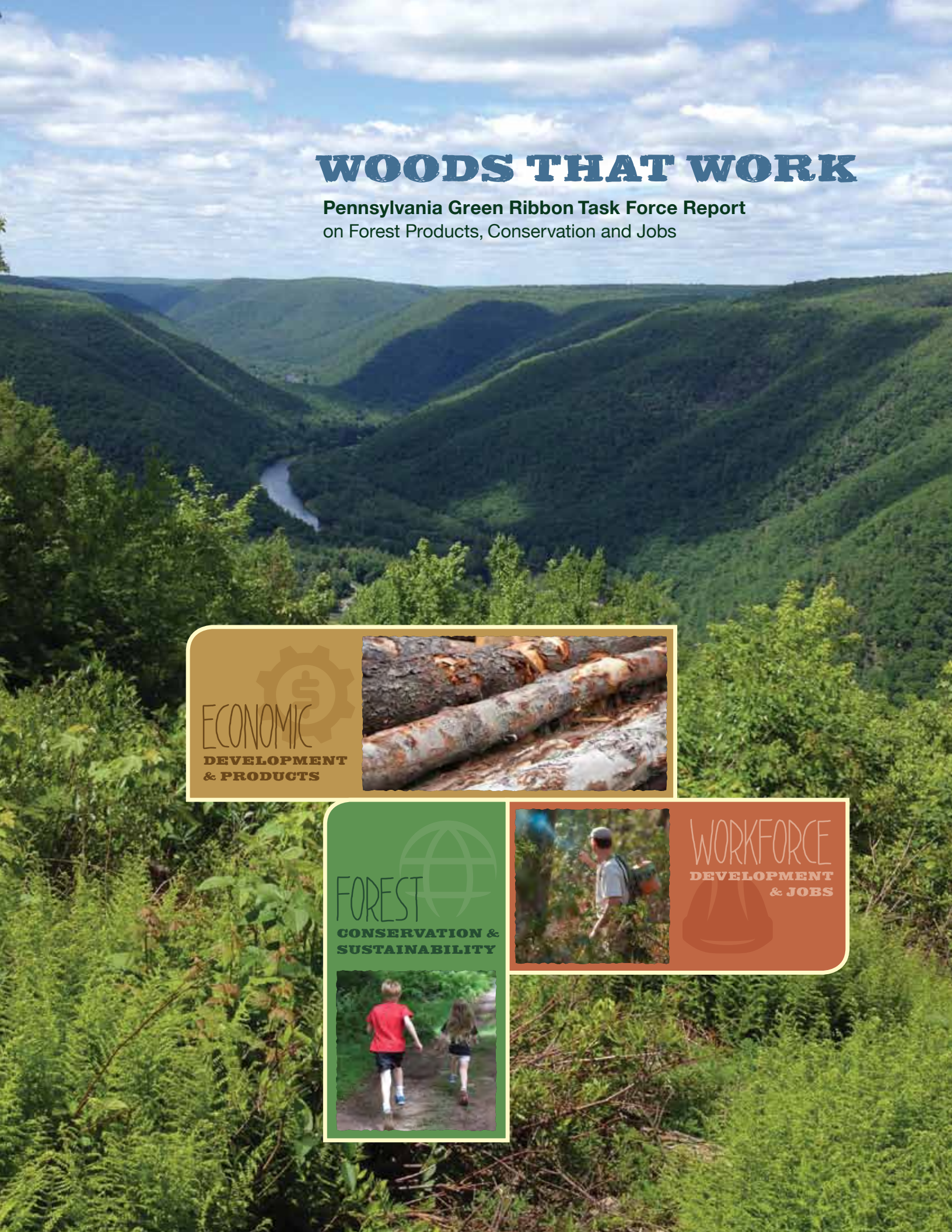
WOODS THAT WORK

Pennsylvania Green Ribbon Task Force Report
on Forest Products, Conservation and Jobs



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EXECUTIVE SUMMARY

How do we grow more good jobs while conserving and improving our forests? This was the charge given to the Department of Conservation and Natural Resources (DCNR) by Governor Tom Wolf in November 2015. Over the next eight months, DCNR, in collaboration with the departments of Agriculture and Community and Economic Development, gathered 36 experts from industry, academia, conservation, and state government to form a Green Ribbon Task Force on Forest Products, Conservation and Jobs to issue recommendations on conserving the forest and developing good jobs in Pennsylvania..

Despite the long title of the task force, we soon discovered how deeply and completely integrated and interdependent Pennsylvania's forests are with the forest products industry, jobs, wood-based manufacturing, artisan work, recreation, tourism, conservation, and sustainability practices. Forestry is not a regional activity or a niche market tucked away in one corner of Pennsylvania; a 2015 DCNR report, the Timber Product Output Survey, documented active sawmills and other primary wood-related production centers in every county in the state. Pennsylvania still boasts 16.6 million acres of forest, 58 percent of our total land base, which in turn supports a $20 billion forest products industry and 60,000 direct jobs. With multiple threats to forest health, recent declines in forest jobs, and long-term declines in manufacturing, there is still much work to do.

The following outline of recommendations are the top 15 identified by the task force. The full report includes a broader discussion of many of the cross-cutting issues involved. The recommendations here are divided into the three general topics addressed by the task force: forest conservation and sustainability, workforce development and jobs, and economic development and products.

Top 5 Forest Conservation and Sustainability Recommendations:

1. **Adopt a statewide forest conservation easement program** to conserve privately owned forestland while preserving access for sustainable timbering and other forest-dependent activities that support good jobs. A $200 million bond initiative would conserve 160,000 forested acres, slowing forest fragmentation, parcelization, and land conversions. A related recommendation is to create a Forest Cooperative Areas program through legislation, similar to existing Agricultural Security Areas, to enable adjacent forest landowners to manage their lands cooperatively in larger tracts that could be prioritized for easements,

carbon offset programs, timber access, and other benefits. Conservation groups, the Pennsylvania Forest Products Association (PFPA), forest products industry representatives, DCNR, and the PA Department of Agriculture (PDA) should collaborate to make this happen.

2. **Establish a carbon offset program** to attract a pool of voluntary contributions to finance forest conservation and improved management of private forests. Examples around the country demonstrate that individuals and companies are willing to donate money to conserve forests and the benefits they provide, including carbon sequestration. Existing forest bank models operate in two ways: raising voluntary carbon offset funds to support community reforestation, urban tree planting, and private forest conservation and management; and establishing a program that pays landowners an annuity based on the long-term value of their timber. These models would also create demand for professional foresters. The conservation community should lead this effort, and industry, government, and conservation groups should work together to establish a model program in Pennsylvania.

3. **Revise the current Clean and Green and Payment in Lieu of Taxes (PILT) programs** to support forest communities and ensure forest conservation is compatible with other needs. At the time that the task force was convened, members discussed a recommendation to increase PILT payments to counties, townships, and school districts – then, $3.60/acre total. In July 2016, a budget was signed that will increase these payments to $6/acre starting July 2017. House Bill 806 was also adopted and signed in July 2016, addressing an inequity in Clean and Green by ensuring that timber values will not exceed the county's appraised value for a forested parcel enrolled in the program. The task force recommended additional improvements to Clean and Green, including requiring forest stewardship plans for newly enrolled parcels to improve forest management. PFPA, PDA, DCNR, and conservation groups should work together.

4. **Provide additional funding to combat invasive plant and pest damage and adopt a plant labeling program** to ensure that consumers don't inadvertently contribute to the spread of invasive species. Recognizing the alarming advance of invasive plant and pest species in Pennsylvania, their ecological and economic threat, and current inadequate resources to address them, the task force strongly recommended two interrelated ways to address this need. First, boost annual funding for the multi-agency Pennsylvania Invasive Species Council (PISC), increasing its current annual budget of $45,000 from contributing agencies plus funding from PDA to a sustainable annual budget of $110,000 for a full-time coordinator. In addition, a $500,000 rapid response fund would enable state agencies and partners to tackle immediate threats such as hydrilla in lakes, as well as future threats. A related recommendation, modeled on a similar program in Maryland, is to adopt a tiered system of categorizing damaging invasive plants: those restricted from general sale and those allowed, but with a warning label to educate consumers. PDA and PISC should lead this effort.

5. **Adopt legislation and identify funding to enable DCNR to assist the U.S. Forest Service in increasing management activities on the Allegheny National Forest (ANF)**. Legislation is needed to specifically grant DCNR the authority to enter into a Good Neighbor Agreement (a program of the federal Farm Bill) with the U.S. Forest Service to enable state collaboration on federal lands located within the commonwealth. This would allow state partners to assist in planning, timber harvest management, and other resource management activities that the ANF is struggling to address with current resource levels. Funding to support this management assistance, either through conservation investment funds to be paid back or additional support through the state budget, would help DCNR provide this assistance. DCNR, the PA Game Commission (PGC), and ANF should work together to make this happen.

Top 5 Workforce Development and Jobs Recommendations:

1. **Adopt legislation to exempt loggers from Pennsylvania Department of Transportation (PennDOT) road-bonding requirements, age-related workplace restrictions**, and other benefits available to those in the traditional agriculture industry. This recommendation was offered by a group of Pennsylvania loggers who met with members of the task force. In the nation's most dangerous job, with an aging workforce (average age 52) and relatively low pay, loggers see their role as farmers of very long-rotation crops. However, loggers were left out of sales tax exemptions that sawmills and traditional agriculture can use for equipment. With the adoption of the 2016-17 state budget in July 2016, the sales tax exemption for loggers was enacted. With increased support, the Hardwoods Development Council (HDC) should work on securing additional exemptions and benefits for loggers.

2. **Expand safety and other training to encourage insurance companies to lower worker's compensation rates** for forest industry workers, or find workable models in other states that could be used in Pennsylvania. For many logging and forestry operations, worker's compensation costs can be prohibitively expensive. Many loggers choose to work independently to circumvent high worker's compensation rates, which only increases their vulnerability in an already dangerous occupation. Additional funding to strengthen ongoing training by the Sustainable Forestry Initiative (SFI)'s State Implementation Committee (SIC), a trusted nonprofit group that conducts similar training and would like to expand, could lower rates and improve job safety. SFI's SIC currently has only one employee, down from three employees before 2008. The HDC, hardwoods utilization groups, and SFI should also research how other hardwoods states and Canada are addressing these costs.

3. **Broaden recruitment efforts** to attract students already interested in technology, machinery, and other in-demand occupations, as well as veterans, displaced gas and coal workers, adjudicated youth, and others into forestry careers. Many students do not make the connection between their interests in wildlife and working outdoors and careers in forestry, and many already interested in machinery and other technology are not aware that the forest products industry hires for many technical occupations. The HDC created a forest jobs recruiting website in June 2016, but additional outreach tools and staffing are essential to expand this messaging into high schools, vocational-technical schools, and other programs. Multiple state agencies and industry should assist HDC here.

4. **Develop more formal and informal pipelines between industry and schools** through internships, apprenticeships, and industry partnerships to better prepare and match students for the forest-related jobs that require specific skills now and in the future. Pennsylvania has a small number of college-level programs that teach forestry-related subjects and skills, but many forest industry jobs don't require a four-year degree. The industry is also changing rapidly, requiring more technological and computer skills. Collaboration between the HDC, SFI, and providers, like Penn State, Penn State Mont Alto, Penn. College of Technology, Elizabethtown College, and industry can develop internships, apprenticeships, and curricula that produce the skill sets that industry needs.

5. **Broaden discussion and inclusion of forestry and forest occupations in formal and informal K-12 education**, including Future Farmers of America (FFA), 4-H, Envirothon, Boy and Girl Scouts, and children's literature. Many task force members noted that forestry has suffered a poor reputation as successive generations come to view cutting trees as environmentally damaging. Reaching students at a young age to provide better information on the benefits of forest management may counter this

view and encourage more young people to consider forestry as a career. Many forest occupations project shortfalls in the next 20 years, so recruiting is critical to the future of the industry. Updated curricula for K-12 students, more hands-on forestry for Scouts and FFA members, and children's books that include forest management can help. DCNR, PA Department of Community and Economic Development (DCED), the Department of Education, industry, and HDC should collaborate on these efforts, with additional HDC staff support.

Top 5 Economic Development and Products Recommendations:

1. **Increase sustainable staff and funding for the Hardwoods Development Council**, a trusted and collaborative partnership between state government and industry, to expand its work on many of the recommendations included here. A sustainable council is the vehicle to address many industry concerns, including recruitment, career paths, worker's compensation, marketing, sales, and local materials integration. It could also conduct research and support and expand the three hardwood utilization groups (HUGs) that provide critical support and services to industry and communities within their regions. The council is currently funded within PDA's budget at $385,000 annually, 80 percent of which supports the activities of the HUGs. An annual increase to $1 million would allow for the creation of additional regional HUGs and bring the HDC up to three full-time staff. PDA should lead this.

2. **Create a *PA Hardwood Stands for Quality* slogan and marketing campaign** to promote Pennsylvania hardwoods. Consumers in Pennsylvania and beyond need to be more aware of the many timber and non-timber products derived from Pennsylvania forests so that they prioritize them for purchase and thereby support local industries and good jobs. Promoting locally grown PA timber and non-timber products will also create a stronger public constituency for better conservation of Pennsylvania's forests. An adequately funded Hardwoods Development Council would be the right group to lead this campaign, supported by DCED, DCNR, PDA, and industry.

3. **Conduct forest tours and develop demonstration areas** to showcase best practices in forest management and industry on federal, state, and private forestlands. State and federal land managers in Pennsylvania do an outstanding job of managing their forest resources, providing a perfect template for showcasing these practices to private landowners and the visiting public. DCNR and PGC have already held a number of tours, which should be expanded. Private industry and the ANF also have opportunities to showcase best management practices (BMPs). Tours should be held near metropolitan centers as well to reach new and larger audiences.

4. **Conduct a comprehensive study to quantify and document the values of Pennsylvania forests**. Forests offer many ecological and economic benefits to the public and to landowners, but these benefits are not well-known or well-documented. Quantifying and documenting the many benefits of forests would provide needed data to make the case for forest conservation and better forest management, and thereby create demand for professional forestry jobs. In July 2016, The Center for Rural Pennsylvania asked DCNR to provide an outline of such a study for its board to consider funding in December, and Penn State researchers have developed a draft proposal outlining a one-year economic study to quantify forest benefits. If the center's board of directors agrees to pursue the study, it would fund this effort.

