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Hardwoods in Huntland, Tennessee

Tennessee State Forest Action Plan

5-YEAR REVIEW AND NATIONAL PRIORITIES REPORT
2020-2025





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Introduction

From 2020 through 2025, Tennessee achieved measurable progress under all four objectives of its [State Forest Action Plan \(SFAP\)](#). Key accomplishments include expanding forest pest detection and treatment, maintaining steady hardwood timber production throughout economic disruptions, launching innovative land conservation programs and broadening community engagement in wildfire preparedness. These gains demonstrate the SFAP's effectiveness at guiding statewide efforts to protect, conserve and enhance Tennessee's forest resources.

At the same time, challenges that were identified in 2020 persist. Utilization of low-grade wood remains limited, forest parcelization is accelerating in both rural and urban areas, prescribed burning on private lands is still constrained and there is an ongoing need for funding to mitigate hazards and restore forests after large-scale disturbances. This five-year review addresses these challenges and outlines priority actions for the 2025-2030 period to keep Tennessee's forests healthy, productive and resilient.

Tennessee's forests cover about 14 million acres (52% of the state's land area) and provide a foundation for biodiversity, clean water, wildlife habitat, rural economies and recreation opportunities. The 2020 Tennessee SFAP, developed by the Tennessee Department of Agriculture Division of Forestry (TDF) in partnership with The Nature Conservancy, set a comprehensive strategy to sustain these benefits. Tennessee's first SFAP (2010-2020) successfully met all 35 of its goals, creating a strong foundation for the current plan. Building on that success, the 2020-2030 SFAP centers on three key themes: robust forest markets, outreach and education, and partnership-driven conservation, which are reflected in four overarching objectives:

- **Enhancing forest health and resilience**
- **Expanding market diversification**
- **Maintaining and improving connected landscapes**
- **Strengthening wildfire-resilient communities**

This midpoint review was developed through a collaborative process. Multiple stakeholder input sessions were convened to gather external partner feedback and evaluate SFAP implementation over the past five years. In compliance with national guidance, Tennessee also conducted a thorough review of the state's Forest Legacy Program (FLP) and presented the results to the State Forest Stewardship Coordinating Committee. The review found that Tennessee's FLP Assessment of Need remains valid and that no amendments to the program are necessary at this time. TDF has [documented the results of this process in writing to the U.S. Forest Service Southern Region](#). Additionally, [a virtual check-in with U.S. Forest Service regional staff confirmed that Tennessee's SFAP implementation is on track and well-aligned with national State and Private Forestry priorities](#).

Throughout this document, each objective section notes how Tennessee's accomplishments support the three national priorities established by Congress in the 2008 Farm Bill: **conserve and manage working forest landscapes for multiple values and uses; protect forests from threats; and enhance public benefits from trees and forests**. Major examples of Tennessee's contributions to these national priorities have been integrated into the objective narratives to avoid redundancy. Together, the five-year review and the integrated national priorities highlight report demonstrate the SFAP's value at local, state, regional and national levels. As we enter the next five years of the plan, the SFAP will continue to guide coordinated action across all ownerships so that Tennessee's forests remain healthy, productive and beneficial to the public.



I. Enhancing Forest Health and Resilience

Overview

This objective focuses on maintaining healthy, productive forests by addressing the biological and environmental stressors that threaten their long-term resilience. Invasive pests, diseases, plants and extreme weather events continue to impact forests across all regions of Tennessee. From 2020-2025, agencies and partners expanded detection, treatment and recovery efforts while increasing landowner engagement and on-the-ground capacity. This objective supports **National Priority 1: conserve and manage working forest landscapes** and **National Priority 2: protect forests from threats** by ensuring Tennessee's forest resources are defended against both biotic and abiotic challenges. It also contributes to **National Priority 3: enhance public benefits from trees and forests** by maintaining the health of forests that provide recreation, clean water and other public benefits.

Forest Health Trends (2020-2025)

INSECT AND DISEASE CHALLENGES¹

The emerald ash borer (EAB), first detected in Tennessee in 2010, is now confirmed in 66 counties and continues to cause widespread ash mortality, especially in central and eastern parts of the state. Over the past five years, coordinated treatment, hazard tree removal and replanting efforts have helped mitigate safety hazards and canopy loss in affected riparian and urban areas.

Hemlock woolly adelgid (HWA) continues to threaten native hemlock stands across all 43 counties of eastern Tennessee. Through the interagency Tennessee Hemlock Conservation Partnership, more than 58,300 hemlock trees (across approximately 6,000 acres) were chemically treated from 2020-2025 to suppress HWA infestations. Biological control using predator beetles was also expanded at targeted sites to slow HWA's spread. These HWA suppression efforts earned statewide recognition, including the Governor's Environmental Stewardship Award in 2023 for the HWA Strike Team's pursuit of excellence.

From 2020 to 2024, TDF placed over 20,700 spongy moth traps as part of a multi-state Slow the Spread program, capturing 332 moths across 26 counties, primarily in eastern Tennessee. Early detection and rapid treatment of any detected spongy moth incursions have so far prevented this defoliator from gaining a permanent foothold in the state.



TDF's Hemlock Woolly Adelgid Strike Team is a federally funded seasonal crew that chemically treats HWA on hemlock conservation areas (HCAs), conducts outreach programs, supports the HWA predator beetle program and facilitates events sponsored by the Tennessee Hemlock Conservation Partnership. HCAs include state parks, state natural areas, state forests and conservation easements across the native range of eastern hemlock in Tennessee. Through a Good Neighbor Agreement with Cherokee National Forest, TDF's HWA Strike Team treats additional HCAs on the national forest. © TDF

¹ [Tennessee Forestry Commission Annual Reports](https://www.tn.gov/agriculture/forests/about/commission.html), 2020-2024. www.tn.gov/agriculture/forests/about/commission.html

Tennessee confirmed its first detections of the invasive spotted lanternfly during this period. To prevent these early infestations from becoming established statewide, federal supplemental funding has supported rapid quarantine measures, expanded public outreach and provided guidance on control efforts.

Southern pine beetle (SPB) remained mostly at endemic levels through 2023. In 2024, trap monitoring indicated rising SPB populations regionally, prompting TDF to expand monitoring into additional counties. In late 2025, aerial surveys detected one small SPB outbreak in McNairy County. Thanks to enhanced monitoring and a quick response, the infestation was contained with no further spread to surrounding pine stands. This success is attributed not only to vigilance but also to proactive forest management.

INVASIVE PLANTS

Land managers across the state have implemented targeted forest health projects to control invasive plants and restore native ecosystems. Since 2020, more than 25,000 acres of forests have been treated for invasive plant infestations. These efforts have focused on removing aggressive nonnative species like privet, kudzu, Japanese honeysuckle and *Paulownia* that degrade forest health and wildlife habitat while increasing wildfire risk. In 2024 and 2025, cogongrass infestations were confirmed in six counties after nearly 15 years of eradication. All sites were treated in 2025, with all but one requiring follow-up treatments in 2026.

As an example of invasive plant management efforts supported by TDF, approximately \$79,000 (47% federal, 53% state and/or local match) was invested in five invasive species removal projects on public lands, treating approximately 32 acres and 1.2 miles of riparian areas. Four additional projects treated roughly 57 acres across State Natural Areas and urban green spaces, pairing invasive removal with native replanting to support long-term recovery. Volunteer-led Weed Wrangle events have significantly expanded treatment capacity. Since 2020, 268 Weed Wrangle events statewide resulted in the removal of more than 92,000 invasive plants and the replanting of 1,850 native plants and trees. While it is not possible to account for every individual treatment, partners across the state continue to carry out a wide range and scale of invasive plant management projects across both public and private lands.



In 2025, Tennessee utilized aerial spray for kudzu control for the first time. Aerial application treated 1,677 acres with selective herbicide (clopyralid) targeting legumes on Chuck Swan State Forest and Natchez Trace State Forest and Park. © Katy Kilbourne

FOREST COMPOSITION AND STAND QUALITY

Tennessee's upland hardwood forests, particularly those dominated by oak, are experiencing structural and compositional shifts. While oak remains prevalent across much of the state, successful regeneration of high-value species such as white oak (*Quercus alba*) is becoming increasingly limited due to suppression by shade-tolerant competitors, absence of regular disturbance and legacy impacts of past land use.

Forest Inventory and Analysis (FIA) data and field observations suggest a trend toward older, even-aged stands with limited recruitment of desirable oak regeneration in the understory. There is also increasing concern about declining log quality, with more lower-grade sawtimber in maturing stands. This shift not only affects long-term timber value but may also constrain future supply for premium white oak products, including staves, flooring and fine furniture.

I. ENHANCING FOREST HEALTH AND RESILIENCE

Reversing these trends will require consistent application of sound silvicultural practices, such as prescribed burning, intermediate thinning and regeneration harvests, to promote oak recruitment and long-term stand improvement. During this period, these efforts were strengthened through strategic participation in the White Oak Initiative, a multi-state collaborative focused on sustaining the long-term viability of white oak across its native range through expanded technical assistance and outreach to private landowners. The University of Tennessee (UT), in partnership with the U.S. Forest Service, hosted the inaugural International Oak Symposium in 2024, bringing together researchers, federal and state partners and industry to share data and discuss management approaches. Each fall, TDF leads a statewide white oak acorn collection effort, inviting the public to contribute to future reforestation efforts by supplying locally adapted seed for nursery propagation and planting across the state. These combined efforts demonstrate Tennessee's commitment to collaborative, long-term stewardship of one of the region's most valuable hardwood resources.

