



**FOREST
LANDOWNERS
FOUNDATION**

U.S. FOREST SUSTAINABILITY IN THE 21ST CENTURY:

Strengthening Families, Communities, and Livelihoods

Dovetail Partners

February 2025

Authors: Kathryn Fernholz, Eliza Meyer, Maria Golden

Special thanks to the Forest Landowners Foundation and the US Forest Service for support and collaboration.

TABLE OF CONTENTS

Executive Summary	3
The Scale and Importance of Working Forests	8
Ecological Importance	9
Community Value	9
Global Benefit	10
Sustainability and Private Working Forests	11
Land Use History and Patterns: Drivers for Restoration	14
The Legacy of Discrimination in Land Ownership	15
Family-owned Forests	17
Emergence of Certification: A Sustainability Strategy	20
Beyond Certification: Expanded Verification of Sustainability	23
Modern Pathways to Forest Sustainability	23
Best Management Practices (BMPs)	23
Forest Action Plans	23
Forest Inventory and Analysis (FIA)	24
Risk Assessments and Publicly Available Reporting	24
Culture of Forest Sustainability in the U.S.	25
Sustainable Forest Management and Market Support	25
Future Possibilities	26
Securing the Future of Forest Sustainability	26
Supporting Effective Forest Policies	26
Conclusion	27
References	28

EXECUTIVE SUMMARY



Sustainably managed forests play a key role in addressing some of today's most pressing challenges. Forests are essential to the growth of a circular, more bio-based economy and contribute to healthier communities and a more equitable built environment. Forests also provide crucial natural climate solutions. Sustainable forest management helps tackle issues such as affordable housing, workforce development, human health, youth engagement and education, and can support creation of more resilient infrastructure.

Healthy, well-managed forests provide diverse products and services that support families, strengthen communities, and sustain livelihoods. They are essential for wildlife, ecosystems, and the planet, as well as for the well-being of people. These strategic choices not only enhance the health of our forests but also contribute to broader goals of community resilience, social cohesion, and an improved quality of life.

For the past 30 years, certification has served as a benchmark for forest sustainability. Where accessible, certification auditing has become a valued tool. However, newer, more advanced systems for risk assessment, data analysis, and public reporting now offer more accessible and effective solutions. These modernized approaches ensure sustainability across the landscape without imposing the cost and technical barriers that hinder supply chain transparency and perpetuate marketplace inequities.

For most forest owners in the United States (U.S.), forest certification has been cost-prohibitive, inaccessible, and offered limited benefits. In contrast, advancements like artificial intelligence (AI), satellite imagery, cutting-edge research, and leadership from public agencies have propelled sustainability verification beyond reliance on traditional certification. These innovations address longstanding frustrations while providing robust, scalable assurances of sustainable practices.

Government policies and programs have a unique opportunity to modernize and revitalize the promotion and recognition of forest sustainability in the U.S. in the 21st Century. By investing in and prioritizing forest-based economies, advocating for fair trade relationships, and driving bold policy initiatives, we can create new opportunities for sustainable forests across rural, suburban, and urban landscapes.

Forest sustainability in the 21st century, particularly on America's vast privately owned forestlands, has evolved to provide holistic environmental, social, and governance (ESG) assurance opportunities for interested investors. The core of this commitment is a resolve to ensure social sustainability through honoring and valuing the relationships between people and land in the U.S. This includes addressing historic policy harms, dismantling barriers to equality, and restoring trust where challenges persist.

The U.S. is both a nation of forests and a nation founded on private property rights. With these rights comes great responsibility – to the land, families, and communities. The future of forest sustainability in the U.S. resides in empowering people and communities as stewards of the land and ensuring that these relationships thrive for generations to come. It is estimated that over 30 million people in the United States – nearly 1 in 10 Americans – are connected to family forest ownership¹. Many of these forests have been in the care of the same families for five generations or more (Henderson, 2018). These deep cultural and personal connections to the land play a vital role in promoting sustainability.

Private forestland owners in the U.S. with large parcels of forestland, identify timber and land investment as high priorities for them when managing their land (Gable 2019a). Their main concerns are stable wood markets, maintaining their forest legacy, and how regulations may influence their operations (Gable 2019a). As part of their long-term commitment to sustainability, 90% of large forest owners have a management plan, and 92% work with a forester in the care of their lands (Gable, 2019a).

Private working forests are a cornerstone of public value, contributing to carbon storage, biodiversity, sustainable products, and economic support for rural, suburban, and urban communities. These forests supply up to 90% of the total annual wood harvest in the U.S. (CRS, 2019). To sustain this cycle of forestry, an estimated 1 billion trees are planted annually in the United States (ThinkWood, 2020).

1. The total U.S. population is approximately 329 million; average family size is 3.15 people; and there are an estimated 10 million family forest ownerships ($10 \times 3.15 = 31.5$ and $329/31.5 = 10.4$)

Across the U.S., the demographics of forestland ownership differ significantly from the demographics of the overall population. Racial disparities in forestland ownership in the U.S. can be traced to historic discrimination and harmful policies. An estimated 97% of family forest owners with 10 or more acres of land are white (Butler et al., 2021), while 85% of large-property owners are white (Gable, 2019a). These figures stand in contrast to a U.S. population that is 75.5% white.²



Today, the impact of the nation's history is being acknowledged, as well as the need to heal the harm caused by policies that have contributed to inequities in land ownership rights across the U.S. Advocates for sustainable forestry are working to promote greater equality and improved access to the experiences and opportunities that private forest ownership provides, including the profound connection people feel to the land.

Programs aimed at resolving legal issues, increasing land access for Black and historically underserved landowners, and enhancing the value of family forest ownership are essential to this effort. Additionally, forestry is increasingly incorporating Indigenous knowledge and Traditional Ecological Knowledge (TEK) within academic institutions, research partnerships, and national organizations.

When any individual or group faces harm from policies that threaten their connection to the land, it raises broader concerns for all landowners, including the protection of private property rights to sustainably manage forestland. Cultural relationships with land are universal, and these strong ties between people and land provide the foundation for sustainable management.

The forest and wood products sector in the U.S. has long been a cornerstone of the economy, sustainably providing diverse materials for hundreds of years. Today, the industry is embracing new tools to meet the growing demand for sustainable practices.

Environmental, Social, and Governance (ESG) principles, originating from the financial sector's push for formalized sustainable investment, are increasingly shaping forest management strategies. Beyond traditional certification, modern pathways and tools now verify the sustainability of U.S. forests with greater accuracy and accessibility. These data-driven, digital tools provide deep insights into supply chains, surpassing the capabilities of certification programs reliant on basic field audits. The monitoring efforts and comprehensive reports produced by these innovations deliver clear evidence of the overall sustainability of private working forests in the U.S.

To fully leverage these advancements, federal, state, and local government policies and programs must modernize their promotion and recognition of U.S. forest sustainability. Policies should prioritize the use of new data and monitoring capabilities that provide the most comprehensive understanding of forest sustainability. Simply put, policy needs to catch up with current technologies to effectively showcase and support the sustainability of U.S. forests.

Forests across the United States play a crucial role in supporting global biodiversity, local livelihoods, and cultural identities of communities within diverse landscapes. Private working forests, in particular, deliver significant public value by ensuring carbon storage, providing clean water, enhancing biodiversity, and providing sustainable wood products. These forests also support rural, suburban, and urban economies through jobs, taxes, and community investments.

The multi-generational nature of forest management and ownership provides continuity over time, strengthening connections within communities. Private forest landowners maintain a deep connection to their land and heritage, guided by a desire to practice responsible stewardship. As such, they serve as invaluable partners for investors focused on environmental, social, and governance (ESG) principles.