5. **Expand public awareness and education efforts to promote the importance of forests to clean water** and many other environmental and economic benefits. Many Pennsylvania residents and visitors take forests for granted. Forests cover almost 60 percent of Pennsylvania and are not in short supply. However, the quality and benefits of the forest vary greatly, and overall forest health is threatened on many fronts. Linking forest benefits, like water quality protection, to common uses of water through partnerships with breweries, bottled water companies, grocery chains, and other large-scale water users may get the forest conservation message to younger audiences, in particular. Several years ago, a Great Lakes beer coaster campaign was highly successful and provides a possible model for Pennsylvania. Conservation groups, DCED, PDA and DCNR should collaborate.

Green Ribbon Task Force on Forest Products, Conservation and Jobs

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INTRODUCTION

Pennsylvania is blessed with one of the most magnificent expanses of forest in the eastern United States. In addition to inspiring our state's name, these forests give many communities their sense of history and identity. Despite waves of clearance, development, and fragmentation, the commonwealth still holds relatively steady, with 58 percent of its land base covered by forest – a stunning 16.6 million acres. This forest base, in turn, supports a $20 billion forest products industry and many other jobs, directly or indirectly supported by the presence of the forest itself. Jobs and forests are inextricably linked; Pennsylvania's forests supply the raw materials used to sustain the forest products industry and other non-timber, recreation, and restoration jobs. In order to maintain a vibrant forest products industry and myriad other uses for forest materials, we must also conserve and care for the forest.

In 2008 and subsequent years, the forest products industry withstood one of the worst economic downturns in its history. With wood products strongly linked to housing construction, the Great Recession had an extreme impact on the forest products industry, which contracted from 100,000 direct jobs prior to 2008 to 60,000 in 2016. These job losses add to those of two decades ago, when the loss of furniture-industry jobs in the state in the late 1990s and early 2000s led to declines in overall forest products employment. Now in recovery, the industry is looking to expand again, grow new jobs, and modernize. And areas of job growth in the recreation, tourism, and restoration economies offer potential for forest-based jobs of a different kind.

A conversation between Governor Tom Wolf and DCNR Secretary Cindy Adams Dunn early in the new administration centered on what more could be done to create new jobs in the traditional forest products industry and beyond it, and to conserve the forest itself. Secretary Dunn invited colleagues Secretary Russell Redding of

Agriculture and Secretary Dennis Davin of Community and Economic Development to form a tri-agency Green Ribbon Task Force on Forest Products, Conservation, and Jobs. Its purpose would be to identify short and long-term recommendations to conserve Pennsylvania's forest and the jobs that depend upon it.

This report is the product of an eight-month effort that pulled together leaders in Pennsylvania's forest products industry, academia, conservation, workforce development, and government agencies. We share our findings in the hope that they will be discussed, debated, and ultimately put to use to promote more sustainable forest jobs and a healthy, robust Pennsylvania forest.

While this report is primarily focused on the intersection of forests and jobs, it is important to remember that forests play a vital role in many aspects of our well-being. Forests connect us to an earlier time, when pre-European settlement tribes of Susquehannock and other Native Americans lived in a forest that covered more than 95 percent of what is now Pennsylvania. Forests provide habitat and food for wildlife, which draw visitors to our state and support a $2.7 billion hunting, fishing, and wildlife-watching industry. Forests clean our air, filter our water, and sequester carbon. The state forest's 2.2 million acres alone sequester more than 4.5 million standard tons of carbon a year, helping to mitigate the effects of a changing climate. Pennsylvania's northern hardwoods provide brilliant foliage each fall, attracting tourists and recreators to state forests, state game lands, the Allegheny National Forest, and privately conserved forestlands, bolstering the rural tourism economy. Forests can offer peace and quiet, a retreat from urban din and crowding, and their effect on physical and mental health is only just beginning to be documented.

Forests are not a static environment, however. Among the many impacts discussed by task force members are forces that affect the quantity and quality of Pennsylvania's forest base: diseases, invasive species, subdivisions, housing market fluctuations, and ownership trends, to name a few. We hope you find the discussions and recommendations of this report enlightening and inspiring and that you will find time to take positive action.

TASK FORCE METHODOLOGY:

A team of 36 task force members was assembled, including members of the forest products industry, academia, nonprofits, government agencies, and other stakeholders. In addition to the main body of members, the planning team recruited agency and resource staff to provide subject matter expertise; these members also attended task force meetings and participated fully in the process. (For a complete list of task force members, see page vi.)

The task force was convened as a short-term group that would meet for a period of six months. The first meeting was held in January 2016, with subsequent meetings each month through June.

In addition to the main task force meetings, members were divided into three workgroups:

- Forest Conservation and Sustainability, led by Dan Devlin, State Forester at DCNR;
- Workforce Development and Jobs, led by Fred Strathmeyer, Deputy Secretary of Plant Industry and Consumer Protection at PDA; and
- Economic Development and Products, led by Carrie Lepore, Deputy Secretary of Tourism, Marketing, and Film at DCED.

Each workgroup met monthly, in between task force meetings. Workgroup chairs convened the meetings, led conversations, and acted as their group's spokesperson during report-outs at monthly task force meetings. Much of the substantive work on problem identification and solution development came from these workgroups.

The level of participation from task force members was extraordinarily high, with many half-day or all-day meetings requiring absence from normal work duties, which, in some cases, include running companies, agencies, or other organizations. All members were volunteers, participating without compensation. The cross-pollination of ideas and views made the task force a unique experience for most involved. We are extremely grateful to the task force members for their wisdom and service.

Task Force Meetings

January: At the first meeting, located at the Governor's Residence in Harrisburg, Secretary Dunn and Secretary Redding explained the background and purpose of the task force, and members introduced themselves. Three presentations then set the stage for the task force's future discussions:

- Current characteristics and conditions of Pennsylvania's forests – Dan Devlin, State Forester
- Issues facing private forests and forestland owners – Dr. Jim Finley, Penn State's Center for Private Forests
- Current state of Pennsylvania's forest products industry – Paul Lyskava, PA Forest Products Association; and Wayne Bender, Hardwoods Development Council

Attendees were also given a tour of the Residence, which focused on its history and use of Pennsylvania wood products in the Residence.

February: The second meeting focused on issues in workforce training and education. Held at Penn College of Technology in Williamsport, the meeting featured two presentations:

- An educational perspective on the forest industry – Eric Easton, Penn College of Technology
- The Sustainable Forestry Initiative (SFI) and its Professional Timber Harvester Training Program – Chuck Coup, SFI State Implementation Committee

An afternoon tour of the college's working sawmill gave participants a firsthand look at the hands-on training that students receive.

March: Held at the Selinsgrove Center, the third meeting centered on wood products and economic development efforts in rural Pennsylvania. Speakers included:

- Scott Basehore, a Lebanon County-based entrepreneur and wildlife guide who makes hand-carved turkey calls made Pennsylvania hardwoods
- Ta Enos, of the Pennsylvania Wilds Center for Entrepreneurship, on the growth of small businesses, including artisans and bed & breakfasts in forested communities

During a breakout session, participants identified, reviewed, and added to specific issues in each of the three subject areas. Afterwards, the group toured the nearby facilities of Wood-Mode, specializing in high-end cabinetry, and Bingaman Lumber.

April: The topic of the fourth meeting was forest conservation. At the Boalsburg Fire Hall, Shawn Lehman, of DCNR's Bureau of Forestry, provided updated Forest Inventory Analysis data on forest trends. In the afternoon, the task force toured Musser Gap, a recent DCNR acquisition, and heard from experts on invasive species (Bureau of Forestry), land acquisition (ClearWater Conservancy), and private forest landowner management (Penn State Center for Private Forests). Significantly, a delegation from the task force traveled to the annual Kane Area Logger Safety Meeting in Johnsonburg to hear directly from loggers about their needs and concerns.

May: At the fifth meeting, participants met at Harrisburg University to discuss the final collection of issues and begin formal discussion of recommendations. After a presentation on carbon offsets by Josh Parrish and Bill Kunze of The Nature Conservancy, and Gay Thistle, private forest landowner, the workgroup chairs presented the final lists of issues from the workgroups.

June: The sixth meeting featured a presentation by Wayne Bender of the HDC on the Keystone Wood Products Association's new jobs website: www.paforestcareers.org. Then, each workgroup presented its final set of recommendations. Finally, members ranked their top five preferred recommendations from each workgroup, which resulted in the 15 recommendations listed in the executive summary.

Additional Events:

August field trip to tour Martin Guitar's factory and sawmill and Jacobsburg State Park's Environmental Education Center

October final report release event at the Governor's Residence

Early Wins

As with many such efforts, a number of recommendations discussed throughout the task force meetings actually started or were completed prior to publication of the final report. Here is a list of some of these efforts that we have entitled "early wins."

Sales tax exemption – The final 2016-17 state budget included a provision that was much discussed during task force meetings and long sought by many in the forest products industry – a sales tax exemption on logging equipment. This exemption takes effect on July 1, 2017.

Creation of a youth corps – In summer 2016, DCNR launched the Pennsylvania Outdoor Corps, which offers work experience, job training, and educational opportunities to young people who complete recreation and conservation projects on Pennsylvania's public lands. In addition to hands-on job skills, the program provides weekly learning opportunities in resource management, environmental topics, and recreation skills.

Economic Value of the Forest Study – In summer 2016, Penn State Harrisburg submitted a proposal to the Center for Rural PA (CFPA) to complete a study of the economic value that Pennsylvania's state forest system brings to surrounding communities and the state, as a whole. If approved by the CFPA board, the study would begin in January 2017 and conclude within 18 months.

Revise Payments in Lieu of Taxes (PILT) – Per-acre payments to communities from state managed forestlands are legislatively required to offset funds that might be generated if these same lands were developed. In July 2016, the FY 2016-17 state budget increased PILT payments from $3.60/acre to $6/acre starting in July 2017.

Clarifications to the state Clean and Green Program – House Bill 806 was adopted and signed in July 2016, addressing an inequity in Clean and Green by ensuring that timber values will not exceed the county's appraised value for a forested parcel enrolled in the program.

Regional, multi-agency approach to invasive species – The Allegheny National Forest will convene a forest health collaboration in fall 2016, focused on addressing forest pests and disease. The goal is to develop strategies for use on the Allegheny Plateau that will transfer to other users and regions of the state.

Website to expand recruitment – In summer 2016, the Keystone Wood Products Association and the Hardwoods Development Council launched a website to expand outreach and recruitment in the forest products industry. The website, www.PAforestcareers.org, describes different positions within the industry and the training required for each. It also includes an option to request a mentor. (See box on pg. 18 for more information on the site.)

LEED recognition of additional certifications – In spring 2016, the U.S. Green Building Council modified its LEED certification system to give points for wood that is certified by programs other than the Forest Stewardship Council, formerly the only program that was accepted. Now, wood can be certified by American Tree Farm, the Sustainable Forestry Initiative, or groups endorsed by the Programme for the Endorsement of Forest Certification.

2016-17 Loggers Survey – In August 2016, Penn State University contracted with the Hardwoods Development Council to examine the state of the logging industry in Pennsylvania. Special focus areas include the business environment, worker's compensation, and training and support needs. The survey will conclude in spring 2017.

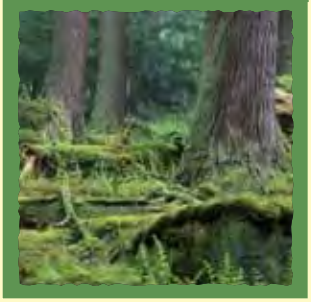
Habitat tour – On September 10, the Northern Tier Hardwoods Utilization Group cohosted a tour of golden winged warbler habitat improvements with the Pennsylvania Game Commission, one of several scheduled for the fall.

Broadband expansion grant – In August 2016, the U.S. Environmental Protection Agency (EPA) and the National Fish and Wildlife Foundation announced two "Cool and Connected" grant awards to Pennsylvania cities to expand broadband for community and economic revitalization. A grant to Clarion was awarded to broaden the city's capacity to "market nature-based tourism," and a grant to Curwensville was awarded to create a shared maker space.

WOODS THAT WORK REPORT

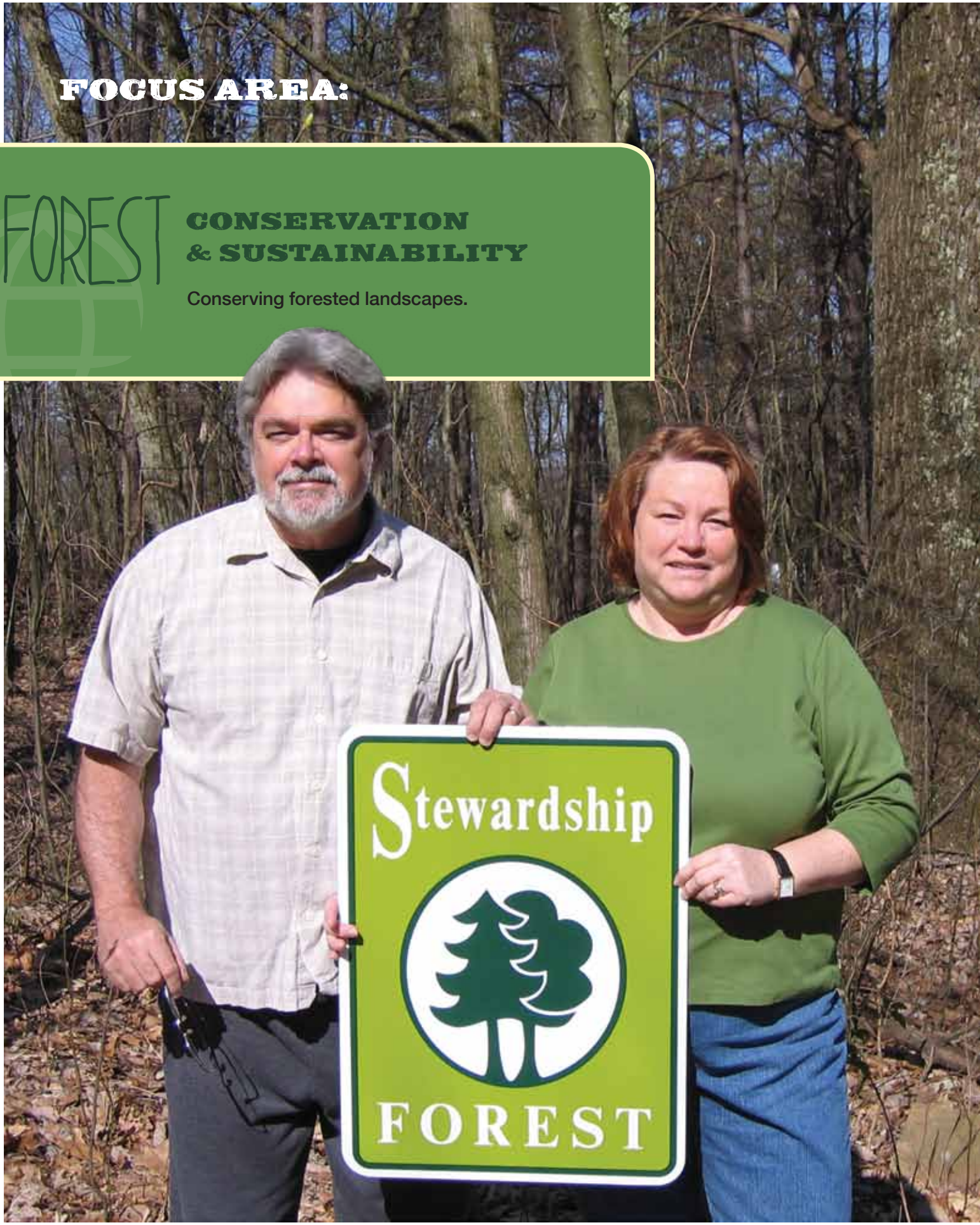
The following discussion represents both a broader discussion of the priority recommendations outlined in the summary, and discussion of related issues addressed by the task force, including additional recommendations. They are grouped according to the three focus areas studied by the Task Force – Forest Conservation & Sustainability, Workforce Development & Jobs, and Economic Development & Products.