Private Landowner Engagement and Capacity Building²

Approximately 84% of Tennessee's forest land is privately owned, spread across an estimated 335,000 family forest owners. The median holding is only 18 acres and the majority of these landowners do not have a forest management plan. Between 2020 and 2024, TDF foresters prepared nearly 3,000 forest management plans covering over 245,000 acres. This included 130 comprehensive Forest Stewardship Plans and more than 1,000 other forest plans for private and public forests. During the same period, foresters wrote 1,900 on-the-ground prescriptions for thinning, wildlife habitat and regeneration practices on an additional 93,000 acres. To increase efficiency and landscape-scale impact, Tennessee introduced new tools and programs to assist these landowners. In 2023, a comprehensive [Landscape Management Plan](#) (LMP) was published, providing a framework that landowners and foresters can leverage for faster forest management plan development. The goal of the LMP is to reduce the burden of writing entirely custom plans for each small property, allowing professionals to spend more time in the field with landowners while still ensuring that individual plans align with broader conservation and stewardship goals.

Over the last five years, TDF also supported implementation through vendor coordination and cost-share programs. TDF foresters and vendors assisted 512 landowners with practices on 13,900 acres. Through combined state and federal cost-share funding, 226 landowners received a total of \$1.18 million to implement priority practices like site preparation, thinning, tree planting and invasive species control.

Outreach through UT Extension's Healthy Hardwoods field days, the ForestryWorks career program and other local events helped connect landowners with technical and financial resources. The Tennessee White Oak



An invasive plant removal workday occurred at Lennon Seney United Methodist Church in Knoxville. Since 2020, Trees Knoxville has supported urban forest restoration and community stewardship efforts through the planting of 1,797 trees, the engagement of 1,905 volunteers contributing 5,053 volunteer hours and the graduation of 406 Volunteer Foresters to support long-term forest management in the Knoxville area. © Melissa Hinten

² [Tennessee Forestry Commission Annual Reports](#), 2020-2024. www.tn.gov/agriculture/forests/about/commission.html

Initiative expanded technical assistance for oak regeneration and seed collection.

Emerging carbon markets have also begun to serve as a tool to keep forests intact. In 2024, The Nature Conservancy partnered with American Forests Foundation to enroll landowners in the Family Forest Carbon Program, which allows small private landowners to earn income from carbon credits by managing their forests sustainably. This market-based incentive is particularly valuable for family forest owners who might otherwise feel pressure to sell or subdivide their forestland. By the end of 2025, 81 landowners had enrolled 16,370 acres in carbon sequestration projects, reflecting growing interest in ecosystem service markets as a supplement to traditional timber revenue.

Cross-Agency Implementation and Innovation

Forest health work in Tennessee has increasingly relied on coordination across agencies and programs. U.S. Department of Agriculture (USDA) Landscape Scale Restoration grants and Farm Bill programs have provided funding for forest health and habitat improvement projects on private and public lands. A landmark [Shared Stewardship Agreement](#) between TDF and the U.S. Forest Service in 2021 created a framework to align federal and state investments across shared priority areas. This guides joint outreach, restoration and risk assessment efforts, ensuring agencies pool resources toward the highest-priority landscapes. Innovation also continued through partnerships with universities, nonprofits and regional initiatives.

Tennessee has embraced a comprehensive, integrated approach to forest health. Over the past five years, more than 2,730 forest health observations and reports submitted by citizens, landowners and foresters have been collected statewide through TDF's reporting systems, providing real-time information that helps identify emerging issues and guide where to deploy treatments, outreach or research efforts. Public reporting tools such as Report a Pest have strengthened early detection capacity by flagging new threats that were previously unknown in the state; notably, spotted lanternfly was first detected in Tennessee through a public report, enabling timely field verification and coordinated response efforts.

Prescribed Fire

Prescribed fire remains a cornerstone of Tennessee's forest health and landscape resilience, particularly in restoring fire-dependent oak-hickory ecosystems and reducing hazardous fuel loads. During this review period, 563 individuals were certified as Tennessee Certified Burn Managers, bringing the total to 960 statewide and marking significant progress from previous periods. The Tennessee Certified Burn Manager program provides training on the Tennessee Prescribed Burning Act, writing burn plans and the fundamental principles of conducting a controlled burn. This training is not intended to train burn bosses, nor does it serve as formal wildland firefighter certification. Because of this limited course capacity, many qualified applicants, including Certified Burn Managers from other states, take the course primarily to meet Tennessee's legal requirements rather than to receive advanced fire-operations training.

Cross-boundary prescribed fire initiatives continue to expand, with multi-agency burn teams enabling larger, landscape-scale burns on the Cumberland Plateau and in the Southern Appalachians. These collaborations help public agencies and private partners coordinate burns that cross property lines and support ecosystem-restoration goals. Nonprofits such as the Tennessee Wildlife Federation support prescribed fire through landowner planning assistance, while organizations like the Southeastern Grasslands Institute contribute technical expertise, training and applied fire implementation capacity across boundaries. Notably, during this review period, The Nature Conservancy, in partnership with the U.S. Forest Service, hosted a Southern Blue Ridge Fire Learning workshop in Johnson City, bringing together practitioners from across the region to

I. ENHANCING FOREST HEALTH AND RESILIENCE



The Pulaski Club at a Kingsport, Tennessee high school trains students in fire ecology, burn planning and prescribed fire implementation. In spring of 2024, the student crew completed eight prescribed burns totaling 97 acres in Northeast Tennessee, serving as a fully equipped, National Wildfire Coordinating Group-trained resource. More than 30 program alumni now work in fire services, including U.S. Forest Service and TDF. © Bryan Kerns

exchange information and advance collaborative prescribed fire planning across state and federal boundaries.

Despite this progress, Tennessee still faces notable gaps in prescribed-fire capacity. The state currently has no formal prescribed burn associations (PBAs) to support landowners with planning, equipment, labor and safe implementation of controlled burns. The Tennessee Prescribed Fire Council (TNPFC) has discussed the importance of supporting any PBAs that may form, recognizing their value in increasing the safe use of prescribed fire on private lands. In the absence of PBAs, a number of private individuals, many of whom are Tennessee Certified Burn Managers, voluntarily provide field experience opportunities to those who complete the state certification course. While these efforts are valuable, they do not replace the structured capacity, community support and shared resources that PBAs typically provide.

Establishing PBAs, expanding training capacity and modernizing state certification and liability standards would significantly enhance Tennessee's ability to use prescribed

fire safely and effectively. Increasing opportunities for landowner-led burns, supported by trained experts, will be key to meeting the state's forest-restoration and fuel-reduction goals in the coming years.

TABLE 1: PRESCRIBED FIRE ACRES LEAD IMPLEMENTING AGENCY AND LAND OWNERSHIP³

<i>Land Ownership</i>	<i>Organization</i>	<i>Acres Burned</i>
PUBLIC	Tennessee Division of Forestry	835
	The Nature Conservancy	852
	Great Smoky Mountains National Park	3,173
	Big South Fork National River & Recreation Area	1,853
	Tennessee Department of Environment and Conservation	5,664
	U.S. Forest Service, Cherokee National Forest	103,039
	U.S. Department of Energy, Oak Ridge Reservation	654
	Tennessee Valley Authority	3,200
PRIVATE	Tennessee Division of Forestry	17,000
	Natural Resources Conservation Service	14,727

Note: Acreage totals reflect prescribed fire acres reported by each agency where the agency served as the lead implementing entity. Prescribed fire in Tennessee is often conducted through interagency partnerships on public and private lands. For public lands, acres are attributed to the managing or lead agency to avoid double counting. On private lands, prescribed fire is frequently delivered through coordinated partnerships involving multiple agencies providing funding, planning, staffing or technical assistance. As a result, private-land acres may overlap across agencies and should not be interpreted as additive.

³ Prescribed fire acreage data were compiled through direct outreach to partner agencies and reflect reported totals.

Disturbance Events and Resilience

Tennessee's forests experienced multiple severe disturbance events from 2020-2025, which caused windthrow, flooding, wildfire damage and widespread fuel accumulation, increasing forest vulnerability to secondary stressors like invasive species and erosion. In September 2024, Hurricane Helene brought



Partners from TDF, UT Extension, Tennessee State Parks, Natural Resources Conservation Service, Appalachian Resource Conservation and Development (RC&D) Council and community members plant native trees along the Nolichucky River to stabilize streambanks and support long-term riparian recovery. © Appalachian RC&D Council

unusually intense winds and flooding to eastern Tennessee, causing an estimated \$59.9 million in timber damage across 12 counties (about 280,000 forested acres affected).⁴ Federal, state and local partners responded by stabilizing streambanks, creating fuel removal plans and providing outreach to private landowners in impacted areas on recommended actions. Other disturbances prompted similar action. In December 2021, an EF-4 tornado tore through Henderson County, leveling approximately 1,400 acres of Natchez Trace State Forest. TDF conducted aerial damage assessments and worked with local officials on salvage harvest and reforestation plans for the state forest. In March 2022, the Indigo Lane wildfire burned roughly 2,500 acres across private properties in the wildland-urban interface (WUI) of Sevier County. This event led to improved coordination between state forestry and local fire departments on community protection plans and highlighted the importance of fuel management around rapidly developing WUI communities. In response, TDF created a *Post-Wildfire Recovery Manual for Forest Landowners in Tennessee*, a toolkit of best practices for rehabilitating forests after wildfire, with guidance

that can be tailored to wind or flood events. By learning from each disturbance and continually improving planning, Tennessee is striving to ensure its forests can recover more quickly and emerge stronger after natural disasters.