While third-party certification programs have traditionally been one method to validating sustainability claims, they have not always been practical for all types of land. Today, advancements in technology, integrated systems, and rapid innovation are ushering in a new era of sustainability assurance. These developments are better aligned with marketplace expectations and provide more effective solutions for verifying and improving sustainable practices.

The U.S. has 820 million acres of forest and woodland covering over one-third of the nation's landscape and containing an astounding 1 trillion cubic feet of wood (Oswalt et al., 2019). To put this into perspective, the forested area is close to five-times the size of Texas and holds a volume of wood that could nearly reach the moon.³ Looking to the future, sustainable management of U.S. forests is essential to ensuring that the benefits and services these lands provide – such as biodiversity, clean water, and economic support – are abundant for generations to come. The world is entering a new, modern era of forest management, characterized by advanced tools, technologies, and monitoring innovations. This “beyond certification” era emphasizes active management by landowners, which is at the heart of creating true sustainability.

The lands of a nation reflect its people, and in the U.S. – a nation of forests – its citizens have long demonstrated a deep commitment to caring for private working forests. Today, the U.S. has more trees than 100 years ago, with nearly the same forest cover as in the early 1900s (USDA, 2012).

³ Texas calculation: $820 \text{ million} / 172 \text{ million} = 4.76$. The moon is 226,000 miles from earth, and there are 5,280 feet per mile. $1 \text{ trillion feet} / (226,000 * 5,280) = 0.838$

The remarkable path toward forest sustainability in the U.S. began during an era marked by profound challenges, including The Great Depression, World Wars I and II, a global energy crisis, rapid population growth, and rising consumption. Each generation has continued to navigate environmental, social, and economic challenges, strengthening the foundation of sustainable forest management.

The U.S. has been able to establish and build a multi-generational culture of sustainable forest management, bolstered by federal, state, and local policies that support private land stewardship. Education programs, technical assistance services, economic incentives, and a range of initiatives enable forest sustainability. These policies and other efforts reflect the ethic of care held by landowners and their dedication to manage their lands sustainably.

Despite significant progress, gaps and opportunities remain in supporting landowners as they nurture and develop their cultural relationships with forests and lands. Research shows that when landowners are unengaged or lack the resources to engage with their land, they are more likely to sell, and the land is more likely to be converted to non-forest uses (Butler, 2021).

Alternatively, when landowners can act on their connection to the land – by participating in technical assistance programs or connecting with a professional forester – they are more likely to embrace and participate in sustainable forestry (Butler, 2021). This engagement fosters a deeper sense of responsibility and commitment to care for the land, preserving the land for future generations.

This connection between land ownership, stewardship, and sustainability forms the foundation for forest sustainability on private lands in the U.S. in the 21st century. By bridging existing gaps and seizing opportunities to support landowners, we can ensure forests remain a vital and thriving part of the nation's landscape.



SCALE AND IMPORTANCE OF PRIVATE WORKING FORESTS



The United States (U.S.) is a nation of forests. Spanning from shore to shore and border to border, the country boasts approximately 820 million acres of forest and woodland, covering over one-third of its landscape and containing 1 trillion cubic feet of wood volume (Oswalt et al., 2019). Forests and woodlands represent the single largest land use for the nation, encompassing an area nearly five-times the size of Texas or France.⁴

The volume of wood in U.S. forests is staggering – enough to nearly reach the moon or circle the Earth more than seven times.⁵ Each year, an estimated 1 billion trees are planted in the U.S. by working forest landowners and individuals wishing to create a positive environmental impact (ThinkWood, 2020). These forests are more than a natural resource – they are vital to the social and environmental fabric of the nation. They provide essential ecosystem services, support local communities, and serve as a sustainable, abundant resource for economies across the country.

Private working forests provide critical habitat for over

3,700

at-risk plant and animal species
(Stein et al., 2010).

⁴ Texas calculation: 820 million/172 million = 4.76; France calculation: 820 million/167 million = 4.91

⁵ There are approximately 1 trillion cubic feet of wood in the forests and woodlands of the United States. A cubic foot is a unit of volume defined as the space occupied by a cube with sides of 1 foot (12 inches) each, meaning its dimensions are 1 foot by 1 foot by 1 foot. The moon is 226,000 miles from earth, and there are 5,280 feet per mile. $1 \text{ trillion} / (226,000 * 5,280) = 0.838$. The circumference of the earth is 131,477,280 feet ($1 \text{ trillion} / 131,477,280 = 7.6$).

Ecological Importance

The forests of the U.S. are among the most biologically diverse on the planet, encompassing a wide range of ecosystems that support an extraordinary variety of life. From the towering, ancient Sequoias of the West Coast to the fire-adapted longleaf pine ecosystems of the Southeast, the diversity is remarkable. These ecosystems extend even further to include the lush tropical forests of Hawaii and the boreal forests and tundra habitats of Alaska.

The U.S. is home to a reported 21,715 native species, with an astounding 80%—or 17,464 species—associated with forest habitats (NatureServe, 2023). Private working forests play a vital role in this biodiversity, providing critical habitats for countless wildlife species, including more than 3,700 at-risk plant and animal species (Stein, *et al.* 2010).

Community Value

Forests across the U.S. are deeply intertwined with the livelihoods and cultural identities of hundreds of communities, particularly in rural areas. A total of 524 counties – or 16.7% of all U.S. counties – meet the social, environmental, and economic criteria to be defined as forest-dependent communities (Frey, 2022). Cultural practices in rural communities often emphasize connections to forests, through activities like hunting, fishing, and outdoor recreation. Forests also serve as a place of respite, spiritual or religious connection, and community gathering.

While rural areas are central to forest care and primary manufacturing, suburban and urban communities also have forest stories to tell. These spaces are home to significant secondary manufacturing, finished goods production, distribution, art and craft industries, and forest product company operations and services. The growth of urban and suburban wood recovery reduces waste and improves circularity within the built environment (Pitti, 2020). The reclaimed wood industry, for example, extends the lifecycle of wood by transforming it into lumber, flooring, and other value-added products.



Urban and suburban residents also depend on forests for recreation, tourism, and critical ecosystem services. Municipalities often rely on clean drinking water sourced from forest-protected watersheds upstream, illustrating the interconnectedness of forests and communities across all landscapes. Together, these connections underscore the diverse and far-reaching value of forests in the U.S.

More than 150 million people in the U.S. rely on forests as their source of clean drinking water, which is nearly half of the nation's total population. In the lower 48 states, forested lands provide half of the national water yield, and approximately 74% of total drinking water originates from surface water sources, such as streams, ponds, and reservoirs (USDA, 2022). Water quality and availability in the U.S. are supported by sustainable forest management, and nearly one-third of drinking water supplies originate from private working forests (USDA, n.d).