FOREST CONSERVATION & SUSTAINABILITY



WORKFORCE DEVELOPMENT & JOBS

ECONOMIC DEVELOPMENT & PRODUCTS

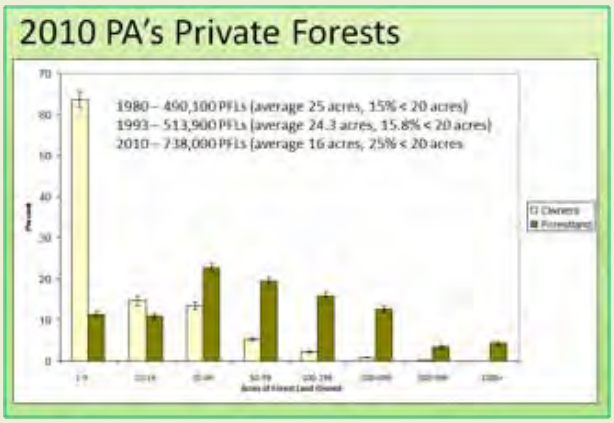


FOCUS AREA:

FOREST CONSERVATION & SUSTAINABILITY

Conserving forested landscapes.

As forest fragmentation and parcelization – the process of dividing forested land into multiple, smaller parcels – continue to split the forest into smaller tracts, a mix of strategies will be required to conserve large, working forests for timber access, in addition to conserving a whole suite of ecological and recreational values. Data from 2010 estimates that Pennsylvania has at least 738,000 forest landowners, whose average age is 59 years old. Private forests make up 70 percent of Pennsylvania's forested land base. In another study, researchers found that the next generation of landowners have varying viewpoints of forest ownership, raising additional uncertainty as to future management and stewardship. Landscape-level management with a focus on overall sustainability is extremely difficult, with larger numbers of landowners owning smaller parcels and having wide-ranging management objectives.



In 2010 Pennsylvania had 738,000 private forest landowners (PFLs). The majority own parcels under 10 acres in size. As land is transferred from generation to generation, those parcels are divided even further. (Finley, Center for Private Forests)

Parcelization creates more and smaller ownerships, which can result in fragmentation or conversion to non-forest uses. Fragmentation, in turn, can compromise many forest benefits, including habitat to support more and larger wildlife species, and often water quality. One tool to limit or prevent parcelization and ensure that forested parcels are large enough to accommodate management and ecological function is a conservation easement. Land conservation easements ensure that land will not be developed or mismanaged, while often allowing the landowner to continue practicing sustainable agriculture and timber harvesting. Many states have programs that provide private landowners with tax benefits or other financial incentives when they decide to conserve their land through an easement.

Pennsylvania leads the nation in conserving working agricultural lands in private ownership but, to date, has not placed the same emphasis on conserving working forests that are privately owned. At the state level, policies and programs exist across state agencies and down to the local municipal level to ensure prime agricultural soils remain available for production. In addition to the nationally recognized Agricultural Conservation Easement Purchase Program that purchases conservation easements on agricultural properties, the commonwealth has policies in place that require DCNR and the Department of Environmental Protection (DEP) to review projects proposed for grant funding to ensure the proposed project will not convert farmland to a non-agricultural use. Forestland, on the other hand, is not given the same prioritization and is often even viewed as "vacant" land by municipal planners and officials.

FORESTLAND ACQUISITION

As timber investment management organizations and other landowners divest of their holdings, there are exceptional opportunities to permanently conserve working forests that could otherwise be subdivided and taken out of active timber management. For these large holdings, direct acquisition by state agencies is often the most effective conservation strategy. State agencies are well positioned to manage large tracts of forest while sustainably managing timber resources. In some cases, partnerships between industry and state agencies in purchasing land is the most feasible means to conserve large forests while providing continued access to local industry.

Without a complementary forest conservation easement program, Pennsylvania lags behind other states, such as Virginia, New York, Maryland, and Georgia, which have implemented broader land conservation programs with a variety of incentives and requirements for landowners. Many of these programs specifically denote the value of woods by prioritizing large working forests (New York), riparian buffers (Washington, Virginia), and sustainable timber harvesting (Michigan).

Pennsylvania should enact a statewide forest conservation easement program, either alone or as part of a larger conservation funding package. Funding could be through a bond initiative. A program of $200 million would enable enrollment of 160,000 high-priority acres, at an average cost of $1,250 per acre. Enrolled lands would require a forest stewardship plan to ensure good management, and timber access would be permitted. Organizations qualified under the Conservation Preservation and Easement Act would be eligible to hold the easements. The state would not be designated as holder of easements.

A related recommendation is legislation to develop "Forest Cooperative Areas," modeled on (but not identical to) Agricultural Security Areas, to encourage adjacent forest landowners into larger compacts to compete for conservation easement funding, provide better timber access, and apply for other resource funding, including voluntary carbon credits. Forest Cooperative Areas would provide an additional incentive to landowners to keep their lands in forest cover and slow current rates of fragmentation and parcelization. DCNR, PDA, PFPA, HDC, Pennsylvania Land Trust Association, and other stakeholders should work together to develop an outline for this program.

Providing technical assistance to private landowners can also be an effective and low-cost way to improve forest management and to combat forest loss and fragmentation. Pennsylvania has a rich tradition of woodland owner associations that organize and educate private forest landowners. DCNR's service foresters provide outreach and technical assistance to these groups, as does Penn State's forestry extension service. Allowing greater flexibility and/or incentives to enable service foresters to participate in more evening or weekend meetings with woodland owner associations would strengthen this symbiotic relationship and lead to better forest outcomes.

Generating Revenue From Carbon Offsets

There is a large and growing market for carbon offsets, based on avoided deforestation, tree planting, and carbon-conscious forest management. In 2014, companies and governments across the globe committed $705 million in new finance for these projects, more than a third of which ($257 million) was channeled through voluntary and compliance carbon markets in the form of direct payments for carbon emissions reductions and sequestration. This market will likely grow in future years, given increasing interest in the business world in purchasing offsets to satisfy corporate social responsibility goals, as well as the likely growth in purchases of offsets to meet regulatory requirements.

With nearly two-thirds of the state in woodlands, the commonwealth and many of its landowners could benefit greatly from the sale of forest-based carbon offsets. The Nature Conservancy has already facilitated over $4 million in sales of carbon offsets for Pennsylvania landowners (see box on Working Woodlands program) and is working on projects likely to generate another $20 million in sales in the next 10 years. However, there are significant obstacles to participating in these markets, especially for smaller landowners.

WORKING WOODLANDS

Working Woodlands is a forest conservation program that uses certified forest management and the growing voluntary carbon market to fund protection and improved management of private forests. Building on its extensive land conservation and forest management experience, The Nature Conservancy works with carbon market developers who find buyers for the tons of carbon sequestered by well-managed forests. This funding, in turn, is used to pay for better management practices by cooperating forestland owners, including a full forest inventory, Forest Stewardship Council (FSC) certification, management plan implementation, and carbon monitoring and verification.

Landowners who qualify for the Working Woodlands program sign their acres into conservation easements or long-term management agreements to prevent them from being converted to non-forest uses and unsustainable management practices. Sustainable timbering activities are allowed. All forest products produced from enrolled Working Woodlands properties are FSC-certified, and the landowner retains 100 percent of the revenue from timber sales. The carbon sequestered as a result of improved forest management practices is verified and sold on the carbon market, providing additional revenue to the landowner. This approach allows landowners to sustainably manage their woodland acres with FSC certification credit with no upfront costs, while receiving long-term value from FSC-certified product and carbon sales. The net result is better managed forestlands, more carbon sequestered, and greater incentive for landowners to protect their lands long-term.

To guarantee sustainable forest management and the credibility of the offsets, landowners generally need third-party certification of their forestland as sustainably managed, as well as market information and access. The certification process is complicated and expensive and has proven to be an insurmountable hurdle for the majority of smaller landowners. In order for more Pennsylvania forest landowners to benefit from selling forest carbon offsets, there must be convenient and affordable sources of forest management plans that meet third-party certification standards; forest certification; carbon modeling services; and carbon marketing services.

Addressing this challenge could also address the lack of good management on private forestlands. Landowners with access to revenue from carbon markets would have greater means to pay for the professional management of their woodlands. This, in turn, would create demand for more consulting forester jobs. The goal is to facilitate payments for carbon offsets in ways that supplement, not displace, other types of forest-based economic activity, including timber harvesting. It is worth noting that, in general, active management of woodlands for carbon revenue not only allows for, but actually relies upon, sustainable harvesting to improve the ecological health of the forest and increase its carbon sequestering ability.

Pennsylvania should establish a carbon offset fund to raise voluntary contributions to support forest conservation, forest restoration, or better forest management. One option would be a program such as The Nature Conservancy's Working Woodlands program that pays landowners through a carbon credit exchanges to certify their forests, conserve them, and improve forest management. A second option would be a forest bank that would promote private forestland conservation through carbon credits as well as future timber receipts, with payments to landowners annualized through an annuity structure.

The task force also discussed climate change, but did not settle on a specific direction. Workgroup discussions noted that DCNR has undertaken an active role in developing climate adaptation and resiliency plans for its own managed lands and for all practices throughout the agency. DCNR will continue to work to ensure that forest conservation and forest regeneration are recognized and supported as critical carbon-sequestration agents in future state climate-related planning, policy, and funding efforts.

A Revolving-Loan Fund to Finance Forest Stewardship

There is growing global interest in certification programs to foster sustainable forest practices. Typically, these programs take the long view and require participants to follow a suite of criteria and indicators that involve record keeping and periodic inspections, and are generally geared toward larger landowners. A recommendation from one of the task force members who studies forest sustainability, Prof. Jim Finley, would establish a revolving-loan fund to help landowners of all ownership

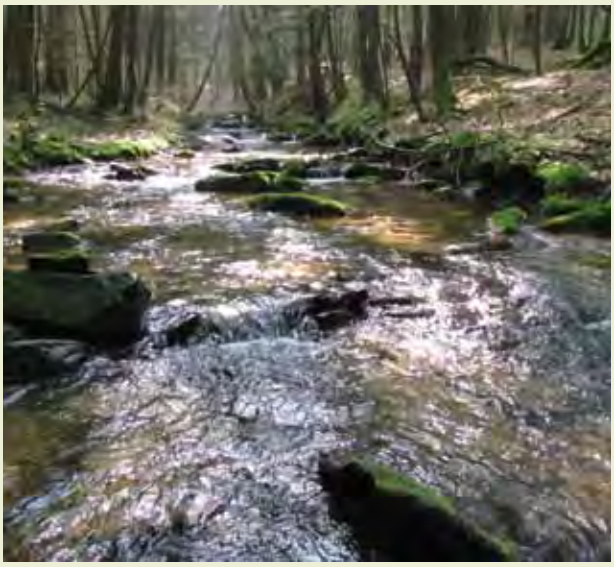
size (25 percent of owners have less than 20 acres) improve their forested acres and pay back the cost of the practices through timber harvest receipts. Importantly, landowners would contract with foresters who would be "certified" according to a set of standards and agree to continuing education and periodic third-party assessment of their work.

By certifying the forester to conduct timber harvests to standards, as opposed to the forest tract itself, landowners will know the harvesting and other management practices they are paying for are based on sound science and will benefit them in the long run with healthier and more economically sustainable forestlands. To certify forest professionals, Finley recommends a certification board be established to develop and conduct training programs, develop certification metrics, and maintain a cadre of certifiers. Forest professionals who don't maintain or follow approved practices could be decertified by the board. The Forest Bank, mentioned earlier in this report, could also be set up to provide this revolving-loan fund service.

Revise Pennsylvania's Payment in Lieu of Taxes (PILT) and Clean and Green Programs

In multiple discussions, task force members debated how to revise the current Clean and Green and Payment in Lieu of Taxes (PILT) programs to support forest communities, and ensure forest conservation is compatible with other needs. At the time the task force was convened, it discussed several pending legislative proposals to increase PILT payments to counties, townships, and school districts (then $3.60/acre total). In July 2016, the PA General Assembly adopted, and Gov. Wolf signed, a budget that will increase these payments to $6/acre by July 2017.