Challenges and Opportunities

Improving forest health in Tennessee will require ongoing investment in workforce capacity, adaptive practices and engagement strategies that connect landowners to the tools and support they need. Partners identified several high-priority needs and persistent challenges shaping the next phase of implementation:

FOREST CONDITIONS AND STRESSORS

- Expand post-disturbance assessments to quickly identify invasive plant outbreaks, hazard trees and regeneration problems after tornadoes, floods or wildfires to allow for intervention that saves time and money.

⁴ Hurricane Helene: Timber Damage Assessment for Tennessee. www.tn.gov/agriculture/forests/protection/hurricane-helene-timber-damage-assessment.html

I. ENHANCING FOREST HEALTH AND RESILIENCE

- Continue to provide practical guidance to private landowners for regenerating oak, hickory and shortleaf pine. Include timing, site prep and low-cost techniques to improve the success of fire-tolerant native species.
- Coordinate demonstration projects on public lands to showcase effective regeneration techniques that can be replicated on smaller tracts.

MANAGEMENT GAPS AND TECHNICAL CAPACITY

- Maintain outreach to small and new landowners in partnership with Tennessee Forestry Foundation (TFF), UT Extension, Natural Resources Conservation Service conservation districts and regional partners. Emphasize affordable timber stand improvement (TSI) practices.
- Encourage neighboring landowners to collaborate through “clustered management” approaches, enabling active management on small tracts through improving economies of scale.
- Maintain cost-share programs that assist with TSI, invasive control and regeneration. Streamline applications, provide vendor lists and make small-scale grants more accessible.
- Equip field foresters with tools and training to identify early pest and disease challenges during regular property visits.

PRESCRIBED FIRE CAPACITY

- Encourage the formation of PBAs in strategic counties by supporting outreach and networking through the Tennessee Prescribed Fire Council.
- Continue offering and promoting the Tennessee Certified Burn Manager Program as the primary avenue for landowner training on prescribed burning.

PROGRAM DELIVERY AND ENGAGEMENT

- Where appropriate, expand field demonstration programs like Healthy Hardwoods Field Days and ForestryWorks into new counties to reach more landowners and forest industry professionals.
- Standardize forest health data reporting and mapping tools so partners can act on localized pest or disease trends.
- Integrate ecosystem service market guidance into landowner assistance so forest owners can evaluate options without compromising timber management or reducing the availability of harvestable timber.
- Encourage all partners (state, federal and nongovernmental organizations) to contribute to the [Forest Action Plan Accomplishment Tracker](#) to report on monitoring and accomplishments that align with the goals of the SFAP.

II. Expanding Market Diversification

Overview

Diverse and reliable markets for forest products are essential to keeping Tennessee's forests productive and sustainably managed. Landowners are more likely to actively manage their forests and less likely to convert them to other land uses when there are fair, accessible markets for both high- and low-grade timber. Conversely, weak or volatile markets can lead to underutilized, overstocked stands that are vulnerable to insects, disease and wildfire or even result in forest cover loss due to lack of economic return.

Tennessee's 2020 SFAP emphasized the need to broaden markets across a range of products, from sawlogs to urban wood and bioenergy. Over the past five years, partners across the state have worked toward this goal, supporting innovations in forest product manufacturing and building resilience across the supply chain. These efforts directly support **National Priority 1: Conserve and Manage Working Forest Landscapes** by ensuring the economic viability of forestry and contributes to **National Priority 3: Enhance Public Benefits from Trees and Forests** by strengthening rural economies and encouraging wood product innovation. Stable forest markets also indirectly contribute to **National Priority 2: Protect Forests from Threats**, as profitable management can reduce biotic and abiotic forest management challenges.

Forest Industry Trends (2020-2025)

ECONOMIC OVERVIEW¹

U.S. hardwood export markets have fluctuated significantly during this period. While initial declines in 2020 were linked to COVID-19², a major contributor was the first round of trade tensions with China under the Trump administration. Export values dropped to \$139 million in 2020, recovered to \$194 million in 2022, fell again to \$149 million in 2023 and rose to \$184 million in 2024³. Analysts anticipate another decline in 2025 as a result of renewed trade tensions. This volatility, especially in hardwood exports to China, underscores the vulnerability of Tennessee's forest products sector to global economic shifts and federal trade policy.

Export data, while useful, represent only a small share of total forest product sales. For example, in 2022, Tennessee forest product exports totaled \$194 million, while overall sales were estimated at \$29.1 billion⁴, though these figures that are not directly comparable due to differences in timing and scope. The broader economic contributions of the sector, including overall sales and downstream economic effects, are based on nominal (non-inflation-adjusted) dollars and may not accurately reflect real growth. While Tennessee's forest economy has demonstrated resilience, recent gains were driven largely by short-term demand during post-COVID recovery and may not signal sustained expansion.

Importantly, the state experienced the closure of major pulpwood-consuming facilities during this period, including Domtar (2020), Resolute Forest Products (2021) and Pactiv Evergreen (2023), resulting in the loss of more than 2.5 million green tons of annual processing capacity. These closures represent a significant contraction in the pulpwood market, particularly in East Tennessee, and remain the most pressing challenge for market diversification.

1 United States Forest Products Annual Market Review and Prospects: Country Market Report, 2022-2026. www.unece.org/sites/default/files/2024-10/US_FPMAR_2024-2025.pdf

2 The Economic Impact of Tennessee Forest Produce Exports in 2023. www.utia.tennessee.edu/publications/wp-content/uploads/sites/269/2024/09/W1262.pdf

3 2025 Governor's Economic Report. www.haslam.utk.edu/publication/economic-report-to-the-governor-2025/

4 2022 Governor's Economic Report. www.haslam.utk.edu/publication/economic-report-to-the-governor-2022/

II. EXPANDING MARKET DIVERSIFICATION

LOW-GRADE UTILIZATION AND SUPPLY CHAIN SHIFTS

Demand for pulpwood material remains limited in most areas due to closures of key pulp and paper mills in the East Tennessee woodbasket, long hauling distances to remaining pulp mills and, to a lesser extent, aging equipment that often makes thinning operations uneconomical for landowners. However, several positive developments have emerged in recent years to utilize low-grade timber and strengthen the wood supply chain:

- The launch of Clark Lumber's thermo-modified wood line in 2025 aims to expand the value-added uses of poplar and other species. This niche product adds diversity to sawmill offerings but does not replace lost pulpwood markets.
- An operational wood pellet and bioenergy facility (Jasper Pellets) in Marion County now produces around 100,000 tons of pellets annually, supplying both domestic and export markets and creating demand for residues from hardwood and pine sawmills and secondary manufacturers.
- Continued strength in railroad tie (crosstie) markets is providing consistent pricing and relatively steady demand for low-grade hardwood sawlog-sized material.
- Expanded research into biochar and hardwood cross-laminated timber (CLT) holds promise but is still in early stages and likely 5-10 years from achieving meaningful market scale.
- Sawmill automation and improved technologies in lumber handling and grading have been adopted by several mills, boosting efficiency and enabling better utilization of mixed and lower-grade log inputs.

Urban wood reuse efforts have also supported diversification, though at modest scales. For example, following tornado damage in 2021, TDF implemented salvage timber sales on Natchez Trace State Forest to recover value from dead and severely damaged trees, rehabilitate forestlands and reduce future forest health risks, generating over \$1.1 million in revenue through competitively bid, pay-as-cut sales while supporting local forest industry jobs. However, much of the pulpwood associated with Hurricane Helene damage and routine sawtimber harvests in East Tennessee has been left at the harvest site following the closure of pulp mills in the vicinity.



Storm-damaged timber salvaged following Hurricane Helene, reflecting efforts to recover remaining economic value, support local forest industry activity and mitigate forest health risks. © Allana Funderburk

Despite these advances, significant challenges remain. Logging and hauling capacity continue to be a bottleneck in the forest supply chain due to weak markets for pulpwood, an aging workforce, rising operating costs and high barriers to entry for new contractors. Many logging crew leaders are near retirement age and few young operators can afford the capital investment for modern logging equipment. Even as mills have increased pay to attract workers, higher wages and especially high fuel costs have further squeezed the already narrow

profit margins for logging firms. Labor shortages are especially acute in trucking, where a lack of drivers has slowed timber transport from the woods to mills.

Workforce and Supply Chain Resilience

Labor shortages in logging, trucking and milling persisted throughout 2020-2025. In response, various programs were implemented to bolster the workforce pipeline and supply chain efficiency:

- UTIA launched a [Structural Lumber Grading Course](#) to increase the number of certified lumber graders, enhancing the capacity of small and medium-sized sawmills to produce higher-value products and meet market specifications.
- Stakeholders identified the need for a comprehensive wood supply chain study to document product flows, infrastructure gaps, hauling costs and opportunities for new wood products. Ongoing collaboration between the UT Haslam College of Business and UTIA is now underway to address this need, analyzing data from FIA and industry surveys.
- Regular state-federal-industry collaborative meetings have been suggested to strengthen relationships and share ideas on market development.