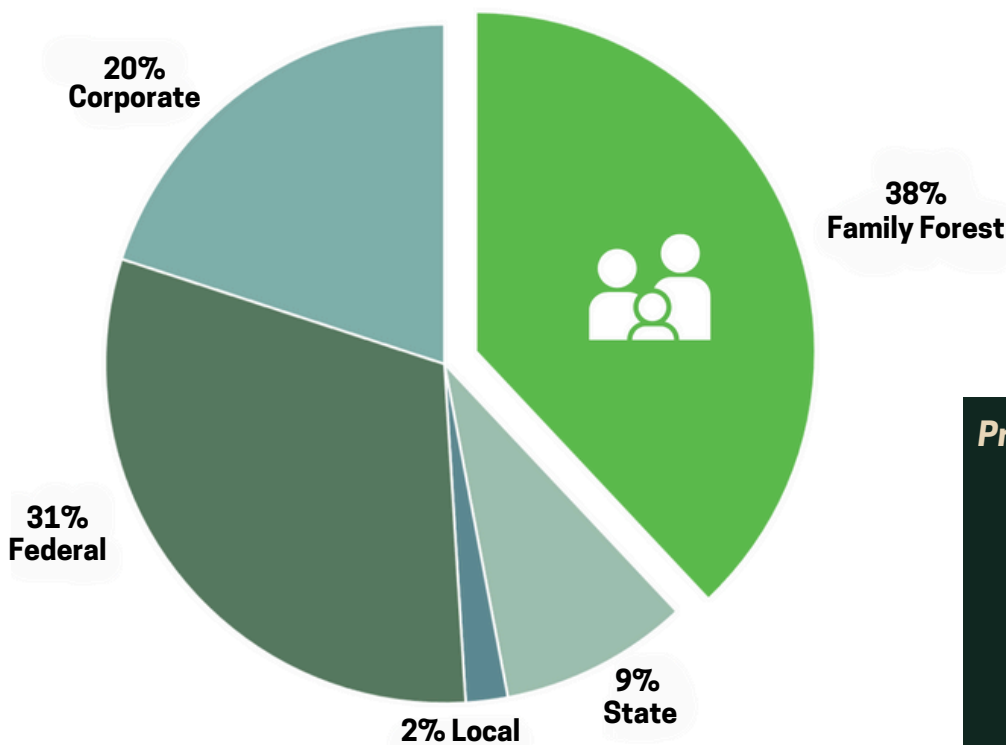
Global Benefit

In addition to economic contributions through jobs, purchasing, and payment of state and local taxes, the forest and wood products sector across all U.S. regions and communities is vital to achieving at least five of seventeen UN Sustainable Development Goals (SDGs): SDG 6 Clean Water, SDG 8 Decent Work, SDG 12 Responsible Production, SDG 13 Climate Action, and SDG 15 Life on Land (Lippe et al., 2022). Since 1990, Land Use, Land-Use Change, and Forestry (LULUCF) activities in the U.S. have resulted in more removal of carbon dioxide (CO₂) from the atmosphere than emissions. In other regions of the world, including countries where forestland is being converted to agricultural uses such as grazing and crop production, the LULUCF sector can be a net source of greenhouse gas emissions (EPA, 2023).⁶ But the LULUCF sector in the U.S. is a net sink, rather than a source, of CO₂, providing significant benefits on a global scale.

Sustainability and Private Working Forests

Forests of the U.S. are sustainably managed to produce wood and fiber products, supporting the economy and communities for centuries. All 50 states have programs to help landowners manage forests sustainably, with over half of the states requiring a written forest management plan. Timber production is stated or inferred in many state programs (Kilgore et al., 2018). Forests carefully managed to provide products and services sustainably are described as working forests. Most U.S. forests are privately owned by individuals, families, trusts, estates, or companies and are cared for as private working forests, ensuring benefits for current and future generations (Figure 1).

Figure 1. U.S. Forestland Ownership Groups



Source: USDA, n.d. <https://www.fs.usda.gov/managing-land/private-land>

Private forestlands in the U.S.:

- Supply nearly 30% of the drinking water supplies in the US
- Provide clean air, wildlife habitat, and recreation opportunities
- Provide more than 90% of U.S. domestically produced forest products, including timber to build homes and fuelwood for heating
- Support 2.4 million jobs primarily in rural communities
- Contribute to the country's energy security, housing, and infrastructure

Source: USDA, n.d.
<https://fs.usda.gov/managing-land/private-land>

Working Forests:

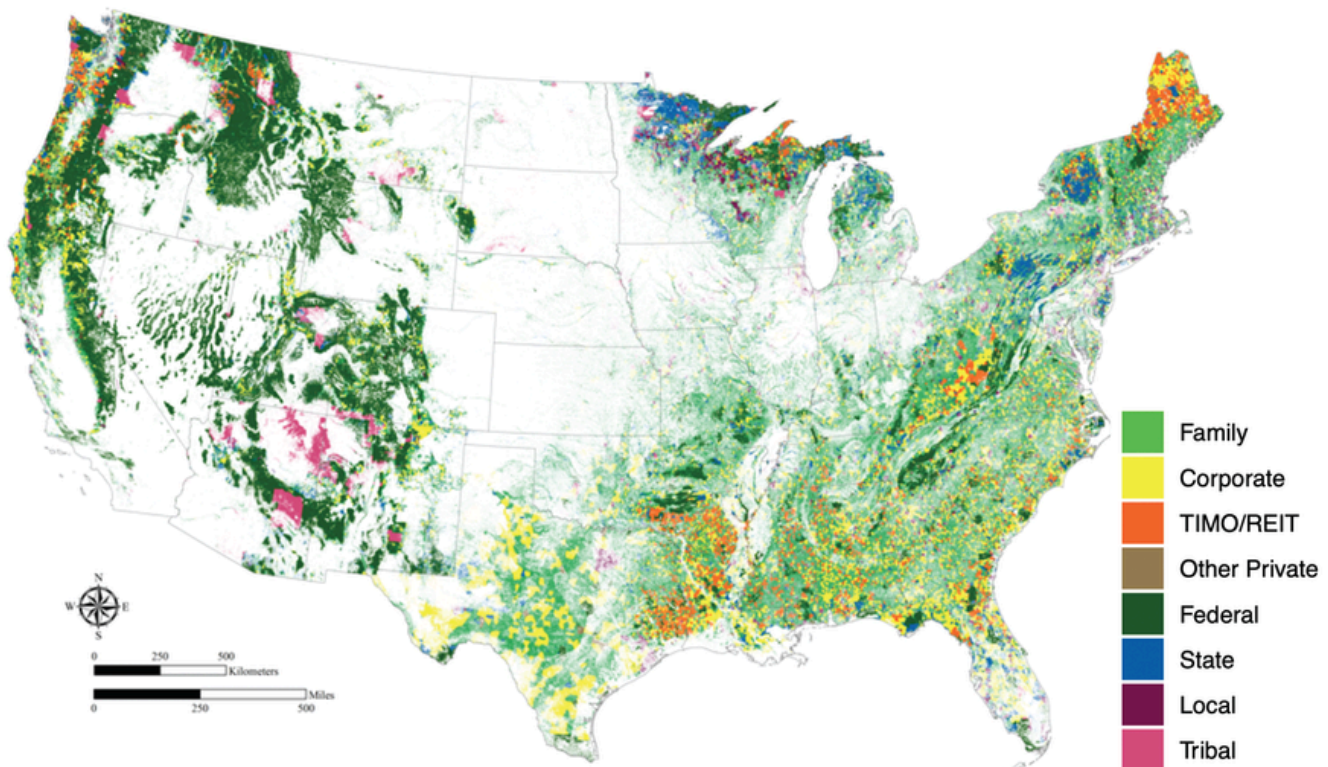
Forested lands carefully managed to provide products and services sustainably.

Private Working Forests:

Forested lands owned by individuals, families, trusts, and estates, and/or private companies that are sustainably managed to provide products and services for current and future generations.

In addition to their abundance and the values they deliver, U.S. forests are unique globally due to the American pattern of land ownership (Figure 2). Unlike many countries where forestlands are predominately publicly owned and managed, the majority of U.S. forests – about 56% – are privately owned (Oswalt et al., 2019). Most of these private owners are individuals or families who do not identify as being part of the forest industry. The largest segment of forest ownership in the U.S. is with individual landowners and families. There are also private landowners that are investors, including trusts, estates, and various institutions. Investment ownership in the U.S. includes Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs), which are also common globally (Sass, 2021). Additionally, some forestland is operated by landowners that own mills, using the land as part of a supply chain for forest products manufacturing.

Figure 2. U.S. Forestland Ownership Map of the Lower 48 States.