Pennsylvania's Clean and Green program, signed into law in 1974, allows qualifying landowners to pay less in property taxes as an incentive to keep their land in agricultural or forest use. The intent of the act is to protect farmland, forestland, and open space – which provide multiple public benefits – by allowing for land



taxation based on use value rather than the prevailing market value. The program is the only state program in Pennsylvania to provide financial support specifically for conserving forestland. In order to qualify, land must be 10 acres or more, stocked by trees of any size, and capable of producing timber or other wood products.

DCNR calculates use values for landowners in the Forest Reserve program, with assistance from Penn State, and provides counties annually with forest reserve values, which are based on the average value of timber in a particular county or the average value of six timber types by county. Based on annual reports conducted by PDA, the average reduction in fair market-assessed value for enrollees is nearly 50 percent. About 4.38 million acres of the state's 12 million acres of private forest ownership are enrolled in the program, which also has a sizable impact on local tax bases.

Clean and Green includes a claw-back provision for landowners that change the use of their property. By law, landowners cannot voluntarily remove their land from Clean and Green. If a landowner does change the use of enrolled lands, the landowner will be subject to seven years of rollback taxes at 6 percent interest per year.

In counties where land prices are high and timber values are low, such as in southeastern PA, Clean and Green's incentives may not always compete well with development or other land-use conversion. In counties where timber prices are high and land prices are low, such as in

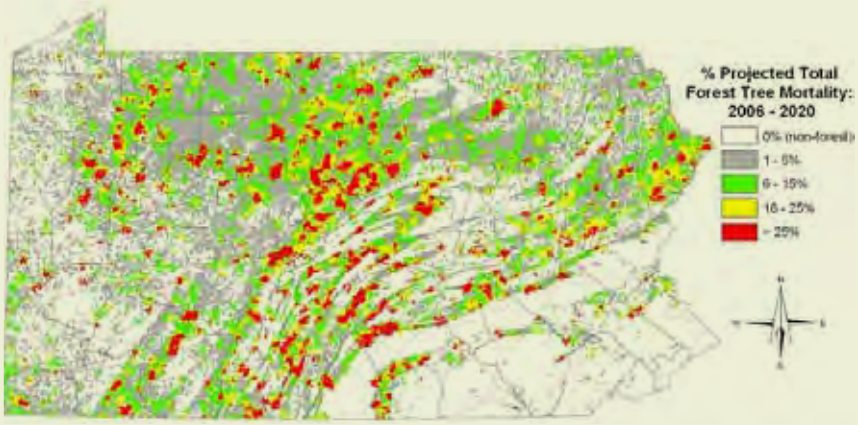
northcentral PA, timber values can approach or even surpass market use values, providing little incentive for enrollment or long-term participation. In addition, Clean and Green allows non-farmers to qualify for preferential assessment under agricultural reserve and forest reserve designations, which can incentivize the sprawling development of 10-acre "mini-estates."

In 2009, legislative changes to the Clean and Green Act provided an exemption for landowners to lease their enrolled lands for oil and shale gas extraction, as well as other energy development. Periodically, legislation is proposed to make changes to the program, and a number of changes have been enacted over the years. In July 2016, House Bill 806 was adopted to ensure that timber value assessments cannot be higher than county assessments for a parcel enrolled in the program.

Additional recommendations to improve Clean and Green's Forest Reserve program include: requiring all new enrollees to complete a forest stewardship plan for their enrolled lands and implement the plan within three years of its completion; and PDA, Penn State, DCNR, and other stakeholders working together to revise the current forest valuation assessment process.

Combatting Invasive Species

Non-native invasive species are very serious threats and can have devastating impacts on the long-term health and sustainability of Pennsylvania's forests. Diseases and insect pests have already significantly changed the forests and urban landscapes of Pennsylvania. Oaks continue to be at risk from gypsy moth defoliation and from sudden oak death. Hemlock woolly adelgid, introduced into Pennsylvania in 1967, continues to spread westward and continued monitoring will be critical to research and management efforts aimed at understanding and ameliorating its impact. The emerald ash borer was detected in Pennsylvania in 2007 and, as of 2016, had spread to 60 of 67 counties, according to Penn State. It poses a significant threat to the 323 million ash trees and urban communities throughout the commonwealth. The Asian longhorned beetle, should it enter Pennsylvania, is another insect pest that could cause considerable harm to maple trees, already under stress, due to the decline of the sugar maple. The first detection of the spotted lanternfly occurred in August of 2014, and since then eradication efforts have been underway in Berks, Bucks, Montgomery, Lehigh, and Chester counties. This pest poses significant threat to the commonwealth's apple orchards, grape vineyards and the maple trees.



Pennsylvania Insect and Disease Risk Map

The tree mortality risk map shown below indicates the Pennsylvania forests at risk for mortality due to various damage causing agents from 2006 to 2020.

Inspection of the damage done by the emerald ash borer.

Many non-native invasive plants also threaten the forests of Pennsylvania. Terrestrial species, such as Japanese stilt grass, mile-a-minute weed and multiflora rose, have been adversely affecting biodiversity and forest regeneration throughout the state. These invasive plant species alter nutrient cycling, hydrology, fire regimes, light-penetration levels, regeneration of native species populations, and physical habitat structure throughout once-healthy ecosystems.

Recognizing the alarming advance of invasive plant and pest species in Pennsylvania, their ecological and economic threat, and current inadequate resources to address them, the task force strongly recommended two interrelated ways to address this need. First, boost annual funding for the multi-agency Pennsylvania Invasive Species Council, increasing its current annual budget of $45,000 from contributing agencies plus funding from PDA to a sustainable annual budget of $110,000. Expanded resources would enable the council to undertake more proactive planning and implementation activities. In addition, a $500,000 rapid response fund would enable state agencies and partners to tackle immediate threats, such as emerald ash borer, hydrilla in lakes, and gypsy moth defoliation, as well as future threats. While this size of fund is not sufficient to address even today's known invasive threats, it is a place to start as a down payment in a tight budget climate. Eventually, long-term sustainable funding will be needed.

A related recommendation, modeled on a similar program in Maryland, is to adopt a tiered system of categorizing invasive plants: those restricted from general sale, and those allowed with a warning label to educate consumers. Additionally, working across agency lines, specifically with PennDOT, would provide resources and technical expertise to address the spread of invasives along transportation corridors.

Forest Regeneration

White-tailed deer are an integral part of Pennsylvania's forest ecosystems. However, the removal of large predators, land use changes, and changing regulatory regimes have profoundly altered population dynamics and the overall impact white-tailed deer have on other forest plant and animal communities.

Deer have been a significant factor in limiting forest regeneration in the state. Ensuring desirable regeneration throughout Pennsylvania's forest is a management

MARYLAND TAKES STOCK OF INVASIVE PLANTS

Invasive plants are not only a problem in the wild; some are actually sold to homeowners by commercial nurseries! Maryland took action to limit the spread of the most damaging invasives.

Maryland's Department of Agriculture recently put into effect regulations that split certain invasive plants into two categories. The first category, or tier, names species that are no longer allowed to be sold, as of April 2016. By April 2017, it will also be illegal to sell, transfer, import, propagate, transport, purchase, or introduce in any way a Tier 1 species into the state without either express permission from Maryland's Secretary of Agriculture or evidence that possession of the plant is for research or disposal and control purposes.

Tier 2 plants are allowed to be sold, but Maryland vendors must clearly advertise their invasive status to potential buyers by placing a 5" x 7" (or larger) version of this "Plant with caution!" sign next to the species. Landscapers are also restricted from planting these species for customers, unless the customer still requests a particular species after having received a list of Tier 2 invasive plants.

challenge; across the state, only 49 percent of sampled stands have adequate regeneration to develop into high-canopy forests (Forest Inventory Analysis, 2014). When considering only commercially desirable species, the number drops to 36 percent. The extent and quality of forest regeneration has far-reaching impacts on forest health and the suite of values that forests provide to society. The natural replacement of forests helps to maintain and enhance Pennsylvania's forest land base that recharges water within watersheds, stores carbon, and provides numerous other ecological services. The habitat structure that young forests also provide is essential to many wildlife species, and to the future availability of wood products.

While inventory and monitoring efforts have shown improvements in forest regeneration in recent years, it is important for Pennsylvania to continue to balance

deer population with available habitat through ongoing monitoring and research, as well as support for programs, such as the PGC's Deer Management Assistance Program, that encourage additional hunting pressure – and hunting opportunities – on public and private lands where deer browse is most damaging.

Better State/Federal Collaboration

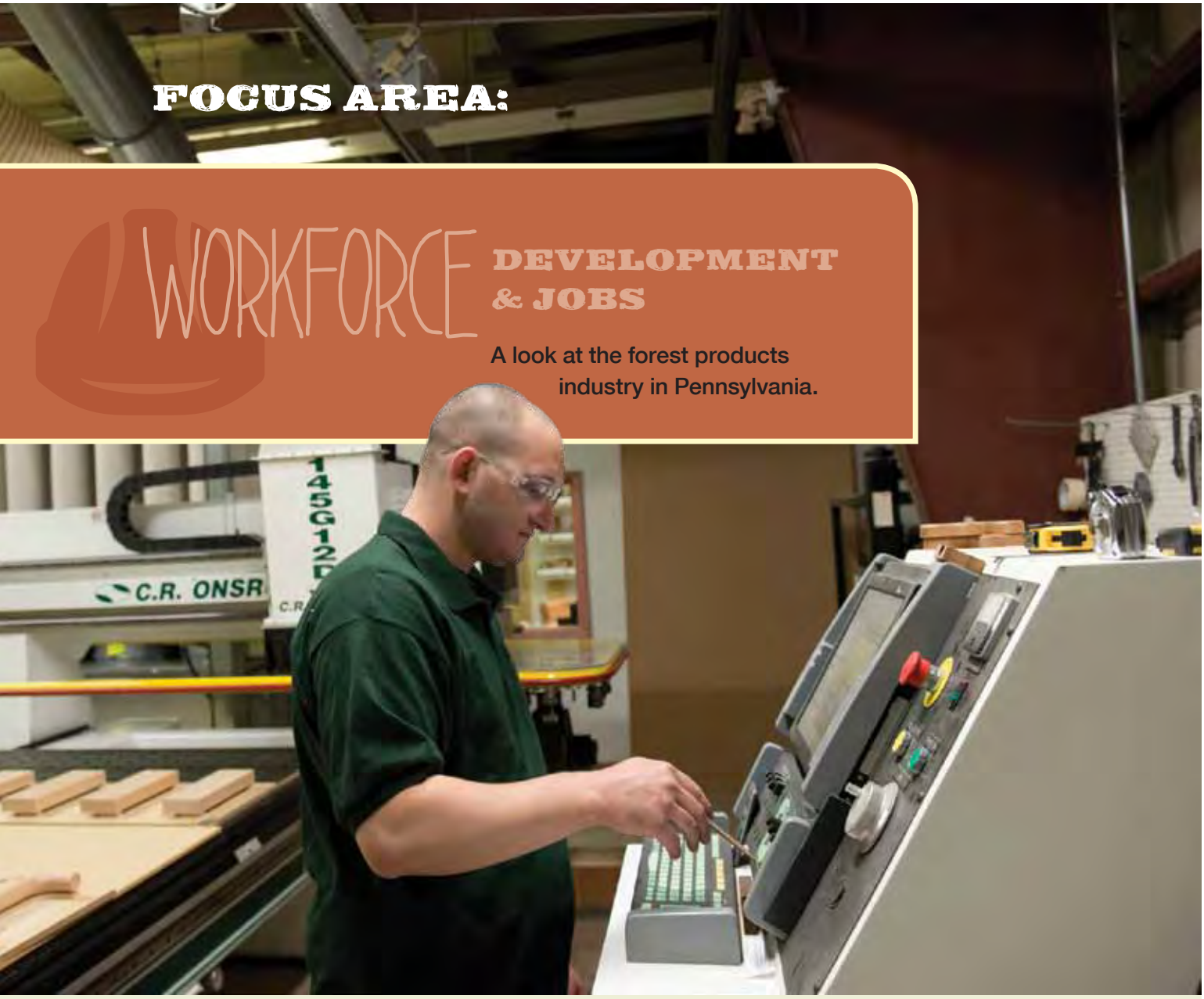
The Good Neighbor Authority is a federal Farm Bill program that allows state resource agencies to partner with federal ownerships within their states to achieve shared forest management objectives. To date, the program has been adopted by several states, and Wisconsin, in particular, has led the way, instituting a Good Neighbor program with the 1.5 million acre Chequamegon-Nicolet National Forest. This partnership led to the first state-administered timber sales on federal lands.

Pennsylvania's Allegheny National Forest (ANF) comprises 517,000 acres, located in McKean, Warren, Forest, and Elk counties. Similar to forests in other parts of the commonwealth, the Allegheny has faced severe forest health challenges in recent decades. The reasons for these challenges are many, some of which have to do with the complicated and time-consuming process of making changes and management decisions under a myriad of federal requirements. Sustainable timber harvesting and the establishment of young, regenerating forests would help restore the Allegheny's forest health, in addition to efforts to expand invasive species control. Landscape-level neighbors are already present, with DCNR, the PGC, and other large, privately-held ownerships adjacent and internal to the ANF. Allowing these neighbors to help the ANF with planning, management, and monitoring would accelerate improvements on many levels.

While the Bureau of Forestry is granted statewide authority through the Conservation and Natural Resources Act of 1994 to conduct forest fire protection, cooperative forest management, and forest health, its authority is generally limited to working on state-managed lands.

Funding is another possible barrier to establishing the program. Good Neighbor collaborations are meant to supplement Forest Service operations, rather than replace them, creating the need for "start-up" funding to cover the initial costs of preparing and completing projects. The most reliable manner in which to do this would be through timber sales. A percentage of profits from timber receipts would be retained by the Forest Service to meet their statutory requirements, but the remaining receipts could be utilized to perpetuate the program. However, a sufficient amount of start-up funding would be necessary to pay for personnel, contractors, materials, and other up-front costs.

Developing and adopting legislation to grant DCNR the authority to enter into a Good Neighbor Agreement with the U.S. Forest Service to enable state collaboration on federal lands will help address these needs. Funding through private or public sources can "front" the cost of state assistance, with future timber receipts as a source of funding to pay back the initial investment. State and federal partners should work together to identify and secure these start-up funds.



FOCUS AREA:

WORKFORCE DEVELOPMENT & JOBS

A look at the forest products industry in Pennsylvania.