Through U.S. Forest Service Landscape Scale Restoration grants and Tennessee state appropriations, TDF and the TDF-funded Tennessee Forestry Foundation (TFF) collaboratively expanded ForestryWorks and Project Learning Tree programming to strengthen forestry workforce development for youth and students from kindergarten through college. From 2020 to 2024, TFF, TDF and partners engaged over 157,200 young people and adults through forestry career awareness events, forestry camps and education programs, helping build Tennessee's future forest sector workforce. © Annelise Mucci and Good Wood Nashville

Market Developments and Innovation

Hardwood lumber production held steady in Tennessee despite global market swings. The past five years saw significant developments that broadened Tennessee's forest product market portfolio:

MASS TIMBER AND ENGINEERED WOOD PRODUCTS

Mass timber construction and component manufacturing represent a potential new market sector for Tennessee. A 2023 U.S. Forest Service [Hardwood CLT Siting Study](#) identified three potential Tennessee locations for hardwood cross-laminated timber (CLT) manufacturing, with a combined production potential of approximately 12.5 million cubic feet of CLT panels annually. Policy changes continue to pave the way for growth in this sector: the City of Nashville adopted modern building code provisions in 2023 that allow construction of taller mass timber buildings,⁵ and a pilot project in Knoxville showcased a multi-story CLT structure, demonstrating the material's viability⁶. When hardwood CLT products are approved for use in products and building codes, demand for locally sourced hardwood lumber for hardwood CLT manufacturing may lead to development of a production facility.

⁵ Metro Adopts Updated Mass Timber Construction Standards. www.nashville.gov/departments/codes/news/metro-adopts-updated-mass-timber-construction-standards

⁶ Covenant Health Park is First Mass Timber Project Ever Completed in Knoxville. www.bma1915.com/news/2025/04/10/covenant-health-park-first-mass-timber-in-knoxville

II. EXPANDING MARKET DIVERSIFICATION



This Nashville structure, built with approximately 99% mass timber, showcases the use of cross-laminated timber (CLT) as a low-carbon building approach and highlights the future potential of engineered wood products in Tennessee. © Jeff Morrow

WOOD BIOMASS AND LOW-GRADE WOOD UTILIZATION

This period also saw exploratory efforts in wood biomass use and urban wood recycling. UTIA demonstrated how biochar can be produced from low-grade wood and storm-damaged timber, potentially providing a new revenue stream for landowners while yielding a product that improves soil health and retains carbon. However, despite these research advances, the commercial market for biochar in Tennessee remains underdeveloped, and the state currently lacks any large-scale commercial biochar producers. Lebanon's municipal biomass power plant, which had been the state's largest biochar-producing facility, ceased operations in 2023. These challenges illustrate that while biochar presents a promising opportunity, significant policy support and market development will be needed before it becomes a viable outlet for low-grade wood in Tennessee.

Meanwhile, urban wood utilization continues to gain traction through local innovation. Demonstration projects and working groups in Memphis, Nashville, Chattanooga, Knoxville and Sevierville have helped advance public understanding and build connections that facilitate urban wood utilization. In Memphis, a federally funded [Urban Wood program](#) (supported by Bipartisan Infrastructure Law funds) emerged as a leading example, diverting 60 tons of high-quality hardwood from landfills each day and transforming it into lumber, compost and other value-added products. Operating on a solar-powered, zero-waste campus, the initiative is on pace to produce over 1 million board feet of lumber annually, demonstrating the potential for urban wood to drive both environmental and economic benefits.

STATE FOREST TIMBER HARVESTS⁷

TDF facilitated over \$3.4 million in timber sales annually from State Forests during this period. Additionally, TDF demonstrated its commitment to sustainable forest management by achieving Sustainable Forestry Initiative (SFI) certification on State Forests, verifying that state timber harvests meet high standards for regeneration, conservation and community engagement. During this period, TDF found a 98% compliance rate with Best Management Practices across 2,557 logging site courtesy checks.



Following a timber harvest on Chuck Swan State Forest, TDF, UT Extension, TWRA and TFF hosted a joint field day demonstrating how wildlife responds to active forest management and how forestry practices can mimic natural disturbance processes to shape healthy forest ecosystems. © Carson Parham

⁷ Tennessee Forestry Commission Annual Reports, 2020-2024. www.tn.gov/agriculture/forests/about/commission.html

WORKFORCE AND INFRASTRUCTURE DEVELOPMENTS

To strengthen Tennessee's forest products sector, TDF and its partners have prioritized workforce development and the identification of infrastructure needs. ForestryWorks and the TFF facilitate the Forest Worker Certificate Program, developed in collaboration with industry and educational institutions, which has provided targeted training for careers in logging, procurement and forest operations. Several sawmills reported investing in technology upgrades (such as computerized optimizers or automated handlers) to improve efficiency and maximize yield from each log. Additionally, stakeholders have assessed critical timber haul routes and transportation constraints affecting wood movement from forest to market. While no specific federal infrastructure funds have yet been confirmed for rural timber road improvements, discussions continue regarding transportation upgrades that would benefit the forest industry. Evaluation of rail and port infrastructure has also begun, with early-stage planning to enhance rail spur access and assess opportunities for improving transloading capacity in West Tennessee. These initiatives aim to increase the economic viability of transporting low-value wood to regional markets, supporting broader goals of market diversification and sustainable forest management.

KEEPING FORESTS AS FORESTS THROUGH MARKETS

Efforts to diversify and strengthen markets have direct conservation impacts. By providing outlets for low-grade timber and increasing the profitability of forest management, Tennessee is reducing the pressure to convert forestland to other uses. Private landowner engagement in active forestry has increased significantly. TDF foresters, consulting foresters and extension agents prepared more than 3,000 forest management plans for landowners From 2020 to 2024 (as noted under Objective 1), covering more than 150,000 acres of private forest. In addition, approximately 17,700 private landowners received technical forestry advice or attended educational programs in this period, with the goal of building a strong culture of stewardship across the state. Stable or improving market conditions encouraged many of these landowners to actively manage their woodlands. Active management, such as thinning overcrowded stands, harvesting timber, ensuring adequate regeneration or salvaging storm-damaged wood, keeps forests productive and intact. It also prevents the buildup of unhealthy fuel loads and improves wildlife habitat, creating a positive feedback loop between market health and forest health. In short, robust markets help ensure that "keeping forests as forests" remains a financially viable choice for Tennessee landowners.



II. EXPANDING MARKET DIVERSIFICATION

Challenges and Opportunities

Tennessee's forest products sector remains essential to keeping working forests viable, but gaps in infrastructure, workforce and market access continue to limit full potential. Stakeholders identified several areas where strategic investment and coordination can advance long-term resilience and economic opportunity:

MARKET INFRASTRUCTURE AND UTILIZATION GAPS

- Recruit low-grade stem-utilizing industries to regions with lost pulp mills or underused timber supply to revitalize local economies and incentivize active forest management.
- Establish post-disaster timber salvage protocols with mills and land managers before disturbances occur to increase utilization of storm- or pest-damaged timber.
- Encourage the use of forest-derived energy in schools, businesses and homes.

WORKFORCE LIMITATIONS AND CAPACITY SHORTFALLS

- Continue to expand logging workforce pipelines through ForestryWorks, technical college programs and apprenticeships.
- Encourage the use of grants and cooperative equipment sharing to improve the efficiency and productivity of existing and new logging businesses.

EMERGING MARKET UNCERTAINTY

- Pilot a mass timber project using Tennessee hardwoods to demonstrate feasibility and attract investors to develop local CLT manufacturing.
- Continue to include markets for ecosystem services education in extension and stewardship services to help landowners weigh the benefits alongside timber income.

TRANSPORTATION AND TRADE RESILIENCE

- Improve roads, bridges and hauling routes in key timber areas to reduce transport costs and expand delivery range. Explore enhancements to rail and barge infrastructure.
- Support the growth of in-state furniture, engineered wood and value-added wood product manufacturing (secondary manufacturing) to stimulate local demand for logs and lumber, while retaining jobs and market value.

COORDINATION AND COMMUNICATION

- Host a forest industry forum at the Tennessee Forestry Association Annual Meeting to help public and private stakeholders align on workforce needs, opportunities for infrastructure investments and market strategies.
- Develop infographics and outreach materials that link active forest management and local wood utilization to jobs, wildfire safety and conservation outcomes, helping community leaders and the general public understand the importance of forest markets and build support for policies and funding that sustain Tennessee's forest economy.

III. Maintaining and Improving Connected Landscapes

Overview

Tennessee's landscape connectivity objective focuses on reducing the ecological, economic and operational impacts that fragmentation, parcelization and land-use change have on Tennessee's forested landscapes. Maintaining connectivity supports wildlife movement, watershed protection and climate resilience. Additionally, connected tracts support working forests and rural economies. From 2020-2025, Tennessee's forests faced accelerating land-use changes, but the state also made historic progress in land conservation, local planning and regional coordination to sustain forest connectivity. This objective supports **National Priority 1: Conserve and Manage Working Forest Landscapes** by promoting land conservation, coordinated planning and private landowner engagement. It contributes to **National Priority 2: Protect Forests from Threats** by maintaining landscape-scale resilience to both biotic and abiotic stressors and supports **National Priority 3: Enhance Public Benefits from Trees and Forests** by protecting the ecosystems and open space that provide recreation, clean water and other public services.

Development and Fragmentation Trends (2020-2025)

Tennessee remains one of the fastest-growing states in the South, and that growth continues to accelerate land-use change. Forests and farmlands are being converted to residential, commercial and infrastructure uses at a pace that is reshaping both rural and suburban landscapes.