Source: (Sass, et al, 2020)

Indigenous, Native American, and Tribal Nations manage approximately 2% of all forestlands within the borders of the U.S (Figure 3). The federal government holds approximately 55 million surface acres and 59 million acres of subsurface mineral estate in trust for Tribes and Tribal members (CRS, 2021). Tribal forests span roughly 19.2 million acres across 33 states, with a commercial timber volume of approximately 66 billion board feet and an allowable annual harvest of 732 million board feet (DOI, n.d).

Tribal forest management and timber harvests are often reported within the private land ownership category for U.S. forests. Privately owned forests, including tribal lands, contribute 88-90% of the nation’s total annual timber harvest (CRS, 2019).

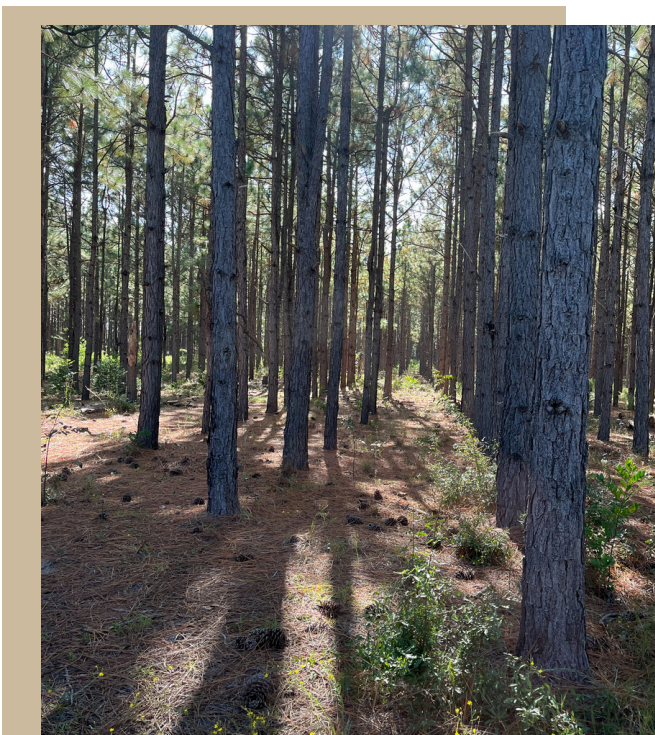
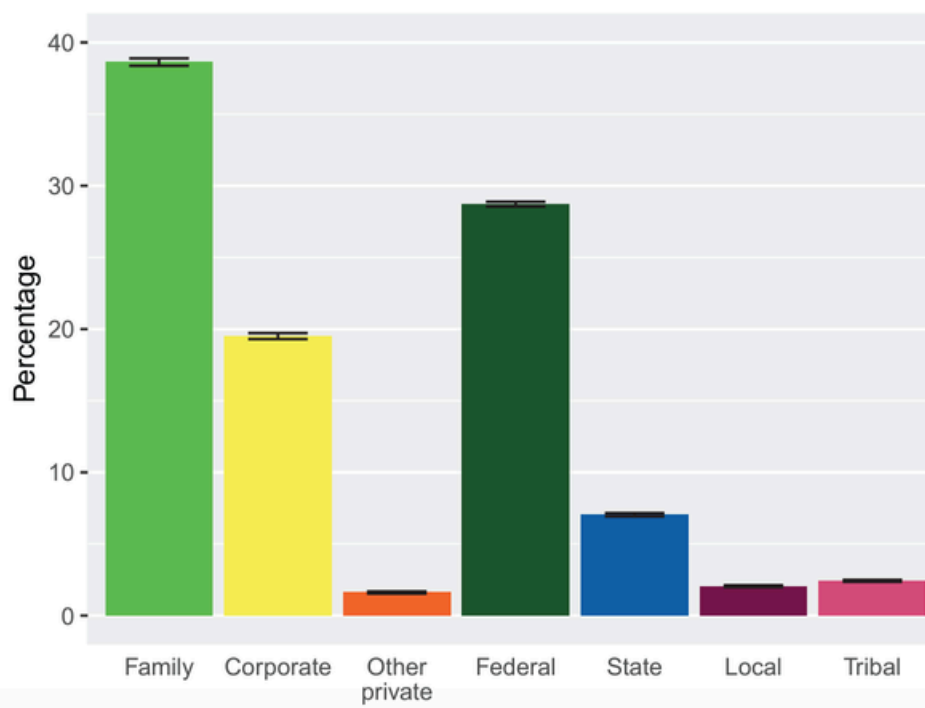


Figure 3. Public, Private, and Tribal Forest and Woodland Ownership in the United States.



Source: (Butler, 2021)
https://www.fs.usda.gov/nrs/pubs/jrnl/2020/nrs_2020_butler_001.pdf

Private working forests in the U.S. deliver significant public benefits, including carbon storage, clean water, biodiversity, sustainable wood products, and support for rural, suburban, and urban economies and communities.

LAND USE HISTORY AND PATTERNS:

Drivers for Restoration

Sustainability includes three dimensions – ecological, economic, and social. In forestry, economic sustainability has been researched and integrated into common practice for over a century. Early systems emphasized sustained yield, and then multiple use, and today’s economic sustainability includes valuing the ecosystem services that forests provide. Similarly, environmental sustainability has been adopted within sustainable forest management for many decades with research and practices addressing wildlife habitat, water quality, soil resource protections, and many other values.

Today’s greatest sustainability needs relate to social and cultural factors that impact individuals and societies. Social sustainability is the work of families, communities, and diverse public and private organizations. Addressing all three dimensions of sustainability—ecological, economic, and social—not only strengthens the resiliency of forestry but also begins with valuing, protecting, and restoring people’s connections to the land.

The National Woodland Owner Survey (NWOS), conducted by the Family Forest Research Center, provides insights into who owns America’s forests and why (NWOS, n.d.). Across the U.S., the demographics of forestland owners differ from the demographics of the overall population. According to the NWOS, 97% of family forest owners with 10+ acres of land are white (Butler et al. 2021). Similarly, 85% of large-property owners are white (Gable, 2019a). These figures contrast sharply with the U.S. population, which identifies as 75.5% white and 58.4 % white, not Hispanic or Latino.⁷

This racial disparity reflects the legacy of historical policies and practices that shaped land access and ownership in the U.S. The nation’s relationship with land has been deeply influenced by complex and often harmful federal policies. Throughout U.S. history, the federal government has oscillated between policies that granted land to certain groups and those that confiscated land through violence, broken promises, and systemic inequities. Acknowledging this complex history and addressing the lasting impacts are essential components of advancing social sustainability—a priority now being addressed within the forest sector.

The legacy of racial discrimination in land ownership

The dispossession of Indigenous lands in North America began with European colonization and persisted through a long history of laws, treaties, and military conflicts. Among these, the Dawes Act of 1887, also known as the General Allotment Act, had one of the most devastating impacts. The Act allotted 160 acres of land to the head of a Native American family for the purpose of cultivation, with the promise that if the land was cultivated, they would receive U.S. citizenship. However, these allotments were carved out of lands already held collectively by Tribes, and any 'surplus' land was sold off to non-Tribal members.

The Dawes Act resulted in a massive reduction of tribally held lands, with estimates indicating a loss of around 65% due to the Act alone ("Land Tenure History", n.d.). It also led to a checkerboard pattern of ownership on many reservations exacerbating land fractionation. Over time, a variety of amendments to the Act made it increasingly difficult for Native Americans to retain control of the lands which had been allotted to them, leading to further loss of Indigenous territory ("Land Tenure History", n.d.).