Pennsylvania's forest products industry supports nearly 60,000 direct jobs, but this is a decline from 100,000 direct jobs prior to the collapse of the housing market in 2008. As the market picks up again, we need to take additional measures to shore up existing jobs, create new jobs, and recruit more youth into careers in the forest products and supporting industries to ensure the industry's future. Most of Pennsylvania's over 200 timbering operations are small entrepreneurial and family operations. Several recommendations address loggers and foresters specifically.

Current Trends and Issues in the Forest Products Industry

There is a growing need for workers, as much of the industry's existing workforce is at, or rapidly approaching, retirement. Falling enrollments in forestry programs, misalignment between coursework and skills required by the industry, and the changing demand for wood products have been complicating factors in sustaining career pipelines.

The industry is made up of roughly four segments: forestry, wood products, paper, and cabinets and

furniture. Each segment has a different geographical footprint throughout the commonwealth, and occupations vary dramatically from segment to segment. Forestry has some jobs that are unique to this particular industry, such as a timber faller, while jobs in the remaining sectors resemble those in much of manufacturing – operators, assemblers, supervisors. There are also layers of tradespeople and technicians, as well as scientists and engineers, which require fewer people but provide critical skills and knowledge.

Expanding Recruitment

Each level of the industry has its difficulties in recruiting workers. Forestry and wood products companies must compete with the rest of manufacturing in basic production jobs. Because three of the segments listed above operate in areas of the commonwealth that have low unemployment rates – Lancaster, York, Montgomery, and Bucks counties – and a great deal of manufacturing employment, in general, companies in those areas must be competitive in order to win workers. Technical training related to the industry is also rare in these localities.

CALLING ALL HOTSHOTS

In April 2016, the USDA Forest Service released a video entitled "A New Front Line," specifically targeted to military veterans and advertising job opportunities with wildfire crews. As the beginning of the video notes, veterans statistically have a higher rate of unemployment compared to the national average, yet their skills and willingness to work difficult, physically demanding jobs make them excellent candidates for many positions like these. Much of the same could be said for occupations in the forest products industry. Loggers, for instance, have physically demanding jobs that require working outdoors, but they also carry a sense of purpose – supplying a valuable and much-used resource for the population while ensuring proper forest conservation.

https://www.youtube.com/watch?v=oOwyu6-XKvM&feature=youtu.be

For the middle level of trade and technician jobs, professional competence and certification are additional areas of importance, but connecting interested people with the right education and training is difficult. In some cases, credentials that reflect the needs of these jobs do not exist.

Other workforce issues include: lack of interest by youth; uncompetitive wages with other manufacturing and oil and gas jobs; few opportunities to introduce the sector to young people; degree inflation of some jobs – many do not require associate or bachelor's degrees but few alternative training options are available; and insufficient communication between the industry and academia or other training providers about the current requirements of an industry that is being reinvented by technology.

Public misperceptions of forest-related work also have negative effects on recruitment, retention, pay scale, and job satisfaction within these careers. Pennsylvania's forests stand for quality – quality of life, quality of the environment, quality of habitat, quality of the wood products made from them – and forests contribute in myriad ways to our collective well-being. Yet most of our citizens take these forests for granted and assume that the best care for them results from simply leaving them alone. From the very earliest ages, children learn that cutting trees is "bad." When forests are taken for granted and active management is seen in a negative light, it becomes more difficult to sustain a dedicated and professional workforce, and recruitment into the forest products industry becomes more difficult.

In addition, wages are low relative to other professions and to the cost of the education needed for many positions, in part, perhaps, because the services are not seen as valuable. When forestry and the production of wood products are seen as destructive of the forest, and when forest products don't receive the "green product" price bump that they could, wages and benefits for the industry are constrained.

At the high school and college levels, task force members discussed the need to broaden recruitment efforts to reach students about forest-related careers and target

WOOD-MODE TOUR

To get a better understanding of the manufacturing sector within the forest products industry, task force members participated in a tour of Wood-Mode, a high-end cabinet manufacturing plant in Snyder County. Wood-Mode's workforce practices on training, career-path mobility and worker retention provide a model that could be adopted throughout the industry. For many positions, job applicants are not required to have prior credentials or experience, merely a good work ethic and work habits. Successful hires are trained on the job, paid a competitive starting wage, given raises for consistent on-time attendance and work performance, counseled in career paths, provided on-the-job skills training, and given many other benefits. Not surprisingly, Wood-Mode's average job tenure is 17 years. While Wood-Mode also suffered a downturn during the Great Recession, cutting back from three shifts a day to one, it is now growing again, and continues to attract more job applicants than it can hire.

FOREST JOBS WEBSITE

The Keystone Wood Products Association has partnered with the Pennsylvania Hardwoods Development Council to develop a new website to promote Pennsylvania based jobs and careers in the forest products industry; the website went live in June 2016. The website – www.paforestcareers.org – highlights jobs in forestry, logging, sawmills, and secondary processing, including veneer, kitchen cabinet, furniture, and paper manufacturing. It also provides links to all Pennsylvania-based training opportunities that are currently available for such jobs, including vocational schools, colleges and universities, and certification programs/short courses.

The mobile-friendly website is designed for students to explore jobs and careers based on their interests in working outdoors, helping the environment, using their hands, and operating cutting-edge technology. It also offers a mentor option for students to have a one-on-one conversation with an experienced professional in their field or position of interest. Useful for current professionals, as well, the site will provide up-to-date job openings throughout the state.

students already interested in technology, machinery, and other in-demand occupations. Many students do not make the connection between careers in forestry and their interests in wildlife and working outdoors. Penn State, for instance, is producing many wildlife biologists with few job opportunities, and not enough foresters, where demand is increasing. Many students already interested in machinery and other technology are not aware that the forest products industry hires for many technical occupations. The HDC and the Keystone Wood Products Association's recent website launch identifies and profiles these forest products jobs as a step towards making that connection (see box above for more information).

Conservation Jobs

While the task force mainly focused on job opportunities within the traditional forest products industry, members did offer suggestions for two areas ripe for expansion – the conservation and restoration sector, and private consulting forestry.

Many jobs in the forestry conservation community exist within government at the federal, state, and local levels, as well as in private industry, nonprofit land trusts, and conservation organizations. In recent years, tight budgets have constrained expansion of these positions within governments. Land trusts and conservation groups are generally funded on "soft" money and are also subject to the vagaries of the market. Former Army Corps of Engineers Director Storm Cunningham has written a book entitled *The Restoration Economy* which cites "the hidden multi-trillion dollar economic sector that

is revitalizing our communities, our nations, and our natural resources." Unfortunately there is not a well-defined set of "restoration" or "conservation" jobs at the state level. Updating federal NAICS codes to reflect the many different occupations in conservation related work would be an initial step toward growing the industry and supporting it with training, credentialing, and workforce development dollars.

Since 2011, Massachusetts' Division of Ecological Restoration has been charged with ensuring that public investment of state dollars in restoration work yields significant returns in local jobs and the economy. Programs and projects are analyzed to determine what approaches have the best ecological *and* socio-economic outcomes for the state. Massachusetts has also been quantifying the benefits of state project funding on individual sectors, including design and engineering, construction, wholesale construction materials, nursery products, and nonprofit science. These types of analysis and incentives to locally source restoration work would benefit Pennsylvania job growth and conservation outcomes as well.

Until conservation jobs are given a definition and a sectoral identity, it will be hard to quantify their impact on Pennsylvania's economy. Programs like Growing Greener currently fund hundreds of restoration projects in the commonwealth each year, but these funds are declining. Reauthorizing Growing Greener conservation funding would support hundreds of good conservation jobs in science, consulting, engineering, planning, design, and physical restoration work, and benefit commonwealth streams, forests, and other natural landscapes.

Reaching a New Set of Forest Landowners

Restoring health to Pennsylvania's privately held forest land is another area that is ripe for job growth. Accomplishing this work depends on training a workforce with specialized knowledge and skills and developing relationships with two segments of private forest landowners: 1) owners of properties of less than 20 acres; and 2) owners of properties from 20 to 100 acres. Some of these acreages are found at the edges of cities and towns, in suburbs, and adjacent to or incorporated within farms. Forestlands held by both ownership groups will require professional assistance in establishing native regeneration, invasive species control, tree removal, and riparian buffer maintenance.

The opportunity for those who could provide forest management services on small acreage is potentially huge: there are 470,000 forest landowners in Pennsylvania with parcels smaller than 20 acres. Traditional forestry

practices, such as timber harvests, are often not practical on these smaller parcels. A new model is needed that creates its own demand – developing relationships with small-acreage owners motivated to invest in improving their forestland not necessarily for profit, but for wildlife habitat, water quality improvement, and other benefits.

One recommendation from the task force included training a cadre of "restoration foresters" in skills such as business-plan writing, forest-health assessments, invasive species treatments, wildlife habitat creation, and small-scale logging to provide fee-for-service assistance to these owners of small and medium sized forest parcels. Existing groups like the Sustainable Forest Initiative and Penn State Center for Private Forests would be well-positioned to provide this kind of training.

A related recommendation would be additional training on values and benefits of forestland and legacy planning for non-traditional partners, such as bankers and real estate agents, whose work often influences the choices forest landowners make but who may lack the knowledge or awareness of sustainable land choices that landowners could benefit from. An app that could list trained non-traditional partners would make it easier for forestland owners to find and hire professionals who understand the non-monetary benefits of forestland ownership.

Workforce Issues Affecting Pennsylvania Loggers

On April 5, 2016, the Workforce Development and Jobs workgroup attended the 48th annual Kane Area Logger Safety Meeting, a gathering of hundreds of loggers from Pennsylvania's Northern Tier and southern New York to discuss the latest developments in resource management, logging technology, and safety. The purpose of the workgroup's visit was to gather input from some of those working on the ground in the industry. Seven loggers, ranging in years of experience and mechanical versus hand-felling, talked about issues that they face as businesspeople and employers.

Major topics that were discussed included:

- Difficulty in recruiting new, young workers
- High worker's compensation rates compared to those in neighboring states
- Road bonding and sales tax exemptions that agriculture receives but logging does not
- Rules regulating the use of mechanized equipment on DCNR land

The group also proposed some solutions, including:

- Establishing a working intern program with technical schools that would allow students to experience a logging operation
- Addressing the perceived negative view of the logging industry by society through an education and marketing campaign highlighting the many positive contributions that loggers make to conservation and society as a whole, including forest products, wildlife habitat management, and forest conservation
- Promoting logging as a career opportunity among high school students, especially those not on the "college track"
- Examining and learning from the European model of logging/timber harvesting, in which operations are conducted with a high degree of professionalism and loggers function as hybrid foresters/loggers

- Fully applying the "agriculture" designation to logging by amending legislation on sales taxes on equipment, road bonding, and child safety age laws to include logging in the exemptions already given to the rest of the agriculture industry

- Examining an incentive program for loggers to upgrade to newer equipment, in order to improve worker safety and environmental performance

One of the first recommendations identified by the task force was to eliminate sales tax on logging equipment. The Pennsylvania Tax Code currently provides a sales and use tax exclusion for purchases of equipment, material, and services used in both agricultural operations and manufacturing/processing operations, including sawmills. Prior to 2016, no such sales and use tax exclusion existed for those purchases used in commercial timbering operations. As a result, loggers were required to pay sales tax on purchases of equipment that is similar or even identical to tax-exempt equipment used at both farms and sawmills. Many loggers view trees as an agricultural product that simply has a longer rotation cycle than field crops. Passage of the 2016-17 state budget in July 2016 included a provision exempting sales tax for timber operators, which takes effect on July 1, 2017.

New mechanized equipment used in logging is expensive, so the sales tax exclusion could save loggers tens of thousands of dollars on their new equipment, helping Pennsylvania loggers and forest products companies to remain competitive and positively impact the continued recovery and job growth in the state's forest products industry. In addition, the sales tax exclusion may encourage the purchase of updated and modern equipment that can provide additional safety to loggers and help to improve the efficiency of the state's logging industry.

Safety Trainings and Worker's Compensation

The high cost of worker's compensation for those in the forest products industry, and for loggers, in particular, has been an issue identified for many years; it was one of the top three issues of concern noted in a survey of loggers by the HDC in 2009. High costs are a reflection of the danger of the occupation, as well as the potential seriousness of accidents associated with logging.

Loggers in Pennsylvania spend at least $50 on worker's compensation for every $100 they earn, according to Sue Swanson of the Allegheny Hardwoods Utilization Group (AHUG). Many decide to opt out of worker's compensation requirements by working alone, which exacerbates the dangers of the job. In a recent survey of timber operators, at least 25 percent of companies with fewer than five workers had no insurance, a reflection of sole proprietors opting out of insurance entirely. Worker's compensation coverage rose to 97 percent among companies with five or more employees because employers are obligated to provide their employees with it.

Addressing worker's compensation presents a chicken and egg conundrum: Loggers are unlikely to want to sign up for insurance when the financial hurdle is so high, but until Pennsylvania can create an insurance pool with enough loggers to bring down the costs, these costs will remain high and prevent loggers from joining the pool. A look at neighboring New York reveals a model that might work for Pennsylvania insurers. The New York Lumberman's Insurance Trust Fund pools insurance for loggers and the sawmill industry and offers reduced rates after a two-year period. AHUG has agreed to convene a group of stakeholders to look at options within Pennsylvania and in other states. A state or federal subsidy to defray startup costs for loggers who opt in would be one way to resolve the initial financial obstacle faced by loggers when joining an insurance pool.

A second route to reducing these costs was suggested in a conversation with staff of the Pennsylvania Compensation Rating Bureau (PCRB). Stronger logger safety trainings would hopefully result in lower incident rates, which could then result in a reassessment of the "lost cost" portion of loggers' worker's compensation premiums. In addition, those who participate in safety trainings could see a significant reduction in their worker's compensation costs

from the insurer. Fortunately, the Sustainable Forestry Initiative already conducts a logger safety training program. With additional funding and staff support, this training could be strengthened and expanded.

It became clear through several conversations with practitioners and agency staff that not enough is known about the current enrollment of loggers in insurance, their cost concerns, or other available options. The HDC and Penn State are planning to survey loggers in fall 2016, with data expected back by spring 2017, which would include several worker's compensation-related questions.