- **Forest Loss:** Between 2003 and 2023, Tennessee gained approximately 497,500 acres in developed land and lost more than 179,000 acres of forest cover. This equates to nearly 25,000 acres per year converted to development.
- **Forest Parcelization:** Private woodlands in Tennessee are increasingly fragmented, with parcelization most concentrated near metropolitan areas like Nashville, Knoxville, Chattanooga and Memphis, but also expanding into rural counties as heirs' divisions and new residential development extend beyond urban centers. These fragmented ownerships reduce the economic viability of forest management and increase the likelihood of future development.
- **Urban Expansion:** Rapid suburban growth is encroaching into historically forested counties, leading to a net decline in forest cover around Tennessee's major metro regions. This urban expansion creates increased impervious surfaces, fragmented habitats and reduced access to green spaces. Proactive local planning, land protection (e.g., conservation easements, strategic zoning) and support for private landowners can help balance growth with the maintenance of connected, healthy landscapes.

III. MAINTAINING AND IMPROVING CONNECTED LANDSCAPES



John C. Burch, Jr.'s Stewardship Forest in Humphreys and Dickson Counties reflects the role of voluntary programs in keeping working forests intact and managed across Tennessee. © Brian Hughett

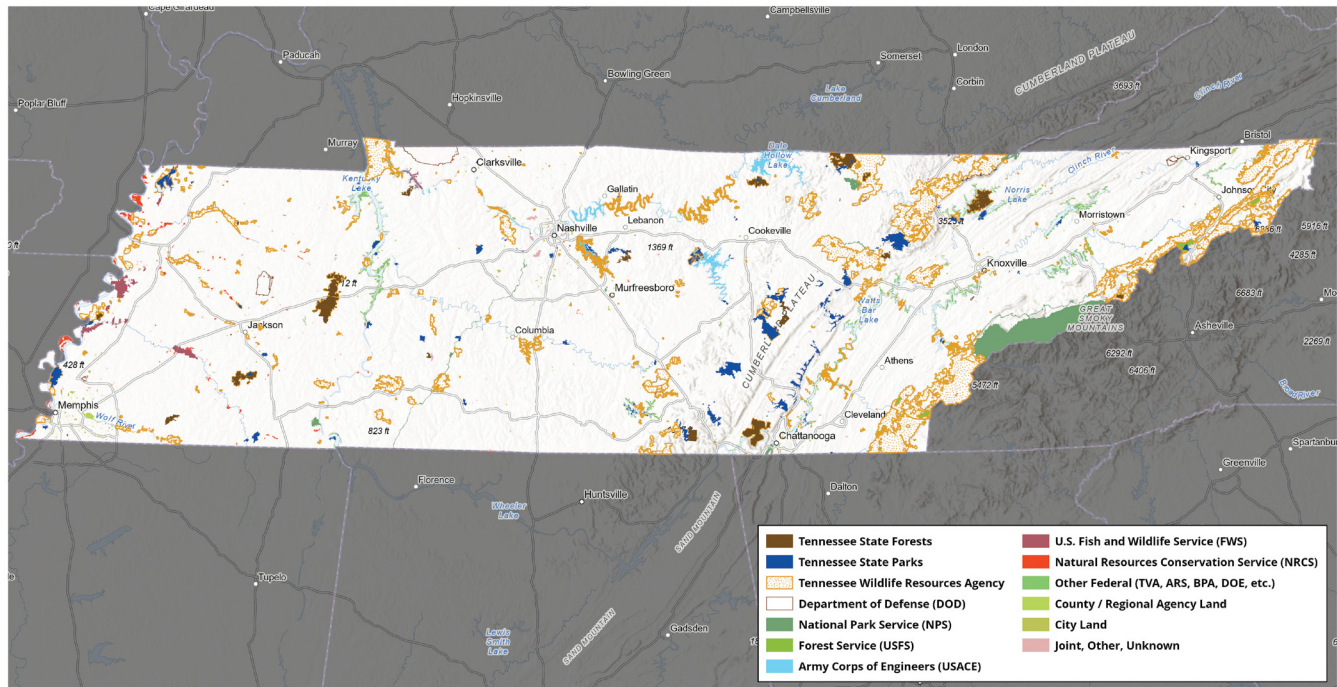
TABLE 2: POPULATION GROWTH IN MAJOR TENNESSEE COUNTIES (2010-2024)¹

County	2010 Population	2024 Estimate	Numeric Change (2010-2024)	Percent Growth (2010-2024)
Williamson	183,182	269,136	85,954	46.9%
Wilson	113,993	169,948	55,955	49.1%
Rutherford	262,604	376,996	114,392	43.5%
Hamilton	336,463	386,256	49,793	14.8%
Knox	432,226	506,748	74,522	17.2%

Most of Tennessee's 14 million acres of forest are privately owned, with approximately 193,000 family forest owners managing 8.5 million acres. According to the 2018 National Woodland Owner Survey, the average holding size is 44 acres, but the median is just 18, indicating that most parcels are small and highly fragmented.² Despite this, landowners frequently cite a strong desire to keep their forests intact. This suggests that with the right combination of technical assistance, financial incentives and planning tools, many owners would choose to conserve and better manage their woodlands. Given the scale of private ownership and ongoing parcelization trends, coordinated planning and targeted incentive programs remain essential for maintaining forest connectivity at a landscape scale.

¹ Tennessee State Data Center, County Population Fact Sheet (2022). www.tnsdc.utk.edu/wp-content/uploads/sites/94/2022/05/TN_County_Pop_Fact_Sheet.pdf

² Family forest (10+ acres) ownership characteristics: Tennessee, 2018. www.fs.usda.gov/nrs/pubs/rn/rn_nrs299.pdf



Expanding Public and Private Conservation for Connectivity

STATE AND FEDERAL CONSERVATION INVESTMENTS

Recognizing these trends, Tennessee has made historic investments in land conservation during 2020-2024, resulting in a significant expansion of protected forest lands. Between 2023 and 2024, the General Assembly approved a \$101.5 million allocation to support statewide conservation initiatives through the Heritage Conservation Trust Fund.³ This commitment, paired with federal programs and private efforts, enabled Tennessee to protect tens of thousands of acres of strategically important forestland. Many of these projects were made possible through close collaboration with nonprofit conservation partners that played a critical role in identifying, securing and stewarding high-value tracts. These public-private partnerships have accelerated conservation outcomes across the state and strengthened the connectivity of Tennessee's forested landscapes. Major accomplishments include:

- **New State Forest:** In 2024, TDF secured 5,488 acres of bottomland hardwood forest in a critical Mississippi River tributary corridor, with support from The Conservation Fund, dedicating the property

³ Heritage Conservation Trust Fund, Board of Trustees 2025 Report. www.tn.gov/content/dam/tn/environment/boards/documents/hctfb/2025/10-oct/hctfb_trust-fund-fy25-annual-report_oct-07-2025.pdf

III. MAINTAINING AND IMPROVING CONNECTED LANDSCAPES

in 2025 as Tennessee's 16th state forest, Wolf River State Forest. This is the first new state forest established in more than two decades and reflects a major collaborative achievement. The acquisition was supported by a record \$17 million U.S. Forest Service Forest Legacy Program grant, matched by over \$7 million in state and private contributions. Wolf River State Forest protects more than 30 miles of headwater streams and 1,560 acres of wetlands that feed the Memphis Sand Aquifer, a primary drinking water source for the region. In addition to its ecological importance, the forest supports active timber management, long-term research and public access for hunting and recreation. It stands as a leading example of how working forests can deliver both conservation and economic outcomes.

- **New and Expanded State Parks:** Since 2020, Tennessee has designated more than a dozen new state parks, expanding recreational access and conservation efforts across the state. While many of these lands, including those comprising Head of the Crow, North Chickamauga Creek Gorge and Middle Fork Bottoms, were already under state ownership prior to their official designation, these formal transitions underscore a continued commitment to land stewardship and public access. Between 2020 and 2025, the Tennessee Department of Environment and Conservation (TDEC) acquired approximately 17,570 acres across various units to enhance park connectivity, conserve habitat and support outdoor recreation. Notable acquisitions include expansions at Cumberland Trail, Fall Creek Falls and Savage Gulf state parks as well as the establishment of Cardwell Mountain and Buffalo River State Parks. These efforts reflect strategic investments in conservation and accessibility, especially in rapidly developing areas where protected corridors are increasingly important for biodiversity and climate resilience.
- **Wildlife Management Areas:** The Tennessee Wildlife Resources Agency (TWRA) expanded its conservation footprint with a \$30 million investment in 2025 for Wildlife Management Area (WMA) acquisitions and habitat restoration, aimed at strengthening ecological connectivity and biodiversity across public lands. A 2,613-acre addition to North Cumberland WMA, completed in 2022, secured important elk habitat



Tennessee Governor Bill Lee, State Forester and Assistant Commissioner Heather Slayton and former Commissioner of the Tennessee Department of Agriculture Charlie Hatcher at the dedication of Wolf River State Forest. Forestry professionals participated in a field tour, including a visit to one of the world's only second-generation white oak orchards.

© Annelise Mucci

and strengthened forest connectivity in the Cumberland Mountains, with support from The Nature Conservancy. In 2025, a 3,295-acre tract in Campbell County was approved for acquisition to expand an existing WMA, improving habitat connectivity on the Cumberland Plateau. Between 2020 and 2024, new WMA expansions totaled over 15,000 acres of improved public access for fishing, hiking and hunting while linking adjacent conservation areas.