The U.S. federal government has established relationships with recognized Tribes through the U.S. Constitution and formal treaties with Tribes. These treaties are legally binding and assign a trust responsibility that requires the federal government to protect the safety and well-being of the Tribes including Tribal treaty rights, lands, and resources addressed in treaties. Over the course of history, the federal government has signed more than 650 treaties with Native American Tribes. Today, there are 574 federally recognized Tribes across 35 states (Report on the Status of Indian Forest Lands, 2019). Additionally, 13 states have formally recognized one or more Tribes at the state level, further acknowledging their sovereignty and cultural significance.

As the U.S. expanded, the federal government periodically transferred significant amounts of land from the public domain into private ownership. The most significant of these transfers was the Homestead Act of 1862, which granted millions of acres to individuals who committed to improve the land – typically by converting forests, wetlands, and grasslands to cropland.



Although the Homestead Act primarily benefited European immigrants and contributed to the land ownership patterns still evidenced today, it was not restricted by race or gender, only by citizenship. After slavery was abolished and formerly enslaved people were granted full U.S. citizenship in 1866, African Americans became eligible to homestead (Homestead National Historical Park and Nicodemus National Historic Site, 2023). Many Black families realized land ownership goals through this opportunity, particularly in the Great Plains and western regions, where land access was more feasible than in the South (Edwards, 2019).

Various additional acts in the 1860s were intended to offer land ownership to Black Americans, but those policies were often repealed. Most famously, after meeting with local Black leaders, General William T. Sherman issued Special Field Order 15 in January 1865, commonly known as “40 acres and a mule,” which set aside 400,000 acres of confiscated Confederate land to give to formerly enslaved people. However, after the assassination of Abraham Lincoln, new President Andrew Johnson reversed the order (MacCammon, 2015).

African American land ownership in the U.S. peaked in 1910 at 16 million acres, declined to 2.3 million acres by 1993, and has improved slightly to 3.9 million acres as of 2017 (Bailey et al., 2019).

African American land ownership in the U.S. peaked in 1910 at 16 million acres. By 1993, this figure had declined to 2.3 million acres — a decrease of almost 85% (Bailey et al., 2019). More recent estimates show some improvement, with 3.9 million acres owned by Black farmers as of 2017 (Bailey et al., 2019). A significant factor contributing to this land loss is the issue of heirs’ property. This occurs when property is inherited without a formally written will and remains titled in the deceased landowner’s name. Heirs’ property leaves families vulnerable to forced partition sales, and it presents significant challenges to sustainable management of the land and to building economic stability (Bailey et al., 2019).

Today, the forestry sector acknowledges the profound impact of the nation’s history and the inequities in land ownership rights shaped by past policies. Supporters of sustainable forestry are working to address these disparities by promoting greater equality and improving access to the experiences and opportunities that private forest owners value—particularly the deep connection to the land.

Programs to resolve legal issues and increase land access for Black and historically underserved landowners are essential to this work. The Sustainable Forestry and African American Land Retention Network (SFLR) works to resolve legal issues and increase the value and sustainability of African American owned forests (SFLR, 2025)

Additionally, the integration of Indigenous knowledge, including Traditional Ecological Knowledge (TEK) is becoming an important component of forest management. Academic institutions are offering programs and courses on TEK, the USDA Forest Service incorporates TEK into management planning, and national organizations are forming partnerships with Indigenous leaders to support TEK initiatives. This growing interest among natural resource professionals and the public reflects a cultural shift toward embracing diverse ways of understanding and managing the natural world (Hoagland, 2017).

Family Owned Forests

Family ownerships play an important role in the landscape of U.S. forests today. An estimated 10 million forest ownerships in the U.S. are managed by families, individuals, trusts, and estates, and these ownerships represent 39% of the forestland in the United States (Butler, 2021). With the average family size in the U.S. at 3.15 people (U.S. Census, 2020), it is reasonable to estimate that more than 30 million people – nearly 1 in 10 Americans – are connected to family forest ownership.⁸ This highlights the significant personal and cultural ties that many individuals and families have to the nation's forests.

More than
30 million
people are connected to family
forest ownership in the U.S. -- nearly
1 in 10.



The long-term nature of forest management aligns particularly well with family forest ownership, as tree species in the U.S. may take 25 to 100 years of care to reach the right size for timber harvesting. This extended timeline fits with multi-generational ownership patterns common in family forests, where the outcomes of decisions made today will be realized many decades later. The care and stewardship of forestlands passes from one generation to the next, reinforcing a legacy of sustainable land management that transcends the immediate interests of individual owners. Additional models for multi-generational forest relationships include Tribal communities across North America with connections to the land spanning thousands of years.

⁸ The total U.S. population is approximately 329 million; average family size is 3.15 people; and there are an estimated 10 million family forest ownerships ($10 \times 3.15 = 31.5$ and $329/31.5 = 10.4$).

Many family forestlands in the U.S. have been owned by the same family for four to five generations—sometimes up to 150 years—creating a deep-rooted connection between the family and the land (Henderson, 2018). This generational continuity fosters a land ethic that ties the family’s identity, traditions, and culture directly to the forest. The forest is not merely an economic resource; it is a living heritage, a symbol of the family's values, and a source of continuity that binds the past, present, and future. As a result, family forest owners often exhibit a long-term perspective that embraces the sustainability of the forest, taking decisions that may benefit future generations as much as, or more than, the current one.

This multi-generational relationship – which is enshrined in the U.S.’s system of laws and private property rights – helps ensure that family forest owners are deeply invested in the well-being of their land, with stewardship practices that preserve and enhance the health of the forest for generations to come. By nurturing both the ecological and cultural dimensions of their forestlands, these families contribute to the long-term resilience of U.S. forests.

Many family forestlands in the U.S. have been owned by the same family for four to five generations—sometimes up to 150 years—creating a deep-rooted connection between the family and the land (Henderson, 2018).

Surveys of family forest owners reveal that management objectives and interests often vary depending on the size of the property. Larger properties tend to be associated with owners who place greater emphasis on timber management, harvesting activities, formal management planning, certification, tax programs, cost-sharing opportunities, recreation, land tenure, and passing the land on to heirs. Income from the forestland is also a key concern for these larger landowners. The likelihood of a timber harvest in the past five years increases with property size: 32% of owners with 100-999 acres have sold timber in the previous five years, and the rate increases to 45% for ownerships over one thousand acres (Butler, 2021).⁹

Research also indicates that very large forest ownerships—such as corporate ownerships more than 45,000 acres in size—are significantly more likely to engage in commercial forest management and timber production as compared to smaller corporate owners (Caputo, 2017). Conversely, smaller forest properties (less than 100 acres) are more likely to include a resident owner who is directly involved in land management (Caputo, 2017). Wildlife conservation remains a priority for most private forest landowners regardless of property size (Butler, 2021). Additionally, over 80% of surveyed forest owners desire to maintain the forested condition of their land, and many have engaged in activities expected to increase the future capacity of their land to provide ecosystem services (Butler, 2017).

⁹ The probability of a recent harvest rises quickly until the 278 acre breakpoint, after which the probability continues to increase, but at a slower rate and crosses the 0.5 threshold (i.e., 50/50 probability) at about 1,000 acres (Butler, 2021).

The Forest Landowners Association (FLA) has conducted additional research to better understand the needs and concerns of owners of larger forest properties (i.e., 1,000 acres or more), recognizing the significant role these lands play on forest-dependent communities, biodiversity, and sustainability objectives (Gable, 2019). A survey focused on larger forestlands in the U.S. confirmed that owners rank timber and land investment opportunities as high priorities. The survey also showed that these landowners are concerned about markets, legacy, and the impacts of regulation (Gable 2019a).