Better Training for Foresters and Loggers

Currently, demand for properly trained loggers comes primarily from landowners, land managers, and primary manufacturers. There are several sawmills, paper mills, and landowners that either require the use of or have preferential purchasing from trained loggers. DCNR's policy of using trained loggers for its timber harvests has been a key driver in promotion of logger training in the state. The Pennsylvania SFI logger training program has been very successful in providing the required trainings for loggers across the state, but with increased demand for training, as well as a market for more intensive programs to qualify for reduced worker's compensation rates and other benefits, comes a need for a similar expansion of SFI's program and others like it.

Although the popularity of logger training has been on the rise, there are still numerous large landowners, consulting foresters, and manufacturers that have no requirement or preference for the use of trained loggers. This has allowed the demand for untrained loggers to remain fairly strong. The qualifications of SFI-trained loggers have not been broadly promoted and are not well-recognized by the public, at large. Geographically, the distribution of trained loggers is concentrated in regions with higher amounts of DCNR land and in the procurement regions of large manufacturers that have instituted a purchasing preference.

To a lesser degree, a similar issue is true for foresters. There are still many sawmills that do not use foresters for procurement, sometimes due to the cost associated with hiring a qualified forester. Because a large part of the timber harvest in the state comes from private lands, landowners themselves can play a more proactive role by hiring qualified foresters prior to harvest to advise them on sustainable timbering options, thereby increasing demand for qualified foresters. Reinforcement of the need for qualified foresters, and loggers and sustainable land management from land managers and manufacturers (end users) will help support this trend.

Currently, SFI's logger training program is limited by scarce resources. Additional staff and funding for SFI would allow expansion and marketing of logger training programs. Industry, state agency, and conservation partners should work together to communicate the benefits of using trained loggers – including increased safety training, professionalism, and knowledge of the craft – to manufacturers and landowners.

Some companies provide loggers with a monetary incentive to do the training, both as a bonus payment for the qualification and to compensate for lost time on the job and the cost of training itself.

Increasing K-12 Forest Education

Workforce workgroup members of the Green Ribbon Task Force spent many hours talking about the need for better, different, or expanded educational opportunities. These discussions focused on three main topic areas: reaching youth early enough to consider forest-related jobs; reaching students at the high school and college levels who may be interested in wildlife, outdoor work, or machinery and technology but have not seen the connection between these interests and forest products jobs; and new training, retraining, or credentialing and certification programs for adults to enhance professionalism, professional advancement, and expanded demand for their skills.

Many task force members noted that forestry, as an occupation, has suffered a poor reputation as successive generations come to view cutting trees as environmentally damaging. Reaching students at a young age through inclusion of better information on the benefits of forest management may help to counter this view and encourage more young people to consider forestry as a career. State agencies and partners should work to broaden the discussion and press for greater inclusion of forestry and forest occupations in formal and informal K-12 education, including in Future Farmers of America (FFA), 4-H, Envirothon, Boy and Girl Scouts, K-12 curricula, and children's literature.

Suggestions for reaching younger students included: developing a new children's book that includes easily accessible discussions of sustainable forest management; distributing more broadly existing materials, such as the U.S. Forest Service (USFS) children's book *Why Would Anyone Cut a Tree Down?*; integrating talking points on the importance of forest management into existing DCNR Parks and Forestry, PGC, USFS, and other environmental educational programs to provide standardized messaging through multiple partners and platforms; reaching out to science/teachers associations and creating a campaign for greater forest-based environmental education in classrooms; and hosting a symposium or facilitated workshop for school administrators and educators.

Members of the workforce group conducted an informal survey of educational opportunities currently available in Pennsylvania, including the use of national Project Learning Tree curricula. Specific recommendations to expand and improve results for educating youth about sustainable forestry include: focusing more effort on reaching children in grades K-4, where views and values are still developing; creating a Project Learning Tree component specific to Pennsylvania and its forest system, similar to those developed in other states; conducting a survey of students and adults to assess their views of forests, forest practices, and wood products; and continuing to support the many good programs, after school clubs, and environmental engagement opportunities that we already have.

Creating Partnerships Between Education and Industry

Pennsylvania has a small number of college-level programs that teach forestry-related subjects and skills. Many forest industry jobs don't require a four-year degree, and some don't pay well enough to ensure graduates can pay off large student loans in a timely way. The industry is also changing, requiring more math, science, and computer skills. To expand career and technical education on forest products industry-related skills, greater support is needed for outreach, equipment, and the development and support of programs. Governor Wolf's 2015-16 and 2016-17 budget proposals included an additional $27 million for career and technical education grants to support career counseling, skills, equipment, and other career development for middle- and high-school students. While final FY 15-16 and 16-17 budgets did not include

PENN STATE
ALUMNI MENTORING PROGRAM

In spring 2016, Penn State began an alumni mentoring program for students in the Department of Ecosystem Science and Management. The program recruits willing alums to pair up with interested students for at least a semester, in order to provide students with opportunities for job shadowing, real-world career advice and networking, and regular check-ins to encourage academic and professional success. Although it is open to all Ecosystem Science and Management majors, the program is being heavily promoted to introductory forestry classes and forestry and wildlife societies, in hopes of strengthening the bond between Penn State students and the forest products industry.

this additional funding, future budgets should include funding for forestry skills training, counseling, and equipment as part of the CTE training effort.

Groups like SFI and the state's eight Community Education Councils (CECs); providers like Penn State University/Mount Alto, Penn.College, and Elizabethtown College; and members of the industry should also collaborate to develop internships, apprenticeships, and curricula that produce the skill sets that the industry needs. One good example is profiled above.

Additional ideas suggested by the workgroup included broader use of the CECs as training opportunities for students interested in forestry careers. A number of these CECs are already located in the "Big Woods" counties of Pennsylvania where many forestry operations are centered. Expanded support for the Sustainable Forestry Initiative could also allow them to play a greater role in developing pipelines of interest at the high school level for forestry programs at CECs, community colleges, and other higher education institutions. Starting a forestry summer program for high schoolers at Mont Alto, Penn College, or a community college was another suggestion to recruit students early. A Forest Leadership Academy or a Forestry Field School to engage and empower high school students to become forest conservation ambassadors could be modeled after the Wildlife Leadership Academy offered by the Pennsylvania Institute for Conservation Education.

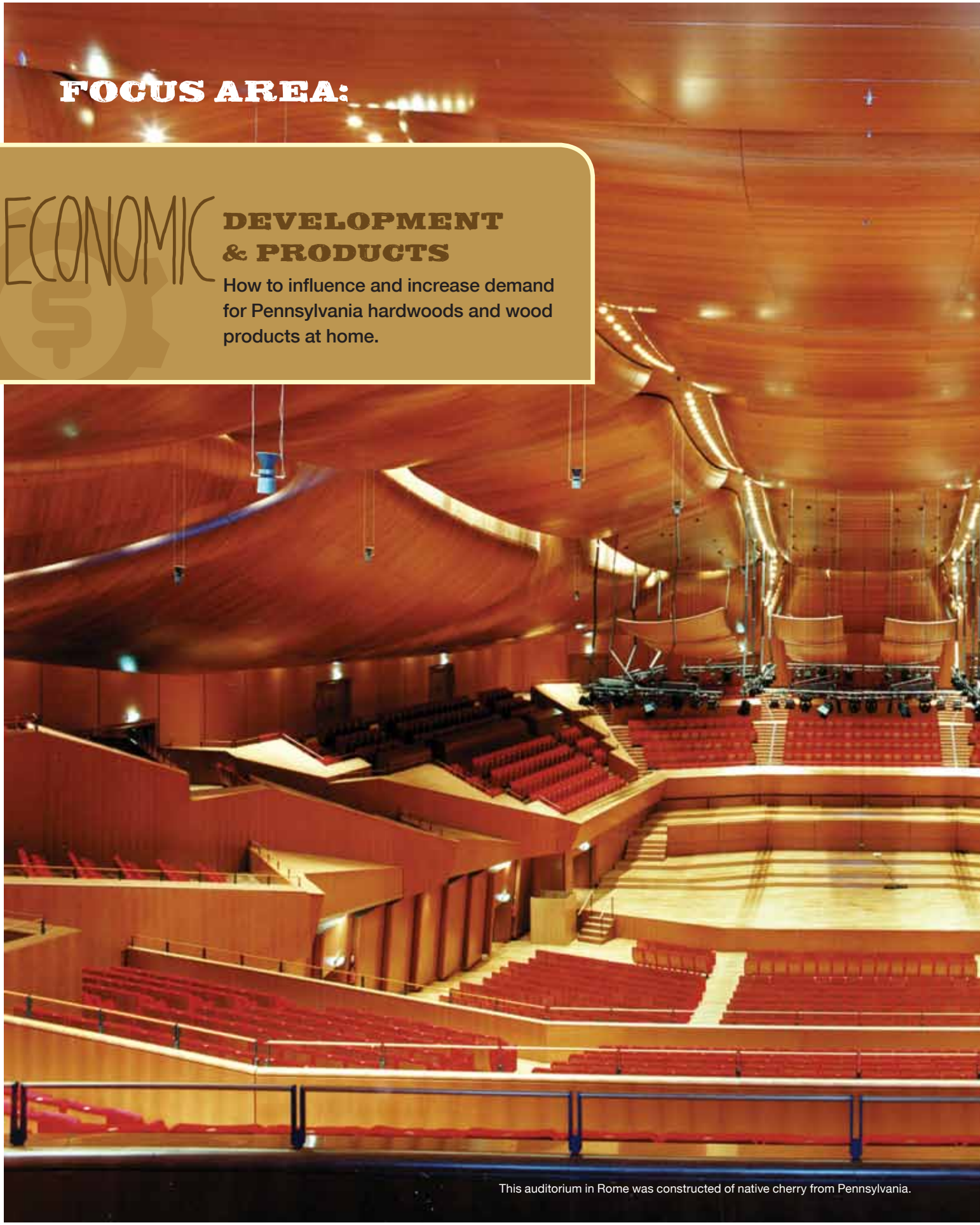
Colleges could also adjust their current programming, including development of a general "outdoors careers" major to expose wildlife biology and other students to forestry and forest management, giving them cross-training and increasing their chances of employment. Similarly, a hybrid agriculture and conservation major or series of classes would give students interested in a career with conservation districts the ecological backgrounds to make better conservation decisions, and future farmers would benefit from better understanding the value of their woodlots and how to manage them.

Microcredentials are another avenue to bolster current employees' skill sets without taking time away from the job or incurring major debt, although it would first be necessary for industry to take a proactive role in defining its workforce needs. Scott Sheely, task force member and special assistant for workforce development at PDA, noted that forestry and forest-related professions are among the least credentialed of all occupational groups in Pennsylvania. A 2009 workforce development study undertaken by the Allegheny Hardwoods Utilization Group, however, noted that the forest products industry is one that does not necessarily need much credentialing, characterized instead by on-the-job training, so there may be debate within industry about the amount of formal credentialing needed.

FOCUS AREA:

ECONOMIC DEVELOPMENT & PRODUCTS

How to influence and increase demand for Pennsylvania hardwoods and wood products at home.



This auditorium in Rome was constructed of native cherry from Pennsylvania.

In recent years, Pennsylvania's hardwoods industry has focused increasingly on expanding and developing new overseas markets. However, as the 2016 price decline of native cherry has shown, the multiple factors affecting worldwide demand for Pennsylvania hardwoods are hard to predict and harder to control. The wood products workgroup of the task force focused much of its discussion on how to influence and increase demand for Pennsylvania hardwoods and wood products at home, where increased sales would also support more Pennsylvania-based jobs. Areas of task force research and focus included:

- How to create more demand for Pennsylvania hardwoods at home and abroad through marketing, messaging, and education
- How to ensure that in-state manufacturers are aware of Pennsylvania hardwoods and that these products are meeting local manufacturer's needs and specifications
- What forest products have potential for immediate and long-term expansion, including non-timber forest products
- How forest-based tourism can promote Pennsylvania hardwoods and create more recreation-based jobs
- How to incubate new opportunities for makers and manufacturers in Pennsylvania

Traditional timber products include raw materials taken from the forest, and wood products that go through a manufacturing process. Raw products include: saw logs, veneer logs, pole wood, chips, bark mulch, and sawdust. Traditional wood products include: furniture, cabinetry, and millwork.

The state's forest product industry produces $11.5 billion in products each year. But given the supply of many different kinds of wood now and projected into the future, economic potential is much greater. Many private forests in Pennsylvania poorly timbered over the years have low-value wood without a robust market. Sources of low-value wood like chips and sawdust that are by-products of manufacturing also need new markets. Urban low-value wood either from residential trees or construction debris or other sources has few identified markets. Biomass energy is one potentially large user of low-value wood, but the sustainability of its life cycle is still a matter of debate. There are numerous studies underway both within Pennsylvania and beyond looking into the sustainability and economic viability of biomass energy.

The growth rate of available Pennsylvania hardwood currently outpaces marketplace demand. As a result, Pennsylvania hardwood supplies continue to increase while potential revenue and economic development go unrealized.

Source: Hardwoods Development Council

The wood products workgroup was fortunate to have a Pennsylvania-based manufacturer on the team, Nick Colesanti, a vice president and wood buyer with Martin Guitar. He provided his assessment of the considerations that drive manufacturers' decisions to buy Pennsylvania hardwood or some other material/wood: price, quality, durability, performance, color, grain, dimension, availability, aesthetics, suitability to need, sustainability and environmental concerns, safety, publicity, marketplace acceptance, historical precedence, incentives and disincentives, ease of purchase, lead time, regulation and legality, transportation and logistics, processing, and alternate materials.

There are three main ways to derive more revenue from Pennsylvania forests and individual trees. The first is to convert more of the resource into cash (i.e., cut and sell more trees). The second is to increase the value of the resource/trees, and the third is to keep more of the value in Pennsylvania by manufacturing products here.

One suggestion from the group was to conduct a survey to identify users of hardwood products in Pennsylvania who are not getting their hardwood supply from Pennsylvania, and ask them why. This information would be critical before moving forward with a marketing or messaging campaign. If the hardwood product cannot serve the end-users' needs, no amount of marketing will improve sales. A second research task would be to identify subsidies in other industries that are currently competing with hardwoods. According to several task force members, some of these subsidies are related to transportation. It is currently cheaper to move hardwood and other timber products here from overseas than within Pennsylvania.