- **River Corridors and Wetlands:** Investments in bottomland hardwoods and riparian corridors have enhanced forest connectivity while supporting water quality and floodplain resilience. In 2025, the state established Hatchie Bottom WMA, protecting 7,418 acres of high-value wetland forest along the Hatchie River, one of the largest remaining unchanneled rivers in the lower Mississippi Valley. Upstream of Hatchie Bottoms WMA, a 1,273-acre acquisition further anchors the growing 30,000-acre corridor, ensuring long-term protection of West Tennessee's most important aquatic systems. These efforts strengthen continuous riparian ecosystems and buffer hydrologic systems while securing habitat for a variety of wildlife species.
- **Federal-Nonprofit Land Acquisition Partnerships:** During this period, The Nature Conservancy assisted the U.S. Forest Service, Cherokee National Forest, with 12 land acquisitions totaling 2,720 acres. These strategically located tracts, ranging in size from 24 to 640 acres, improve forest connectivity, enhance wildlife habitat, increase recreation access and support more efficient forest management across the southern Appalachian landscape.

(Tennessee's protected forest estate now spans numerous ownerships. As of 2025, roughly 1.62 million forested acres are protected on federal lands in the state, 1.02 million on state lands and over 345,000 acres in county, municipal or nonprofit holdings. Private lands under permanent conservation easements exceed 240,000 acres, complementing the public land network. Around 23.6 million acres remain in private, unprotected ownership, highlighting the continued need for voluntary conservation.)

Private Land Conservation

Private land conservation advanced significantly between 2020 and 2024, supported by new state and federal investments and coordinated nonprofit partnerships. Recognizing the accelerating loss of forests and farmland, Tennessee passed the Farmland and Forest Preservation Act in 2025, establishing a \$25 million state fund dedicated to purchasing permanent conservation easements from willing landowners. This first-of-its-kind voluntary program enables farmers and forest owners to permanently restrict development on their land while maintaining private ownership. Federal support through the USDA Forest Legacy Program also contributed meaningfully to private conservation. Since 2020, Forest Legacy projects have protected nearly 20,000 acres of high-priority forestland across the state. These efforts have expanded Tennessee's total Forest Legacy footprint to more than 53,000 acres, valued at \$59 million in total investment. Recent projects include a 1,933-acre working forest easement at Myers Cove in Warren County.

Land trusts and conservancies have played a central role in identifying, negotiating and holding easements across the state. Through their leadership, more than 345,000 acres of Tennessee's private lands are now permanently protected via conservation easements or as private preserves. This widespread voluntary participation plays an important role in sustaining large, connected forest systems. Private landowners consistently cite keeping their land intact for future generations as a top priority. Donated conservation easements may also yield capital gains, estate tax relief or both for families. Programs that offer cost-share assistance, easement purchase funding and management assistance remain critical tools for addressing fragmentation at scale.

III. MAINTAINING AND IMPROVING CONNECTED LANDSCAPES

LOCAL LAND-USE PLANNING

Local planning capacity has long been limited in Tennessee, leaving many fast-growing counties without effective tools to balance development and conservation. In 2023, the state created a Planning and Growth Management Office within the UT Institute for Public Service, providing \$2 million in funding to help counties integrate natural resource conservation into local growth strategies.⁴ This new office is assisting local governments with:

- **Conservation Planning:** Developing conservation subdivision ordinances, tree preservation standards and other sample planning guidelines to ensure new development conserves open space and forest corridors.
- **Smart Growth Policies:** Implementing urban growth boundaries (UGBs), transfer of development rights (TDR) programs and other smart-growth tools that direct development away from working forest and farm areas and toward existing developed zones.
- **GIS Tools and Data:** Accessing high-quality conservation GIS datasets (e.g., the Southeast Conservation Blueprint, The Nature Conservancy Resilient Lands dataset) to inform land-use decisions and identify priority connectivity zones during planning and zoning updates.

Partners in Tennessee continue to support local planning capacity through UT's [Municipal Technical Advisory Service \(MTAS\)](#) and [County Technical Assistance Service \(CTAS\)](#), which help communities incorporate environmental considerations into land-use decisions. TDF has also taken deliberate steps to ensure fire response capacity keeps pace with growth in high-risk areas. As Tennessee's State Forest Action Plan and State Wildlife Action Plan increasingly align around connectivity goals, improving the link between local growth planning and statewide conservation priorities remains a significant opportunity for Tennessee.

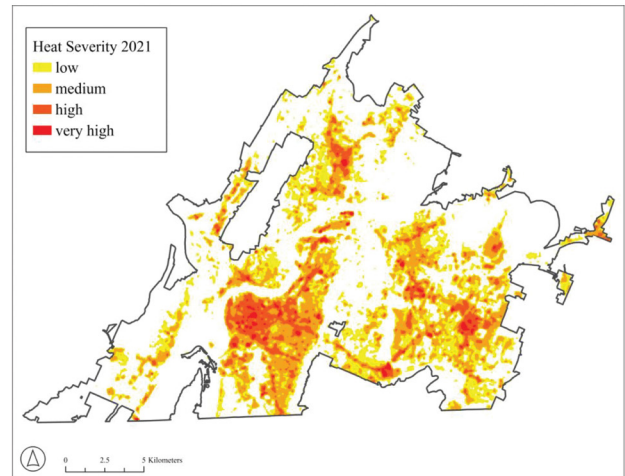
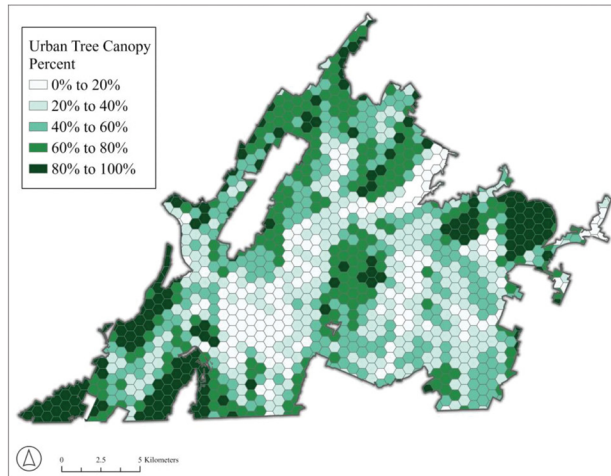
Regional and Cross-Boundary Coordination

Tennessee's forested landscapes extend across eight neighboring states, making cross-boundary coordination essential for maintaining connected landscapes. From 2020 to 2024, Tennessee strengthened multi-jurisdictional coordination through participation in the Southeast Conservation Adaptation Strategy (SECAS) and contributions to the Southeast Conservation Blueprint, which identifies more than 6 million acres of high-priority conservation land in Tennessee. These efforts support coordinated conservation, restoration and land protection across the state.

At the state level, Tennessee has also advanced internal coordination to better align management across publicly owned lands. TDEC, TDF and TWRA have established a State Lands Group to improve collaboration across agencies that manage state forests, parks and wildlife areas. This coordinated approach is intended to reduce fragmented management, share technical expertise and align planning and decision-making across state lands that serve as anchors for larger connected landscapes.

Together, these regional and statewide coordination efforts help ensure that Tennessee's investments in conservation, recreation and forest management contribute to meaningful landscape connectivity, improved habitat continuity and forest resilience at scales that extend beyond individual ownerships or agency boundaries.

⁴ State Funds Local Planning Agency at UT Institute for Public Service. www.ips.tennessee.edu/article/state-funds-local-planning-agency-ut-institute-public-service



Together, these maps demonstrate how tree canopy distribution and urban heat patterns can be used to prioritize urban forestry and riparian connectivity projects that deliver both ecological and community benefits.

Map credit: University of Tennessee at Chattanooga's Interdisciplinary Geospatial Technology Lab

Riparian and Urban Connectivity

Connectivity efforts have also targeted riparian corridors and urban areas. The Tennessee Department of Agriculture, USDA's Farm Service Agency and the Tennessee Valley Authority launched the [*Tennessee Riparian Incentives Program \(TRIP\)*](#) in 2022 to fund large-scale reforestation and wetland plantings along key waterways. By 2024, TRIP supported projects along rivers like the Harpeth and Clinch, improving water quality and expanding riparian forests in the state.

Urban areas have also begun to integrate connectivity principles into city planning. In Nashville and Chattanooga, greenway expansions have linked urban parks to surrounding forested areas. Urban forestry programs, supported by TDF's Urban and Community Forestry grants, have increased tree canopy in cities and expanded vegetated stream buffers that connect urban and rural green infrastructure. To better target these investments, TDF partnered with the University of Tennessee at Chattanooga's Interdisciplinary Geospatial Technology Lab to complete urban tree canopy and heat vulnerability assessments for communities statewide, prioritizing small and mid-sized cities with limited planning capacity. These assessments integrate canopy cover, surface temperature and demographic indicators to identify neighborhoods where tree planting and riparian restoration can provide the greatest connectivity, cooling and community benefits.



The Tennessee 2025-2035 State Wildlife Action Plan (SWAP) Steering Committee delineated Conservation Opportunity Areas using spatial analyses and partner input to prioritize riparian corridors and landscape-scale habitat function. © Janie Jennings-Becker

III. MAINTAINING AND IMPROVING CONNECTED LANDSCAPES

Partnerships, Outreach and Integration

Tennessee's approach to landscape conservation has been highly collaborative, exemplifying the "all lands, all hands" approach, with a broad coalition of nongovernmental organizations (NGOs) and agencies contributing expertise and funding. National organizations like American Farmland Trust, Ducks Unlimited and the Land Trust Alliance provided critical support for farmland and wetland conservation. State and regional conservancies, such as The Land Trust for Tennessee, TennGreen Land Conservancy, Foothills Land Conservancy, Legacy Parks Foundation, Open Space Institute and Wolf River Conservancy, have expanded their on-the-ground programs to work with landowners on forest conservation. In addition, The Nature Conservancy, The Conservation Fund and the Tennessee Wildlife Federation have contributed through strategic land acquisitions, holding easements and policy advocacy for conservation funding. This broad coalition of partners has increased capacity for land conservation and helped integrate forest connectivity goals into local policies and public awareness. Conservation is increasingly recognized not just as the work of government agencies, but as a shared mission among government, NGOs, landowners and community stakeholders.