The FLA study also found that 77% of large properties owners had conducted a timber harvest in the past five years, with 82% planning to have an additional harvest in the next five years. Furthermore, 90% of these large forest landowners in the U.S. have a management plan, and 92% collaborate with a forester to manage their lands (Gable 2019a). An estimated 60% of at-risk plants and animals need the forest habitat that private forest owners provide (McRoberts, 2010). As the 2019 study authors concluded, “These landowners take a great sense of pride in their stewardship, are committed to sustainability, and have a high level of knowledge about their land and the benefits it provides to their community. They also report having a strong emotional attachment to their land, which for many is rooted in a legacy of family tradition passed on from generation to generation.” (Gable, 2019a).

“These landowners take a great sense of pride in their stewardship, are committed to sustainability, and have a high level of knowledge about their land and the benefits it provides to their community. They also report having a strong emotional attachment to their land, which for many is rooted in a legacy of family tradition passed on from generation to generation.” (Gable, 2019a).

Cultural connections to land are integral to all communities, with strong ties between people and their land serving as the foundation for sustainable land management. However, there are still gaps in supporting landowners to successfully act upon these cultural relationships with their forestlands. Research shows that when landowners become disengaged from their land, they are more likely to sell, and the land is more likely to be converted to non-forest uses (Butler 2021). Alternatively, landowners who engage with technical assistance programs and connect with a professional forester are more likely to be interested in and participate in sustainable forestry (Butler 2021). Land ownership fosters a sense of responsibility to care for the land, and through this connection, landowners often feel a deep commitment to preserving their land for future generations.



EMERGENCE OF CERTIFICATION: A Sustainability Strategy

Forest certification schemes emerged in the 1990s in response to increasing global policy concern about forest sustainability and the threat of deforestation. When governments failed to act at the 1992 Earth Summit in Rio, forest certification emerged as a private sector, voluntary, and market-based mechanism to support sustainable forests (FSC, Our History, 2024). Since then, certification programs have become a sustainability strategy for businesses, including supply chains, to verify the responsible sourcing of forest-based products.

Forest Certification Programs

Forest Stewardship Council (FSC) (fsc.org): A global program, established in 1993 and providing forest management certification, chain-of-custody certification, and controlled wood risk assessments.

Programme for the Endorsement of Forest Certification (PEFC) (pefc.org): A global program, established in 1999 and providing an endorsement for qualifying regional certification forest management and chain of custody programs.

Sustainable Forestry Initiative (SFI) (forests.org): A North American program, established in 1995, endorsed by PEFC in 2005, and providing forest management certification, chain-of-custody certification, and certified fiber sourcing.

American Tree Farm System (ATFS) (treefarmssystem.org): A program in the US, established in 1941, endorsed by PEFC in 2008, and providing systems to steward America's private forest lands.

In the U.S., three major certification systems dominate: the Forest Stewardship Council (FSC), the Sustainable Forestry Initiative (SFI), and the American Tree Farm System (ATFS)¹⁰. The FSC and the Programme for the Endorsement of Forest Certification (PEFC) are the two primary programs operating globally (Figure 4). While each program differs in geographic scope and specific requirements, they all share a common goal: to ensure that forests are managed for ecological, social, and economic sustainability.

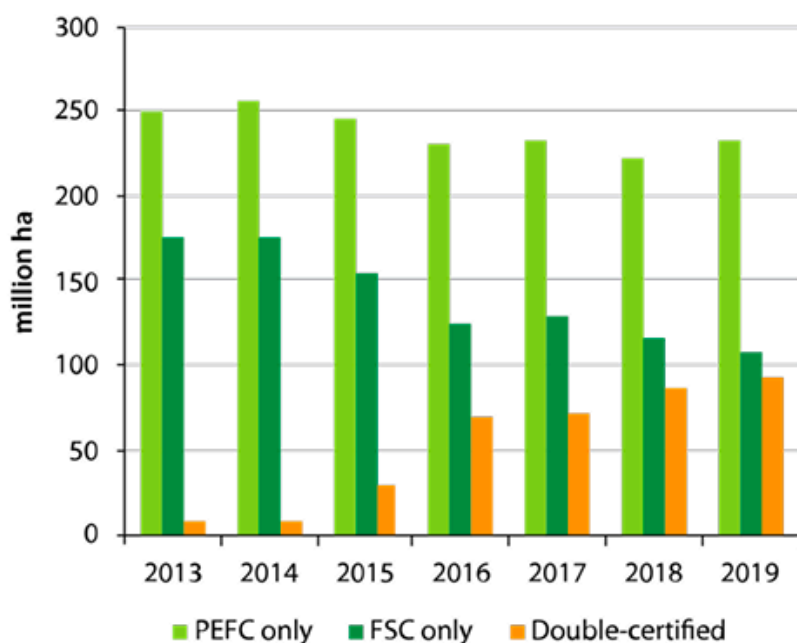
¹⁰ The SFI and ATFS programs are recognized internationally through the Programme for the Endorsement of Forest Certification (PEFC).

Certification has long served as a means of validating forest sustainability. In the early 2000s, its rapid adoption seemed like the solution. However, the limitations as a one-size-fits-all approach to land use challenges and forest health threats have become increasingly clear. Certification’s periodic audits create technical and financial barriers, with costs often exceeding \$1,000 annually outpacing the typical timber revenues of small and family forest owners. While the standards and objectives of certification align with landowner stewardship values, for landowners who harvest timber infrequently or rely on contractors, the bureaucracy and ongoing requirements make certification difficult to justify.

Certification costs often exceed \$1,000 annually, making it financially and administratively unfeasible for many small and family forest owners.

As a result of the limited value, the growth of certified forest area has been limited, and in some regions, it has even contracted in recent years (Figure 4). This trend highlights the challenges many forest owners, forest product companies, and stakeholders face in assessing and benefiting from certification. Competition between certification programs, along with an increase in double-certification¹¹ (as shown in Figure 4), has led to redundancies and inefficiencies within the marketplace. Double-certification occurs when a forest owner certifies their land under multiple programs, often to access different markets or meet the preferences of various customers. This practice can create additional costs and administrative burdens for landowners, as they navigate competing standards without mutual recognition between programs. As of 2018, 16.5% (174 million acres) of certified forests were double certified, yet neither of the international certification programs showed a positive growth trend.¹²

Figure 4. Global Certified Forest Area, Including the Double-Certified Area



Source: UNECE/FAO, 2019. <http://www.unographics.org/fpamr/chapter-1.html>

11 “Double-certified” refers to lands that both PEFC and FSC report as being certified to their respective programs.

12 <https://www.pefc.org/news/doublecertification-continues-to-grow-joint-pefc-fsc-data-shows> The data for global certification declined further in early-2022 with the Russian invasion of the Ukraine and the revoking of certificates in affected areas due to policies for conflict timber and international sanctions. https://connect.fsc.org/sites/default/files/2022-08/FSC_FAQs_Current-Situation-In-Russia-Belarus-Ukraine_2022-04-07.pdf

Certification serves as evidence of sustainability and remains a valuable sustainability strategy where available. However, there are also new, proven, and better systems of risk assessment, data analysis, and public reporting. These modern approaches provide real-time insights, reduce participation barriers, and enhance credibility, demonstrating the sustainability of U.S. forests more effectively and efficiently.

Over the past decade, alternative solutions have emerged through supply chain innovations, new technology, and favorable government policies. This represents the marketplace's continued interest in sustainability and the growing opportunity for moving beyond certification to embrace collaborative ways of securing the sustainability of forests, forest products, and forest-dependent communities. There is growing recognition that forests are at the center of a circular bioeconomy, support a healthier built environment, and provide critical natural climate solutions worldwide. These opportunities are much broader than the tools and solutions offered by forest certification, and they require massive cooperation and significantly greater resources. To realize this potential, everyone who cares about forests, including owners of private working forests throughout the U.S., are strengthening their commitments to innovate, partner, and reach ambitious targets within these large-scale opportunities.

