutans</i>	nodding thistle	<i>Lysimachia nummularia</i>	pennywort
<i>Cleatrus arbutifolius</i>	Asian bittersweet	<i>Lythrum salicaria</i>	purple loosestrife
<i>Cirsium vulgare</i>	bull thistle	<i>Maclura pomifera</i>	osage orange
<i>Cirsium arvense</i>	Canada thistle	<i>Melilotus alba</i>	white sweet clover
<i>Coronilla varia</i>	crown vetch	<i>Melilotus officinalis</i>	yellow sweet clover
<i>Daucus carota</i>	Queen Anne's lace	<i>Morus alba</i>	mulberry
<i>Duchesnea indica</i>	Duchesnea	<i>Musla dianthera</i>	false skullcap
<i>Eleagnus angustifolia</i>	Russian olive	<i>Naturtium officinale</i>	waterrcress
<i>Eleagnus umbellata</i>	autumn olive	<i>Ornithogalum umbellatum</i>	star of Bethlehem
<i>Eulalia spp.</i>	Eulaly grass	<i>Paulownia tomentosa</i>	paulownia
<i>Euonymus alatus</i>	burning bush	<i>Perilla frutescens</i>	beefsteak
<i>Euonymus fortunei</i>	creeping euonymous	<i>Pistia stratiotes</i>	water lettuce
<i>Euphorbia esula</i>	leafy spurge	<i>Poa pratensis</i>	bluegrass
<i>Fatoua villosa</i>	mulberry weed	<i>Pueraria lobata</i>	kudzu
<i>Festuca arundinacea</i>	KY 31 tall fescue	<i>Rosa multiflora</i>	multiflora rose
<i>Flechoma hederacea</i>	ground ivy	<i>Rumex acetosella</i>	dock
<i>Hedera helix</i>	English ivy	<i>Spirea japonica</i>	Japanese steeplebush
<i>Hydrilla verticillata</i>	hydrilla	<i>Stellaria media</i>	chickweed
<i>Lespedeza bicolor</i>	bicolor lespedeza	<i>Sorghum halepense</i>	Johnson grass
<i>Lespedeza cuneata</i>	sericia lespedeza	<i>Vinca major</i>	vinca
<i>Lespedeza striata</i>	Korean lespedeza	<i>Vinca minor</i>	vinca
<i>Ligustrum vulgare</i>	privet	<i>Cichorium intybus</i>	chickory
<i>Lonicera morrowii</i>	honeysuckle	<i>Rhamnus frangula</i>	buckthorn
<i>Lonicera standsihii</i>	honeysuckle		

from: Paratley, R. 1998. The ecology of invasive plants and their impacts on native ecosystems. Pp. 5 - 11 in *Natural Resources Newsletter*, Vol. 14, No. 4. University of Kentucky, Lexington, KY.

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However, in support of this sector, woodworkers spend heavily each year for the purchase of equipment, raw materials, and supplies.

The SFP sector is growing rapidly, perhaps faster than the timber industry, and is expected to grow more in the future. The market for forest products other than trees has mushroomed by nearly 20 percent annually over the last several years. The U.S. herbal medicine market is growing at an estimated annual rate of 13-15 percent with sales of medicinal herbs forecast to reach \$5 billion in the year 2000.

Focus on Alternative Forest-based Income Opportunities

A study based at Virginia Tech seeks to identify market opportunities for development of SFPs in Central Appalachia. This study is very timely. There are many organizations in the region seeking to learn more about these products and their role in economic development and sustainable forest management. The region shares a common forest-based culture and forest vegetation. In addition, economic conditions are common with income levels below national average, subsistence-based economies, and lower local employment opportunities with the decline of traditionally dominant industries.

The study is based on the fundamental assumption that market opportunities exist for non-traditional forest products that can sustain economic development of the region and still conserve valuable forest resources. However, before this can occur, much more knowledge is needed on all factors that influence SFP resources. To date, information has not been collected on the distribution and management of the region's SFP resources, and the nature of and extent to which these products are harvested, processed, and used. The conspicuous lack of information on the scope and value of these markets is a major obstacle to the sustainable development of SFP resources.

Further, understanding the needs of the stakeholders, those involved in managing and marketing these products, is most critical. Forest landown-

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ers, harvesters and processors, and policy makers all greatly influence how SFP resources are used and whether suggested policies will be successful. Their collaboration is essential to improve our understanding on how the SFP resources are managed, and hold the key to successful implementation of local forest resource utilization and management programs. We seek to document local knowledge on all aspects of these products, to identify local needs for policy changes, and to collect suggestions of inputs required for improved management and marketing.

We are producing a market profile for several example SFPs to illustrate the distribution network for these products. These examples will illustrate the breadth and depth of the markets for SFPs. Building on these examples, opportunities for improved management, potential new markets, and technologies appropriate for the sustained economic development of Southwestern Virginia will be identified. All recommendations should be ecologically sound and based on criteria that conserves the ecological integrity of the region. We seek a balance for management of these resources that provides the maximum benefits to the local people while conserving the forest ecology.

To achieve sustainable use of non-traditional forest products, there are still many questions left to answer. What is the value added chain for SFPs? Are we managing these resources so they will be available for future generations? How do local crafters obtain and process enterprise management and marketing information? Or even more important to local economic developers, what market information is needed and how can it be best provided to local producers? What new value added and product market opportunities exist? Special forest products have been overlooked for decades by extension and economic development programs. Focus on these products will bring numerous opportunities for landowners to gain income. Clearly, their time has come!

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