Challenges and Opportunities

Maintaining and improving connected landscapes in Tennessee will require sustained investment in planning capacity, private land conservation tools and stronger alignment across agencies and jurisdictions. As growth pressures accelerate in both rural and urban areas, partners have identified several targeted challenges and opportunities that will shape the state's ability to conserve large, contiguous forest corridors through 2030:

PARCELIZATION AND SMALL TRACT OWNERSHIP

- Expand technical and financial assistance to owners of woodlots less than 50 acres to promote sustainable forest management and land retention.
- Encourage cooperative conservation through shared management activities across multiple neighboring properties.
- Continue to collaborate with working forest conservation and incentive programs and various partners to target land conservation investments in fast-growing counties to protect high-value forested areas and wildlife corridors before they are developed.
- Prioritize riparian reforestation and wetland restoration, especially in flood-affected or rapidly developing areas.

STATEWIDE COORDINATION AND MONITORING

- Create a centralized dashboard and GIS system for tracking gains and losses in forest connectivity, accessible to agencies and NGO partners.
- Align conversations at the annual Governor's Conservation Summit and Tennessee Land Conservation Summit to review progress, adjust conservation priorities and align strategies based on updated data.

IV. Strengthening Wildfire Resilient Communities

Overview

This objective focuses on reducing risk in the wildland-urban interface (WUI), supporting local preparedness and improving safe, effective wildfire response across Tennessee. Wildfire risk is becoming more complex due to factors like population growth into fire-prone areas, forest parcelization, invasive plants and increasingly variable weather patterns. From 2020 to 2024, annual wildfire occurrence generally remained within the state's suppression capacity, but events such as the 2022 Indigo Lane fire in Sevier County demonstrated how fast-moving fires in the WUI can threaten communities and strain local resources. This objective directly supports **National Priority 2: Protect Forests from Threats** by advancing local preparedness, hazard mitigation and coordinated response and contributes to **National Priority 3: Enhance Public Benefits from Trees and Forests** by safeguarding lives, property and the ecosystems Tennesseans depend on.

Wildfire Occurrence and WUI Risk (2020-2025)

Between 2020 and 2024, TDF suppressed 3,750 wildfires, which burned approximately 53,000 acres combined. Thanks to effective suppression, over 90% of these fires were kept below 10 acres in size. These efforts protected an estimated 1,191 structures, with roughly \$238 million in property value saved.¹

At the same time, WUI expansion increased the number of people and structures exposed to wildfire risk. Statewide risk assessments identified particularly dense, high-risk WUI around major metropolitan counties (Nashville/Davidson County, Knoxville/Knox County, Chattanooga/Hamilton County) and in resort and lake-oriented communities on the Cumberland Plateau. Many new developments occupy steep slopes, narrow hollows and ridge tops served by single access roads, conditions that complicate evacuation and tactical firefighting operations. Rural counties experienced smaller, more dispersed fires but often have limited local firefighting capacity, resulting in a different set of challenges as staffing, equipment and training resources are constrained. Meanwhile, invasive plants such as kudzu and *Paulownia* have increased fuel continuity in many highly developed WUI areas, which adds to local ignition potential and fire spread. Climate trends during this period included more frequent periods of low humidity, fast drying of fine fuels and extended fire-weather windows in spring and fall. These evolving conditions underscore the need to pair local preparedness and home-ignition zone mitigation with strategically placed landscape-scale fuel treatments.

Community Preparedness and Fire-Adapted Communities

Fire Adapted Communities initiatives, including the national Firewise USA recognition program, expanded significantly between 2020 and 2024. Twenty-seven communities achieved Firewise USA recognition during this period, a substantial increase from the single-digit number of recognized sites a decade ago. Participation was highest in East Tennessee and the Cumberland Plateau, where communities are acutely aware of wildfire risk. Recognized neighborhoods and towns organized mitigation workdays, conducted home-ignition zone assessments and developed or updated local emergency preparedness plans. Homeowners' associations, local fire departments and volunteers played central roles in these efforts, demonstrating the value of sustained, community-led engagement in risk reduction.

¹ Tennessee Forestry Commission Annual Reports, 2020-2024. www.tn.gov/agriculture/forests/about/commission.html

IV. STRENGTHENING WILDFIRE RESILIENT COMMUNITIES



During this review period, Tennessee hosted Coalitions & Collaboratives' Wildfire Mitigation Best Management Practices training and the U.S. Forest Service Community Mitigation Assistance Team to support local capacity and review wildfire mitigation strategies in high-risk counties. © Brook Smith

Community Wildfire Protection Plans (CWPPs) also increased in number and strategic value. Many communities updated existing CWPPs or developed new plans during this period, using current risk assessment data to identify priority fuel hazards, critical access constraints and key mitigation projects. Through the federal Community Wildfire Defense Grant (CWDG) program (funded by the Bipartisan Infrastructure Law), three communities in Tennessee created or updated CWPPs and implemented associated hazard mitigation projects. Notably, TDF leveraged CWDG funding to develop the state's first countywide CWPP in Sevier County, a notable step toward integrating wildfire risk reduction into county-level emergency management and land-use planning. By 2025, over half of Tennessee counties with significant WUI areas had community-level CWPPs in place.

Despite this progress, outreach and awareness remain uneven. Some rural communities, areas dominated by absentee or short-term rental properties and newly developed subdivisions have limited familiarity with wildfire risk or local fire history. Partners emphasized

that engaging trusted local networks, such as churches, schools, civic organizations and homeowner associations, is essential for reaching these audiences and familiarizing new residents with Tennessee's fire environment. Communities that have embraced preparedness provide strong models, but expanding participation to all at-risk areas remains an ongoing need.

Response Capacity, Training and Interagency Coordination²

TDF maintained a robust wildfire response capacity from 2020 to 2024, supported by modernized equipment, enhanced fire-weather monitoring and close coordination with local, state and federal responders. TDF delivered hundreds of hours of training annually, including basic wildland firefighting courses and WUI structure protection tactics, to 900 firefighters from departments across the state. In addition, over 2,400 personnel participated in the annual Tennessee-Kentucky Wildland Fire Academy during this period, contributing to a growing pool of qualified responders region-wide.

Volunteer fire departments (VFDs) remain essential frontline partners, particularly for structure protection, initial attack in the WUI and evacuation support. Local departments bring critical knowledge of access routes, water sources and vulnerable populations. Many rural VFDs operate with limited budgets, frequent turnover and an aging workforce, and they often must prioritize structural fire needs over specialized wildland training and equipment. While basic National Wildfire Coordinating Group training (e.g., S-130/190) is available online at no cost, hands-on and advanced courses are less accessible and often depend on TDF instructors volunteering outside of regular duties. To help address these needs, TDF secured a total of \$1,133,402 from 2020 to 2024 in federal grants (State Fire Assistance and Volunteer Fire Assistance programs) to equip dozens

² Tennessee Forestry Commission Annual Reports, 2020-2024. www.tn.gov/agriculture/forests/about/commission.html



Community members chip woody debris to reduce hazardous fuel loads on their properties as part of wildfire mitigation efforts. © Nathan Waters

of VFDs with wildland personal protective equipment (PPE), hand tools and communication equipment.

Stakeholders identified several persistent gaps in wildfire response capacity. These include the need for additional training opportunities for crew boss and incident commander qualifications, more sawyer (chainsaw operator) courses for safe debris clearing, increased access to wildland PPE for rural firefighters, more portable water tanks for areas without hydrants and upgraded communications equipment to support interagency operations on large incidents. Targeted grant programs and partnerships that focus on building wildland capability within local fire departments will be critical to addressing these gaps.

Interagency coordination improved steadily through the review period. County-level Fire Adapted Community groups and local wildfire councils in high-risk areas provided forums for joint pre-season planning and fuel mitigation prioritization. Multi-agency responses involving TDF, local fire

departments, county emergency management agencies, the Tennessee Emergency Management Agency (TEMA), the National Park Service and the U.S. Forest Service became more routine, strengthening trust and clarifying roles among responders. Additionally, investments in common reporting and mapping platforms and an expanded network of weather stations significantly improved situational awareness and decision support.

Zoning, Building Materials and Preventative Planning

Local planning and development practices increasingly shape wildfire exposure in Tennessee's growing WUI. Although the state lacks a statewide WUI code, several counties and municipalities have begun incorporating wildfire considerations into subdivision reviews, emergency access requirements and vegetation management standards. MTAS and CTAS continued supporting local governments with training on hazard-aware development, helping planners understand how road design, structure placement and landscaping influence ignition potential. Interest in ignition-resistant materials is slowly growing, but adoption remains uneven, particularly in fast-developing areas with new residents unfamiliar with Tennessee's fire environment. Strengthening outreach to builders, homeowners associations and local planning commissions represents a clear opportunity to reduce structure vulnerability before wildfires occur.

