PHOTO: USDA

Taking Care of America's Forests

Forests are a critical part of life on Earth. They purify air, filter water, store carbon, provide food and shelter for a diverse array of plants and animals, and produce natural resources like timber, paper and medicine. Forests are also important places for recreation and cultural practices. But forests across the United States are under threat from pests, pathogens, deforestation, climate change, and other stressors. Land-grant university researchers and Extension educators are working to protect forests and the environmental, economic, and social benefits they provide.

Here are a few examples of that work:

- After the 2020 wildfires, many private forest owners in Oregon could not find seedlings or tree planters to reforest their property. Extension educators in **Oregon** have helped about 300 landowners, who need over 3.5 million trees, decide how to prepare their sites, select species and planting density, and plan for maintenance needs. They have also helped track down available seedlings and place orders.

- In Oregon, many landscapes benefit from occasional prescribed fires that reduce the amount of fuel that can feed devastating wildfires. To overcome resistance to and inadequate resources for prescribed burns, Extension educators in **Oregon** helped develop a training that gave forest owners and managers the knowledge and tools to implement prescribed burns and a support network to help carry them out. After the training, the number of planned prescribed burn acres had increased from only a few hundred acres to nearly 10,000 acres.

- Beech leaf disease eventually leads to tree death and should be managed as soon as possible, but infected plants are visually identical to uninfected plants in early stages. Researchers in **Ohio** developed a technique that uses near-infrared light, sensors and artificial intelligence models to determine which leaves are infected. This technology enables rapid response before outbreaks become severe and costly.

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- Researchers in **Pennsylvania** found that forests growing on shale bedrock store 25% more carbon and can take up about 55% more carbon annually than forests growing over sandstone bedrock. Forest managers in the Appalachian Ridge and Valley Region (which extends from southern New York to northern Georgia) can use these findings to target forest conservation efforts to maximize carbon sequestration.

- Managing forests for non-timber coproducts, like pawpaw fruits, maple syrup and Christmas trees, can lead to economic and ecological win-wins for Ohio forest owners. Researchers and Extension educators in **Ohio** offer numerous programs that help forest owners take advantage of non-timber products. Their efforts have enhanced existing maple syrup operations, sparked new producers and identified additional maple species for production. Other programs have encouraged greater use of pawpaws — in beer and ice cream — leading to an increase in production acreage, and proprietary fir seed from Ohio plantations supports Christmas tree growers across North America.

- Researchers in **American Samoa** completed a forest inventory and analysis. The collected data can be used by landowners, policymakers, environmental agencies and students to understand the past, present and future conditions of the forests in American Samoa.

- Over half of Wisconsin's forested land is privately owned, and many of these acres are unmanaged. Since 1994, Extension workshops in **Wisconsin** have helped 822 private woodland owners manage their forests to balance wildlife habitat with other goals such as recreation, aesthetics, and timber production. Program participants have gone on to share their knowledge with another 17,000 landowners in Wisconsin and beyond, impacting an estimated 1 million acres.

- In 2021, Extension educators in **Montana** helped private forest owners responsible for over 400,000 acres identify high risk areas and develop site-specific action plans. The program also provided tailored assistance after fires. For example, forestry experts and local agents helped private forest owners select appropriate sites and species for reseeding, sell fire-killed timber sawmills and use logs to stabilize soils.

- When the emerald ash borer, a highly destructive invasive pest, was discovered in **Oregon** in 2022, Extension educators immediately assisted by identifying and monitoring the insects and curating and disseminating information via social media, pocket guides, webpages, newsletters and more. These resources have reached around 70,000 people so far. These efforts should help slow emerald ash borer spread in Oregon, where it has the potential to devastate habitats and reduce urban tree cover.

- In 2021, Extension educators in **Oregon** engaged woodland owners in the Master Woodland Manager program. These trainees then shared their knowledge with 751 members of the public, including other forest owners, watershed councils, policymakers, and youths.

- Researchers in **Pennsylvania** identified genes in green ash trees that confer some resistance to attacks by emerald ash borers, which could help breed trees that are more tolerant.

- **Oregon** landowners who took the Woodland Pollinator Stewards course have already enhanced habitat on over 1,700 acres and have plans for an additional 902 acres within the next five years.

- In **Pennsylvania,** researchers determined that deer browsing has not had much impact on forest canopy density. This research may greatly change how scientists and forest managers view the role of deer in eastern forests and steer the focus to management practices that more effectively reduce overstory density, an issue that threatens many historically important tree species.

- Bird watchers can play a key role in scouting and monitoring for serious threats like emerald ash borer, spotted lanternfly and hemlock wooly adelgid. Extension educators in **Vermont** trained 115 birders (across Vermont, five other states, and Canada) to identify and report signs and symptoms of invasive forest pests. Trainees then educated another 450 people.

- **Indiana** landowners have access to tree seedlings, but often do not have experience or knowledge of best practices that improve tree planting success. In 2021, Purdue Extension provided tree planting clinics for 130 people. Participants reported increased knowledge about site evaluation and preparation, planting techniques, weed control, and post-planting management.

Generational land loss has drastically affected Black families. The University of **Arkansas** at Pine Bluff helps run the Keeping in the Family program. The program helps Black forest owners implement conservation practices, gain cost-share assistance and access genealogy and legal assistance for estate planning and asset protection. In just the last year, the program helped 18 Black forest owners obtain $300,000 in funds to install land-improving conservation practices on 1,316 acres. The program also helped Black forest owners secure $70,739 to perform land surveys, helped one owner obtain a carbon credit contract, and helped another complete a tree audit. Twenty-six Black forest owners obtained USDA Farm Numbers, which are needed to participate in USDA programs. Over 250 Black landowners attended the peer-to-peer empowerment sessions hosted by the university.