Also important is educating private forest landowners themselves about the value of their trees. Many landowners are getting cents on the dollar for their timber, while middlemen are getting the lion's share of the value. Many landowners are simply unaware of what their trees are worth. This knowledge would also drive landowners to make better management decisions – for example, not allowing harvesters to cherry-pick or "high-grade" the most valuable timber and leave less desirable trees behind with dim prospects for future growth or merchantability. While Penn State Extension already provides outreach and education to groups of private forest landowners, this work should be expanded to reach more landowners, through funding support by the state. One task force member suggested supporting a public-private position to offer interested landowners advice on how to value their timber – an "Antiques Roadshow" for forestland owners. While not displacing the services of a consulting forester, it would give landowners enough knowledge to establish a better bargaining position. The Pennsylvania woodland owners associations would be an ideal partner in this effort.

Ultimately, the problem for Pennsylvania's hardwoods industry is how to increase demand for Pennsylvania hardwood species by influencing material buying decisions, thereby expanding Pennsylvania hardwood use for both existing and prospective products.

One of the potential growth areas for Pennsylvania hardwoods products discussed by the group was in "green," or sustainably certified, buildings. An early recommendation was to work through the U.S. Green Building Council that administers the LEED certification program for green buildings and landscapes to award additional points in their ranking system for the use of locally sourced hardwoods. One change that the council made in early 2016 was to expand the qualifying forest certification programs from one – the Forest Stewardship Council – to include American Tree Farm, the Sustainable Forestry Initiative, and those programs endorsed by the Programme for the Endorsement of Forest Certification. More work is needed to drive green-building projects and proponents to make more widespread use of locally sourced hardwood products. The demanding chain-of-custody requirements currently found in LEED certification should be studied to look for ways to improve and streamline this process. A number of task force members felt that an alternative certification process or methodology would be more fruitful to promote wood building materials.

Hardwoods Development Council Funding

The task force fully endorsed increasing sustainable staffing and funding for the HDC, already a trusted and collaborative partnership between state government and industry, to expand its work on many of the recommendations included here. A sustainable council could be the vehicle to address many industry concerns, including recruitment, career paths, worker's compensation, marketing, sales, and local materials integration. It could also conduct research on markets for low-value wood, methods for keeping the industry up to date on trends, best practices for branding products in this and other industries, technological innovations (such as thermally treated lumber for specification by architects), and non-timber industry needs. The council would also support and have the opportunity to expand the three hardwood utilization groups that provide critical support and services to industry and communities within their regions.

The HDC is currently funded within PDA's budget at $385,000 annually, 80 percent of which supports the activities of the HUGs, with the rest for additional services and one full-time staffer. With an increase to $1 million annually, the HDC would return to its historical, higher level of sustainable funding. This would give the council the resources necessary to perform new research, lead new projects, create one or two additional regional HUGs, and expand the council itself to three full-time staff. It would also support the restoration of a grant program, cut in recent years, to aid additional research and programming by outside groups. It would also support the council's work on creating new well-paying forest jobs here in Pennsylvania. Additional staffing would help expand the reach of The PA WoodMobile, an educational traveling interactive exhibit the HDC has shared with 1,567,845 visitors since 2002, including 171,880 students and teachers through workshops and school programs.

Several recommendations were made to broaden participation on the council, including adding a representative or two from the building industry to provide expertise on the demand side of using wood products. Another suggestion was to continue in some form the cross-pollination of ideas developed through the work of the Green Ribbon Task Force. This could involve a subgroup of interested members to help move recommendations forward, or broadening representation to include members from the conservation, marketing, or technical education fields.

Marketing the Forest

A common suggestion from many task force members was to create a "PA Hardwood Stands for Quality" slogan and marketing campaign to promote Pennsylvania hardwoods and to better integrate locally grown hardwood materials in regional manufacturing and value-added uses. Consumers in Pennsylvania and beyond need to be more aware of the many timber and non-timber products derived from Pennsylvania forests so that they prioritize them for purchase and, by extension, support local industries and jobs. Promoting locally grown Pennsylvania timber and non-timber products will also create a stronger constituency for better management and conservation of the forest. This campaign would be led by the Hardwoods Development Council, in collaboration with industry, state-agency partners, and local partners.

A point-of-purchase label included with the marketing campaign would educate consumers about what species of trees were used, where the trees came from, and other relevant information about PA hardwood products, dovetailing nicely with the growing popularity of local, sustainable products.

Other suggestions centered on demonstration as a way to showcase hardwoods and increase public awareness and exposure to their many uses as a building material. One recommendation was to do more to promote makers and manufacturers who use timber products (see box on this page, on Pajama Factory).

State agencies, particularly DCNR, that promote and fund trails and other recreational improvements have the opportunity to showcase hardwoods in many ways. DCNR already maintains 13 LEED-certified buildings within its parks and forest systems that feature multiple sustainable elements. Adding boardwalks and trails made of thermally treated lumber, now made on a limited basis in Pennsylvania, and providing signage for the public, would promote the use of this new specialty lumber.

THE PAJAMA FACTORY

A MAKERSPACE IN THE PENNSYLVANIA WILDS

The Pajama Factory in Williamsport has hosted many things over its lifetime (in addition to an actual pajama factory) – a rubber goods manufacturer, Broadway scouts seeking site inspiration for the musical *The Pajama Game*, a shoe outlet, and now, a unique mix of craftspeople, artists, and small businesses, among many others. When the site was purchased in 2008, the buyers envisioned turning the historic complex into a welcoming place for creative thinkers of all sorts to have a space to work and collaborate. From furniture and cabinets to outdoor gear to an organic garden center, the Pajama Factory is a pioneering makerspace, even featuring a community woodshop, in which woodworkers of all levels can use shared equipment and attend classes. As Williamsport has seen firsthand, spaces like these are integral in revitalizing our rural areas and bringing people back to the PA Wilds to create, learn, and stay.

DURABILITY MATTERS

In 2016, LL Bean launched a campaign touting its reputation as a maker of long-lasting, quality products as a response to the successes of so-called "fast fashion" stores, such as H&M and Zara. The company released a commercial in the spring of 2016 that questioned, "When did we stop valuing things to get better over time? When did disposable become our default? At LL Bean, we didn't stop and we never will." This message echoes what the Hardwoods Development Council has been saying about Pennsylvania wood products for years: "PA Hardwood Stands for Quality." Although high quality goods, whether it's a pair of LL Bean boots or cabinets made from PA hardwoods, often cost more than their low-budget competitors, consumers may realize the value over time. Investing in durable, lasting products is actually good for your wallet in the long run, they contend.

The Real Value of a Healthy Forest

There is little data available quantifying the full set of socio-economic functions of forests in Pennsylvania. As a result, there is an inherent knowledge gap for private and public landowners making land-use decisions. This lack of quantification of our forest's real worth may result in further devaluation and degradation or the forest.

Values important to landowners include the raw materials (timber and non-timber) that come from them; their recreation, tourism, and scenic uses; the role they play in sequestering and storing carbon, cooling streams, and regulating climate, in general; their important water and soil quality conservation; and the varied habitats for wildlife that they provide. A comprehensive study of the social and economic benefits of Pennsylvania's private forestland would complement the study of state forestlands and give an overall picture of the importance of forests to Pennsylvania's economy.

In summer 2016, Penn State Harrisburg submitted a proposal to the Center for Rural PA to perform a study quantifying the effect of the state forest system on Pennsylvania's economy. Using existing DCNR data and other sources, the study would assess the economic benefits derived from state forestland, including income from forest products, resource extraction, and hunting, fishing, and other recreation.

Once these forest values are quantified, they could be updated through crowd-sourcing, traditional surveys, and other means. This would close the knowledge gap for private and public landowners. These values could then provide the basis for market-based incentives, like ecosystem credits to help conserve forestland and reinforce the forest's role in Pennsylvania's sustainable economy.

Campaign for Awareness and Education on Forest Benefits

A broader set of outreach efforts to reach the general public through their areas of interest, hobbies, work, or even beverage of choice could increase awareness of the importance and relevance of forests to everyone. In the early 2000s, a nonprofit group in the Great Lakes region created a campaign to raise funds to improve Great Lakes water quality. The campaign included water-quality protection messages on beer coasters distributed to restaurants and pubs that benefitted from tourism that the lakes brought in. In conjunction with the creation of a forest bank, funds raised through outreach campaigns could be targeted to specific water-quality improvements through forest restoration or conservation activities.

Nonprofit and industry partners should launch a water-quality improvement campaign aimed at water-using products or parent companies. They should reach out to Pennsylvania-based water-using companies (like Yuengling, Trader Joe's, Wegmans, Woolrich, Giant, Weis Markets) to gauge interest in contributing funds for water quality improvement through forestry practices. They could also reach out to breweries and home brew clubs to engage younger audiences, and design posters (and coasters!) for bars, state park bathrooms, office conference rooms, and giveaways to reach additional audiences.

Demonstration Areas and Tourism

Conservancies, state and federal agencies, and some private land managers do an excellent job of forestland management. Many already give regular public tours of well-managed, certified forests. An expansion of these efforts could reach more of the public, especially youth and private forestland owners. These could include tours demonstrating the effect of: different cuts on regeneration; prescribed fire on invasive species and regeneration; fencing and other techniques to ward off deer predation; and invasive species on forested landscapes. Tours of sawmills and wood products manufacturers would also be beneficial for teachers, students, and the general public.

With additional funding support, the Center for Private Forests could set up and maintain a website that would list forestry tours, as could the Hardwoods Development Council. The PGC has done a number of forest harvests over the course of the past 10 years on tracts that are visible while traveling the Pennsylvania Turnpike between Lancaster and Morgantown. Most of these harvests were done using the shelterwood method, in which undesirable or competing vegetation is removed, leaving the healthiest, most mature trees as seed sources and wildlife habitat. With various stages of forest management within view of tens of thousands of travelers every day, this location is prime for educational signage or possibly a limited area, looped AM radio broadcast that could explain to motorists the excellent forestry that is occurring along their drive.

Non-timber Forest Products

Wildcrafting, or the collection of edible and medicinal plants, plant products, or fungi, is a long-standing tradition in Pennsylvania, but growing consumer demand for these non-timber forest products (NTFPs) has fueled unsustainable harvesting that threatens wild populations of some native edible and medicinal plants. American ginseng is perhaps the most well-known example of an NTFP whose population has diminished because of over-harvesting. It was historically abundant in the forests of Pennsylvania but has been listed as a vulnerable species here due to the demand and suspected overharvesting.

In recent years, another NTFP has gained the attention of consumers, chefs, and forest landowners – the ramp, or wild leek. Harvesting ramps is a springtime tradition throughout its range, and ramp dinners are commonplace in rural communities to raise funds for volunteer fire companies. But they also are economically valuable. In some markets, ramps fetch $20 per pound – and ramps can be found in multi-acre patches. However, their value and apparent commonness can result in overharvesting. Because ramps are slow to spread, it can take five or more years for a population to reestablish after harvesting. When the area is completely cleared, the population may never recover.

Forest farming and the intentional management of woodlands to support NTFPs can alleviate some of the pressure on wild populations, but many landowners are unfamiliar with the cultivation, processing, and marketing of NTFPs. Potential producers need access to training and support throughout the supply chain. Recognizing this need, efforts such as the *Wild to Woods Harvested: Assisting Beginning Appalachian Forest Farmers in the Development of a Commercial Cultivation Corridor* are emerging to assist "forest owners in the beginning stages of cultivation, harvesting aggregation, and sales of woodland botanicals to supply price-premium nutriceutical and innovative value-added decorative markets."

Outdoor Recreation-Based Tourism

Pennsylvania outdoor assets have long served as economic engines for the tourism industry. In 2012, 19 percent of the 189 million travelers to the state indicated their main reason for travel was outdoor-related. Those travelers listed swimming, visiting a state park, camping, and hiking as top outdoor activities they did on their vacation. And, forested lands typically play a role in these activities while generating income for adjacent local communities.

DCNR commissioned the Pennsylvania Visitor Use Monitoring project to survey expenditures by visitors in some of our state forests specifically. Average trip expenditures to three state forests ranged between $80 and $89, with the survey from Susquehannock State Forest in the PA Wilds region at $207.

In addition, agricultural tourism like corn mazes, farmer's market tours, county fairs and festivals, and wine tours is a growing trend and can also be an economic driver to Pennsylvania's rural communities.

Tourism Economics completed an economic analysis of tourism in Pennsylvania for www.visitpa.com. This 2012 study found that tourism industry sales in Pennsylvania were $38.4 billion in 2012, with just under 17 percent in spending associated with recreation (both indoor and outdoor). This equates to roughly $6.4 billion dollars in spending, making it the third most profitable industry in relation to tourism, behind transportation, and food/beverage services (Tourism Economics, 2012).

Tourism Economy Impacts By County
(in units)

County	Employment		% Change
	2009	2014	
Cameron	125	129	+3.2
Clarion	1454	1640	+12.8
Clearfield	2638	2908	+10.2
Clinton	1326	1634	+23.2
Elk	776	911	+17.4
Forest	211	231	+9.5
Jefferson	1200	1356	+13
Lycoming	4022	4588	+14.1
McKean	1513	1765	+16.7
Potter	348	408	+17.9
Tioga	1876	2274	+21.2
Warren	1775	1802	+1.5

Source: The Economic Impact of Travel in Pennsylvania, Tourism Economics

Despite tourism being one of the largest industries in the state, there is no sustainable nor adequate funding source for tourism marketing initiatives at the state level. This must be addressed if we hope to realize the full potential of the industry and specifically the outstanding outdoor recreation-based tourism assets we have in the state.

In the PA Wilds, the commonwealth has invested in a small business ombudsman position that serves as a clearinghouse and connector for businesses in the region who are seeking to invest or grow in the nature-tourism market. This includes small local producers and artisans, many of which utilize wood or forest byproducts (e.g. maple syrup). This resource, provided by the nonprofit PA Wilds Center, offers programs like the Wilds Cooperative of Pennsylvania to help producers gain access to markets and fill a real demand for high quality, authentically made wares sought after by tourists and locals alike, such as hand-carved turkey calls.

Wilds Cooperative of PA sign; hand-carved turkey calls; workbench

Multiple agencies, organizations, and jurisdictions are charged with managing the state's outdoor tourism product. As a result, messages and promotional efforts often lack a strategic approach. Therefore, it would also be worthwhile to look at new and innovative ways to foster cooperation among tourism partners and incentivize more strategic and sustainable regional tourism strategies, which would surely improve the leisure travel experience for visitors to the commonwealth.