IV. STRENGTHENING WILDFIRE RESILIENT COMMUNITIES

Hazard Mitigation, Fuel Management and Post-Fire Recovery

Proactive hazard mitigation is essential to wildfire-resilient communities in Tennessee. While the state experiences fewer large-scale fires than other regions in the country, strategic fuel reduction near population centers and critical infrastructure has proven effective in moderating fire behavior and supporting safe suppression operations.

- Prescribed fire continues to play a dual role in hazard reduction and ecological restoration. From 2020 to 2024, TDF-led prescribed burns treated approximately 33,000 acres across state forests and private lands, supported by partner-led burns on WMAs and other conserved lands.
- Mechanical fuel treatments, such as thinning and invasive species removal, are increasingly applied around subdivisions, along primary evacuation routes and near critical infrastructure to create defensible space and strategic fuel breaks.
- Integrated approaches that combine fuel reduction with neighborhood-level mitigation efforts are recognized as best practice, achieving cumulative risk reduction across the landscape.

Despite these efforts, time and financial constraints limit mitigation at scale. Extremely limited markets for small-diameter material and woody biomass mean that excess fuels have little economic value, making removal costly. Maintaining treatments over time is also challenging; without periodic follow-up, fuels quickly re-accumulate. County-level mitigation planning in Sevier County has provided an effective framework for sharing resources, prioritizing projects and pursuing funding rather than relying on individual neighborhoods alone.

Post-fire recovery emerged as a key theme during this review period. Residential and WUI fires highlighted the need for a comprehensive, statewide post-wildfire rehabilitation framework for private lands. In 2022, TDF and The Nature Conservancy partnered to create a Post-Wildfire Recovery Manual for Forest Landowners in Tennessee. This resource offers practical, field-based guidance for recovering forests after wildfire and has since proven adaptable for use following other natural disasters, including wind and flood events.

The impacts of Hurricane Helene in 2024 underscored the need to integrate natural resource recovery into broader disaster preparedness efforts. Widespread windthrow and flooding generated heavy downed-fuel loads, elevating wildfire risk and highlighting the growing intersection of storm recovery, fuel management and long-term fire resilience. In response, natural resource professionals from state, local and nonprofit organizations met with the U.S. Forest Service to review and discuss proposed mitigation actions, such as salvage thinning and prescribed fire, as part of a coordinated effort to reduce future fire hazards across affected landscapes.



Through a multi-agency partnership led by TDF, TWRA, the U.S. Department of Energy and Oak Ridge National Laboratory (ORNL), roughly 7,000 acres have undergone wildfire mitigation treatments to reduce fuel loads and community risk near the ORNL campus.
© Annelise Mucci



Dense invasive vegetation contributes to hazardous fuel accumulation, especially along transportation corridors and developed areas, where unmanaged growth can elevate ignition risk and complicate wildfire suppression.

© Cherise Guesford

CHALLENGES AND OPPORTUNITIES

Building and sustaining wildfire-resilient communities in Tennessee will require continued investment in mitigation, planning, outreach and response capacity. Partners identified several key challenges and corresponding opportunities that will shape implementation through 2030:

Public Awareness

- Tailor wildfire awareness campaigns to local fire history and risk and distribute messages through trusted community outlets (e.g., schools, churches, VFDs).
- Focus outreach in high-growth counties where new or short-term residents may be unfamiliar with fire risks.
- Encourage counties to include wildfire risk in comprehensive plans, hazard mitigation plans and emergency operations plans.

Fuel Mitigation

- Continue to promote neighborhood fuel reduction programs with brush disposal assistance, cost-share and recognition for fire-prepared communities.
- Help communities prioritize fuel treatments in high-risk WUI zones to reduce fire behavior potential.
- Work with local fire departments to coordinate county-level fuel plans to create a connected network of defensible space and fuel breaks.
- Support partnerships that explore small-diameter wood utilization, biomass aggregation or local disposal options that could improve fuel removal at the scale needed to reduce wildfire risk.

IV. STRENGTHENING WILDFIRE-RESILIENT COMMUNITIES

Rural Fire Department Capacity

- Continue to work with local, state and federal partners to expand and modernize Volunteer Fire Assistance (VFA) and similar grant opportunities to supply volunteer fire departments with wildland PPE, tools and portable water units.
- Expand wildland fire training courses in weekend or hybrid formats accessible to volunteer teachers and interested students.
- Support mentorship and qualification pathways for volunteer firefighters to develop incident leadership skills.
- Standardize radio programming and incident communication to improve coordination during multi-agency responses.

Mitigation Planning and GIS Capacity

- Continue to encourage counties to write or update CWPPs with clearly prioritized fuel projects and public outreach strategies that meet federal funding criteria.
- Provide counties with GIS maps and wildfire planning layers using state tools like the [U.S. Forest Service's Wildfire Risk to Communities](#) tool and [Tennessee's LMP](#).
- Continue to support cross-jurisdiction mitigation plans and encourage counties to integrate wildfire considerations into zoning reviews in firesheds, while promoting the voluntary use of ignition-resistant building materials in new developments.

Prescribed Fire and Private Lands

- Where appropriate, include private-land prescribed burns in CWPPs and local resilience plans as tools for community protection.
- Promote peer-to-peer learning opportunities through the Tennessee Prescribed Fire Council and its network of certified burn managers.



Firewise landscaping and defensible space treatments around this home reduced ember exposure and surface fuel continuity, helping the structure withstand wildfire. © Nathan Waters

Continued Implementation, Monitoring and Next Steps

Ongoing Performance Tracking

Achieving the goals of Tennessee's SFAP is an ongoing process that requires sustained attention to outcomes, openness to adaptation and active collaboration with diverse partners. Recognizing this, TDF expanded its monitoring infrastructure during the second half of this period to better track implementation and enable shared accountability.

In 2023, TDF established a dedicated Forest Action Plan Coordinator to lead the mid-cycle review, support interagency collaboration and maintain communication with the many external stakeholders contributing to SFAP goals. One of the most significant improvements was the development of the [Forest Action Plan Accomplishment Tracker](#), an open-access reporting tool that allows agencies, NGOs and partners to submit outcome data year-round. This system provides a shared space to capture project-level metrics as they relate to the SFAP, such as acres treated for invasive species, miles of riparian forest restored or new Firewise USA communities recognized. These data points feed directly into state- and national-level performance assessments and support a transparent, up-to-date understanding of forest stewardship progress across Tennessee.

Adaptive Management and Statewide Alignment

Tennessee has prioritized the use of monitoring, modeling and performance data to guide real-time decision-making. In both 2024 and 2025, the Forest Action Plan Coordinator facilitated review sessions with the State Forest Stewardship Coordinating Committee to evaluate performance data and identify opportunities to improve SFAP program delivery. These sessions helped maintain momentum and ensured that the SFAP remained an active and actionable tool, rather than a static document, reinforcing its relevance to influential practitioners.

As part of a broader effort to align Tennessee's conservation strategies, the Forest Action Plan Coordinator also served on the 2025-2035 State Wildlife Action Plan (SWAP) steering committee and worked closely with the SWAP Manager to support alignment between the two documents. This collaboration ensures that shared priorities, such as maintaining habitat connectivity, conserving working forests and addressing cross-boundary challenges, are pursued through a coordinated framework. Aligning these two foundational plans enhances consistency across agencies, strengthens funding proposals and positions Tennessee to implement landscape-level conservation more effectively in the coming decade.

Closing Outlook

At the midpoint of the 2020-2030 State Forest Action Plan, this five-year review confirms that Tennessee's SFAP remains both relevant and effective. The objectives and strategies outlined in 2020 have proven well-aligned with the challenges and opportunities the state has faced, and they continue to provide a sound foundation for future action in its current form. **Based on this review, Tennessee's 2020-2030 SFAP requires no midcycle amendments. Similarly, the Forest Legacy Program review confirmed that Tennessee's designated Forest Legacy Areas and Assessment of Need are current and require no changes.**

CONTINUED IMPLEMENTATION, MONITORING AND NEXT STEPS

As Tennessee enters the second half of this planning period, the path forward is clear: build on what is working, address identified gaps and remain flexible in the face of emerging challenges. The challenges and opportunities outlined under each objective in this five-year review highlight where emphasis would be beneficial in the next five years. By focusing resources and partnerships toward those areas, Tennessee will continue to build on the successes of 2020-2025.

The accomplishments of the past five years reflect meaningful progress. From enhancing forest health and expanding markets to conserving connected landscapes and improving wildfire resilience, Tennessee has made tangible contributions not only to the well-being of its forests and communities but also to the broader national priorities of conserving working forest landscapes, protecting forests from threats and enhancing public benefits from trees and forests.

Looking ahead, the next five years will focus on scaling up effective practices, addressing persistent challenges and embracing innovation. With continued coordination among federal, state, local and private-sector partners and guidance from the SFAP, Tennessee is well-prepared to meet future challenges. Sound forest management, collaborative planning and data-informed decision-making will remain central to achieving lasting economic, ecological and social outcomes.

TDF and its partners will continue to rely on the SFAP to guide investment, coordinate action and deliver measurable results. This plan will guide efforts to promote the health and resilience of Tennessee's forests, support forest-dependent communities and industries and advance the broader national priorities of the U.S. Forest Service. Through ongoing transparency, adaptation and partnership, Tennessee's commitment to sustainable forestry will remain strong through 2030 and beyond, ensuring that its forests remain productive for future generations.



The TDF and The Nature Conservancy staff that guided the Forest Action Plan five-year review process are pictured together. © Allana Funderburk