BEYOND CERTIFICATION: Expanded Verification of Sustainability

Modern Pathways to Forest Sustainability

Increasingly, numerous pathways and tools other than certification are available to verify the sustainability of U.S. forests. Environmental, social, and governance (ESG) values—originally rooted in sustainable investment practices—are now shaping advanced sustainability systems. These modernized programs incorporate monitoring and public reporting, offering robust evidence of the overall sustainability of U.S. private working forestlands.

Best Management Practices

Since the 1970s, every U.S. state has implemented Best Management Practices (BMP) programs to address timber harvest impacts on water quality and ecological conditions and resources. These BMP programs are developed through a rigorous peer-review process and are continuously adapted to meet modern needs like invasive species, climate-smart forestry, and emerging markets. BMPs are regularly reviewed and updated, and they typically address management activities such as stream crossings, infrastructure like logging roads and skid trails, riparian management zones, and other measures to keep sediment and pollutants from impacting water quality and ecological resources. With implementation of BMPs by forest landowners across the United States exceeding 90% (NASF, 2019), these programs provide consistent environmental accountability and sustainability assurance.

Forest Action Plans

Forest Action Plans are developed by each state and U.S. territory and updated every 10 years in collaboration with the U.S. Forest Service. These state-level plans address local forest conditions and prioritize strategies for multiple benefits including forest products, biodiversity, clean water, and carbon storage. These publicly available plans, required under the Cooperative Forestry Assistance Act of 1978, foster collaboration and public consultations, ensuring their relevance and effectiveness. The Forest Action Plans benchmark sustainability across the U.S. by providing a comprehensive assessment of risks and opportunities that informs local management actions to meet community goals for restoration, maintenance, and enhancement of resilient forestlands.



Forest Inventory and Analysis (FIA)

The Forest Inventory and Analysis (FIA) program is a congressionally mandated nationwide system for providing current, consistent, and credible information about the status of forests and forest resources throughout the United States. The system has operated since the 1950s and continually collects and analyzes data about all U.S. forests and the values they provide.¹³ The FIA program is implemented by the U.S.D.A. Forest Service Research and Development Branch, offering the most comprehensive understanding of the extent and conditions of forests across the country. In recent years, the FIA program has been enhanced to include urban forest monitoring, additional carbon data collection and analysis, intensified sampling, and improved public access to

the data for research and analysis. The FIA program provides scientific data and trend analysis to verify many aspects of forest sustainability across the U.S., including land use change, forest growth and yield information, insect and disease data, and other measurements of forest conditions and change detection.

Risk Assessments and Publicly Available Reporting

Risk assessments and the associated public reporting evaluate many aspects of forest sustainability, including the risk of illegal logging, high conservation value protections, land use conversion, and social conflicts. For example, the FSC U.S. Controlled Wood National Risk Assessment (NRA) completed in 2019 examined social, economic, and environmental aspects of sustainability throughout the wood-producing regions of the U.S. The risk assessment determined low risks for sustainability concerns, such as timber harvest, forest management, and protected species. The findings of the FSC U.S. NRA and other risk assessments verify the reputation of U.S. forests as a sustainable resource.

Additionally, many forest and wood products companies are actively engaged in ESG and responsible investment efforts. These companies provide publicly available annual sustainability reports and continue to adapt their reporting to align with investor expectations. Forest products companies have been recognized as ESG leaders and are recipients of business sustainability awards for their accomplishments.

Using AI for Wildfire Detection and Forest Conservation

There are many threats to forest sustainability, not the least of which is wildfire. Modern technologies, including artificial intelligence (AI), are being used to help detect wildfire threats and reduce the risk of negative impacts. Systems in use in California utilize cameras placed at high vantage points that are able to complete 360-degree scans of the landscape every two minutes and can detect changes, including smoke, down to a 10-by-10-foot area. The camera views are also publicly available. While the cameras have been around for a while as part of a visual monitoring system, the integration of AI has augmented the system. In 2023, the AI enhanced system detected 40% of wildfires before a 911 call was received. Similar cameras or audio detection systems enhanced with AI can be used on an increasing scale for continuous monitoring of wildlife species and other activities in forest ecosystems.

Sources:

<https://www.cnn.com/2023/09/23/us/fighting-wildfire-with-ai-california-climate/index.html>

https://cameras.alertcalifornia.org/?pos=37.2382_-119.0000_6

Culture of Forest Sustainability in the U.S.

The United States is a nation of forests and people dedicated to their care. Today, the U.S. has more trees than 100 years ago and nearly the same forest cover as in the early 1900s (USDA, 2012). The U.S. has been building a legacy of sustainable forestry despite impacts from The Great Depression, World War I and World War II, a global energy crisis, expanding population and consumption, and many other social and economic upheavals. This achievement reflects a strong culture of sustainable forest management, driven by supportive federal, state, and local policies that promote private land stewardship.

Educational programs, technical assistance, economic incentives, tax policies, and other initiatives empower landowners to manage forests sustainably. These policies and other efforts reflect the ethic of care held by landowners working to manage their lands sustainably. The strength of forest sustainability in the U.S. will continue to grow as the commitments to honor, protect, and restore the relationships between people and the land continue to be valued. This collective commitment to sustainable management, paired with generational stewardship, positions U.S. forests as vital assets in achieving global sustainability goals.

The collective commitment to sustainable management, paired with generational stewardship, positions U.S. forests as vital assets in achieving global sustainability goals.

Sustainable Forest Management and Market Support

The culture of sustainable forest management in the U.S. thrives on strong, consistent market demand for diverse forest products and services. Supportive policies and strong, diversified markets effectively incentivize landowners to manage forests for multiple benefits, including a sustainable wood supply. A study of the U.S. South, where 70-80% of forests are privately owned, revealed that increased demand for wood prompted landowners to invest in productivity improvements, significantly boosting wood fiber and carbon storage in forests (Jefferies, 2017).

Another broad measure, the growth-to-removal ratio, indicates forest sustainability when the ratio is larger than 1 (i.e., growth rates are greater than combined harvest and mortality rates). Across the U.S., hardwoods and softwoods in each region and under private and public ownership consistently exhibit a growth to removal ratio greater than 1 (USFS, 2017)¹⁴. The U.S. forest sector leads in the advancement of modernized risk assessment methodologies, assurance systems, and ESG values for fostering impactful and sustainable investments. By actively engaging in ESG initiatives, connecting with policymakers and regulatory agencies, highlighting effective solutions, and listening to diverse audiences - from the workforce to investors - the sector provides benefits across ESG perspectives. Private working forest landowners play a vital role, sharing compelling stories of stewardship that resonate with investors seeking to align their financial choices with positive outcomes for people, prosperity, and the planet.

¹⁴ One exception is softwoods in the Rocky Mountain Region, where public ownership is dominant and insect infestation drives high mortality (USFS, 2017).

FUTURE POSSIBILITIES

Securing the Future of Forest Sustainability

Forests in the U.S. and around the world face significant threats, including the global risks associated with climate change. Ensuring the sustainability of private working forests in the U.S. requires attracting additional investment, strengthening and diversifying markets for forest products and services, and creating regulatory certainty to prevent unintended disincentives for forest ownership and stewardship. Pursuing these strategies and changes through advocacy and partnerships will enable U.S. forests, including private working forests, to continue to deliver the full range of products, services, and values that are derived from sustainable management.