Bringing Back Manufacturing

With the loss of furniture-industry jobs in the late 1990s and early 2000s, followed by additional job losses during the 2008 Great Recession, the Pennsylvania forest products industry has experienced repeated cycles of job loss. One strategy has been to look increasingly overseas for growing markets for Pennsylvania's hardwoods and other forest products. Another strategy, increasingly in evidence across the state and the country, is to promote local manufacturing to take advantage of the abundance and proximity of local forest products. Several task force members discussed the idea of local wood products manufacturing as parallel with the local food movement, where marketing and promotion help prioritize locally grown foods to consumers and restaurants and for added-value food processing.

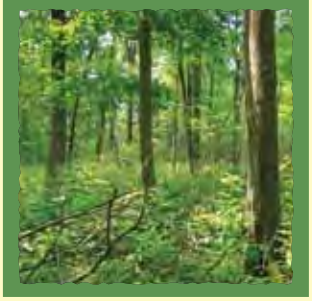
Architect Glenn Vernon, a task force member, has been a proponent of a local makers and manufacturers movement for many years. His writings and work connected to the Pajama Factory makerspace in Williamsport (see box on pg. 29) were beneficial to showing task force members the potential for local, small-scale manufacturing and the long-term appeal of durable goods (see Durability Matters, pg. 30).

While makerspaces and shared use spaces have been cropping up across the state over the past 10 years, they have been limited and lacking in long-term sustainable funding support. The movement began as a place for hobbyists to pursue their projects, and has only shifted toward an economically viable movement for commercial manufacturing in the past three to four years. A recent study published by MIT professors Lorlene Hoyt and Andre Leroux, *Voices from Forgotten Cities, Innovative Revitalization Coalitions in American's Older Small Cities,* notes that Pennsylvania leads the nation in the sheer number of older, distressed cities (21) as defined in the report, many hollowed out by the departure of manufacturing. Bringing makerspaces and shared spaces back to these cities will allow wood and other manufacturers to share space, equipment, technology, and other costs to keep overhead down and increase their individual chances of survival.

Maker spaces can incubate new jobs and train new workers by providing access to equipment, like CNC routers and 3-D printers, that would be too expensive for a start-up to afford. Associated maker fairs help introduce new people to the concept and can function as clearinghouses for the exchange of ideas and technologies. Shared spaces are similar to maker spaces, providing short-term leases for people interested in exploring new ideas in a collaborative environment.

An investment of $30 million in public and private sources would enable the start-up and maintenance of 100 maker spaces or shared spaces across the state. This kind of investment would take a relatively young movement and give it the resources to grow, expand, and survive. While Pennsylvania's larger cities have been incubators for most of the early establishment, smaller cities like York are now raising funds to establish makerspaces. As broadband expands across rural Pennsylvania, makerspaces in small communities will be well-positioned to take advantage of surrounding wood products to minimize transportation costs and develop regional or even local brands. The average cost of $300,000 for each makerspace or shared space is based on current budgets, including the project in York.

FOREST
CONSERVATION & SUSTAINABILITY



WOODS THAT WORK
CONCLUSION

WORKFORCE
DEVELOPMENT & JOBS

ECONOMIC
DEVELOPMENT & PRODUCTS

The final recommendation developed by the task force, mostly through individual interviews with participants leading up to the publication of the report, was to keep the discussion going. Many participants found the cross-cutting issues discussion refreshing and novel. Members in all disciplines agreed there were benefits to talking to experts outside of their immediate discipline or workplace. Reconvening the task force at regular intervals, perhaps every six months, to discuss progress and persistent obstacles, and share notes was a recommendation suggested by many participants.

RELATED RECOMMENDATIONS

While the discussion on the previous pages represents the many wonderful ideas discussed and volunteered by members of the task force, there were additional suggestions that were not among the top-ranked. We have included them below as ideas having merit, in the hope that they may someday be adopted.

Forest Conservation and Sustainability

- Provide a stable funding source for strategic acquisitions of working forestlands.
- Explore public/private partnerships for conserving landscape-level working forests while providing local mills continued access to timber resources. These partnerships may include state ownership of land with a reservation of timber rights to a private entity or land conservancy with an interest in sustainable timber management.
- Develop and adopt a Pennsylvania state "no net loss" of forestland executive order.
- Promote forest conservation through specific criteria in a wide variety of state grant programs.
- Promote better management of urban forests.
- Find permanent funding sources for the TreeVitalize urban tree canopy restoration program.
- Develop model zoning ordinances and county conservation plan language to conserve more forest and discourage conversions.
- Encourage the Center for Rural PA and Joint Legislative Budget and Finance Committee to complete studies on the definition and potential growth of conservation jobs in Pennsylvania, as well as what obstacles stand in the way.

- Develop a forest landowner legacy outreach campaign. $100,000/year for five years would support a full-time position through the Center for Private Forests or other institution to conduct this work.

Workforce Development and Jobs

- Create an Angie's List for loggers.
- Support and expand the Woodnet program started in the Poconos, which has a foothold in the South Mountain region. Woodnet is a marketing and networking program to connect all participants in the wood economy – loggers, sawmills, furniture makers, woodworkers, etc.
- PA Department of Labor & Industry should develop a dashboard that tracks the health of the PA forest products industry. Indicators could include productivity, wage levels and benefits, and other publicly available data on wood product manufacturing listed by the U.S. Census.
- Conduct visits to best-practice employers, identify managerial mentors for managers at companies that want to adopt best practices, and conduct an annual (confidential) human resource practices survey.
- Look at workforce development practices in Canada which have been in place for 20+ years, either as a Green Ribbon Task Force or HDC visit or through a survey.

Economic Development and Products

- Address transportation and infrastructure challenges.
- Certify new wood products for specifications required by architects and building codes.
- Expand broadband internet access throughout rural PA to support more new forest-based businesses and jobs.
- Expand the PA Wilds partnership model to other regions of the state.
- Add more points to the LEED certification process for locally sourced wood and simplify the chain of custody requirements.

RESOURCES AND FURTHER READING

Recommended Background Publications

Conservation:

Pennsylvania's Private Forests: 2010 Private Forest Landowner Survey Summary. Alexander L. Metcalf, James C. Finley, A.E. Luloff, Allyson B. Muth. October 2012.

The Future of Penn's Woods: A Mixed-Methods Study of Parcelization and Pennsylvania's Private Forests. Joshua B. Gruver, Alexander L. Metcalf, James C. Finley, A.E. Luloff, and Allyson B. Muth. March 10, 2013.

Gender, Values, and Behaviors of Pennsylvania Private Forest Landowners. Alexander L. Metcalf, Allyson B. Muth, James C. Finley, and A.E. Luloff. September 11, 2015.

Private Forest Landowners of the Pennsylvania Marcellus Region. Alexander L. Metcalf, James C. Finley, and A.E. Luloff. February 5, 2015.

Regional Variation Among Pennsylvania Private Forest Landowners. Alexander L. Metcalf, James C. Finley, and A.E. Luloff. September 11, 2015.

Penn's Woods: Sustaining Our Forests. Department of Conservation and Natural Resources Strategic Plan.

Pennsylvania Statewide Forest Resource Assessment. Department of Conservation and Natural Resources. June 2010.

Pennsylvania Forest Strategies. Department of Conservation and Natural Resources. June, 2010.

2015 State Forest Resource Management Plan. Department of Conservation and Natural Resources. September 2015.

The State of Chesapeake Forests. Eric Sprague, David Burke, Sally Claggett, Albert Todd. September 2006.

Forests of the Northern United States. Stephen R. Shifley, Francisco X. Aguilar, Nianfu Song, Susan I. Stewart, David J. Nowak, Dale D. Gormanson, W. Keith Moser, Sherri Wormstead, and Eric J. Greenfield. January 2012. Accessible through www.nrs.fs.fed.us

PA Woodland Stewardship: Working Forests for Today and Tomorrow. Department of Conservation and Natural Resources. June 30, 2015.

Jobs/Industry:

Results of the Hardwoods Development Council Fall Forum. Pennsylvania Department of Agriculture. November 14, 2013.

Economic Impact and Timber Requirements of the Wood Industry in Pennsylvania. Charles Strauss, Bruce Lord, Michael Powell. Pennsylvania State University. June 30, 2007.

The Global Position of the U.S. Forest Products Industry. Jeffrey P. Prestemon, David N. Wear, and Michaela O. Foster. USDA. March 2015.

Size and Economic Impact of Pennsylvania's Wood Products Industry. Bruce Lord. December 31, 2013.

Sustaining Pennsylvania's Hardwoods Industry: An Action Plan. Pennsylvania Hardwoods Development Council, Pennsylvania Department of Agriculture. June 2010.

International and Domestic Outlook for the Hardwood Industry. Lake States Lumber Association Winter Meeting. January 14, 2016.

Factors and Trends in Pennsylvania's Logging Industry. Michael Jacobson, James Finley, and Chris Schmid. 2009.

Forest Products:

Becoming Makers and Manufacturers Again. Glenn A. Vernon. November 7, 2014.

Pennsylvania Timber Product Output Survey. Department of Conservation and Natural Resources. April 2015.

Wood Energy in Developed Economies: An Overlooked Renewable. Francisco Aguilar. January 15, 2015.

Member-Suggested Readings

Zero to One: Notes on Startups, or How to Build the Future. Peter Thiel. September 16, 2014.

The Furniture Wars: How America Lost a 50 Billion Dollar Industry. Michael Dugan. March 26, 2009.

Factory Man: How One Furniture Maker Battled Offshoring, Stayed Local, and Helped Save an American Town. Beth Macy. June 9, 2015.

Prisoners of Geography: Ten Maps That Explain Everything About The World. Tim Marshall. October 27, 2015.

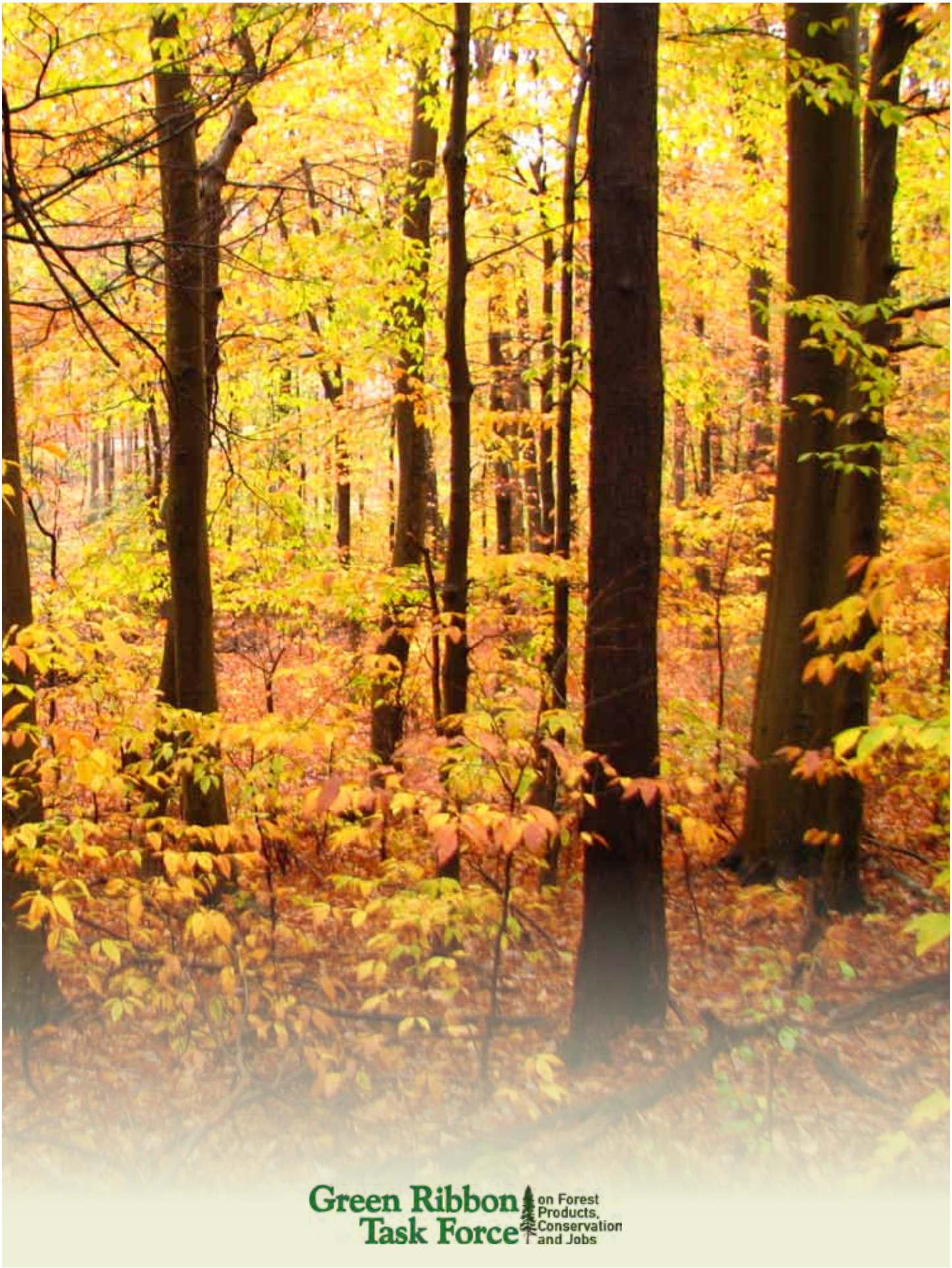
Why the Makers Movement Matters: Part 1, the Tools for Revolution. James Fallows. *The Atlantic*. June 5, 2016.

Why the Makes Movement Matters: Part 2, Agility. James Fallows. *The Atlantic.* June 9, 2016.

Makers: The New Industrial Revolution. Chris Anderson. October 2, 2012.

Voices from Forgotten Cities: Innovative Revitalization Coalitions in America's Older Small Cities. Lorlene Hoyt and André Leroux. 2007.

How Cities Can Grow the Maker Movement. National League of Cities: Center for City Solutions and Applied Research. 2016.



Green Ribbon Task Force on Forest Products, Conservation and Jobs