Federal, state, and local government policies and programs must renew their support for forest sustainability through targeted investments in forest-based economies and advocacy in trade relationships. Through global trade, the private working forests of the U.S. can help the world meet its needs for climate-beneficial products essential to a transition to a circular bioeconomy that reduces the reliance on fossil fuels and supports the move toward carbon-free and carbon-negative systems. Expanding economic opportunities for forests across rural, suburban, and urban areas also strengthens infrastructure, including schools, healthcare, and overall quality of life for communities.

Expanding economic opportunities for forests across rural, suburban, and urban areas also strengthens infrastructure, including schools, healthcare, and overall quality of life for communities.

Supporting Effective Forest Policies

Within forest policy, a key consideration is to let the existing systems do their job. Forest sustainability is thriving in the United States. To sustain this success, policymakers should focus on creating and maintaining certainty for landowners, who make long-term, multi-generational investments in forest management. Existing policies and current laws, combined with advanced monitoring programs, risk assessments, and planning processes effectively balance regulatory oversight with public interest. Avoiding regulatory disruptions, ensuring landowner access to beneficial programs and services, and fully accounting for any negative impacts of policy changes will enable landowners to continue investments in long-term sustainable forestry practices.

Today's forest owners and land managers have embraced sustainability and comply with existing regulations by leveraging effective training, monitoring systems, state-level planning processes, and more. These tools enable the achievement of forest sustainability and maintained certainty for landowners without imposing additional regulations. Today's forest owners across the U.S. exemplify a strong culture of sustainability, legacy, and land ethos. This deep commitment and multi-generational actions are priceless for achieving long-term sustainability goals, surpassing the impact of any single policy or regulation.

CONCLUSION



Private working forest landowners are steadfast stewards of their land, preserving heritage, embracing sustainability, and planning for future generations. Many view their forests as a legacy, while others focus on the economic and environmental benefits of maintaining healthy, productive lands. Through conservation efforts, certification programs, secure property rights, and a long-term commitment to forest ownership, these landowners ensure the continuity of sustainable practices across generations.

As champions of sustainability, private forest landowners are invaluable partners for individuals, businesses, and other organizations seeking to align with ESG principles. Forests and forest products provide critical environmental and social co-benefits for communities that extend from the local communities to the global stage. By taking a thoughtful and proactive approach to sustainable management, U.S. private working forest landowners embody the values that resonate with investors, consumers, and families, making them essential allies in building a sustainable and thriving future.

The connection between land ownership, stewardship, and sustainability forms the foundation for forest sustainability on private lands in the U.S. in the 21st century. By bridging existing gaps and seizing opportunities to support landowners, we can ensure forests remain a vital and thriving part of the nation's landscape.

REFERENCES

- Bailey, C., R. Zabawa, J. Dyer, B. Barlow, & N. Baharanyi. 2019. "Heirs' Property and Persistent Poverty among African Americans in the Southeastern United States." <https://www.fs.usda.gov/research/treesearch/62088>.
- Butler, B., J. Caputo, A. Robillard, E. Sass, & C. Sutherland. 2021. "One Size Does Not Fit All: Relationships between Size of Family Forest Holdings and Owner Attitudes and Behaviors" *Journal of Forestry*, 119(1), 28-44. <https://doi.org/10.1093/jofore/fvaa045>
- Butler, B., J. Caputo. 2017. Ecosystem Service Supply and Capacity on U.S. Family Forestlands" *Forests* 8(10), 14. https://www.fs.usda.gov/nrs/pubs/jrnl/2017/nrs_2017_caputo_001.pdf
- Caputo, J., B. Butler, & A. Hartsell. 2017. *How Large is Large? Identifying Large Corporate Ownerships in FIA Datasets*. Res. Pap. NRS-29. Newtown Square, PA: USDA Forest Service, Northern Research Station. <https://www.fs.usda.gov/research/treesearch/53826>
- Chizmar, S., R. Parajuli., & K. Fontana. 2020. *An Introduction to Forest Certification*. NC State Extension. https://content.ces.ncsu.edu/show_ep3_pdf/1711131231/20355/.
- Congressional Research Service (CRS). 2021. Tribal Lands: An Overview. Oct. 14, 2021. IF11944. <https://crsreports.congress.gov/product/pdf/IF/IF11944>
- Congressional Research Service (CRS). 2019. Timber Harvesting on Federal Lands. April 12, 2019. R45688. <https://crsreports.congress.gov/product/pdf/R/R45688/1>
- Department of the Interior (DOI). n.d. Tribal Forest Management Examining Opportunities to Promote and Enhance Tribal Forest Management. STATEMENT OF BODIE K. SHAW, DEPUTY REGIONAL DIRECTOR-TRUST SERVICES. NORTHWEST REGION, BUREAU OF INDIAN AFFAIRS, U.S. DEPARTMENT OF THE INTERIOR. <https://www.doi.gov/ocl/tribal-forest-management> Accessed May 2024.
- Edwards, R. 2019. "African Americans and the Southern Homestead Act ." *Great Plains Quarterly* 39 (2): 103–30.
- Fernholz, K., J. Bower, G. Erickson, H. Groot, M. Jacobs, A. McFarland, & E. Pepke. 2021. *Forest Certification Update 2021: The Pace of Change*. Dovetail Partners, <https://www.dovetailinc.org/upload/tmp/1611160123.pdf>.
- Frey G., C. Kallayanamitra., P. Wilkens, & N. James. (2022). Defining and Measuring Forest Dependence in the United States: Operationalization and Sensitivity Analysis. *Forests* 13(4):577. <https://doi.org/10.3390/f13040577>
- FSC United States. 2019. FSC National Risk Assessment for the conterminous United States of America. FSC International Center: Policy and Standards Unit.
- FSC United States. 2024. Our History. 2024. <https://fsc.org/en/en/about-us>
- Gable, M., & L. Ward. 2019. Who is the Real Forest landowner? Forest Landowners Association. *Forest Landowner Magazine*. May/June 2019. www.forestlandowner.com
- Gable, M., and L. Ward. 2019a. FLA Survey: A New Narrative. Forest Landowners Association. *Forest Landowner Magazine*. May/June 2019. www.forestlandowner.com

- Henderson, C., K. Fernholz, T. Cushing, H. Groot, & E. Pepke. 2018. *A Survey of Industrial-Scale Multigenerational Family Forest Owners Across the United States*. Dovetail Partners. <https://dovetailinc.org/upload/tmp/1579550757.pdf>
- Hoagland, S. 2017. Integrating traditional ecological knowledge with western science for optimal natural resource management. *IK: Other Ways of Knowing*. 3(1): 1-15.
- “Homestead Act (1862).” 2022. National Archives. May 2022. <https://www.archives.gov/milestone-documents/homestead-act>.
- Homestead National Historic Park. 2021. “Homesteading by the Numbers.” National Parks Service. August 2021. <https://home.nps.gov/home/learn/historyculture/bynumbers.htm>.
- Homestead National Historical Park, and Nicodemus National Historic Site. 2023. “African American Homesteaders in the Great Plains.” National Parks Service. March 7, 2023. <https://www.nps.gov/articles/african-american-homesteaders-in-the-great-plains.htm>.
- Jeffries, H., & T. Leslie. 2017. *Historical Perspective on the Relationship Between Demand and Forest Productivity in the US South*. Forest2Market, Inc. https://www.forest2market.com/hubfs/2016_Website/Documents/20170726_Forest2Market_Historical_Perspective_US_South.pdf
- Kilgore, M., P. Ellefson, T. Funk, & G. Frey. (2018). State property tax programs promoting sustainable forests in the United States: A review of program structure and administration. *Journal of Forestry* 116(3): 257-265. <https://doi.org/10.1093/jofore/fvy002>.
- Lippe, R.S., J. Schweinle, S. Cui, Y. Gurbuzer, W. Katajamäki, M. Villarreal-Fuentes, & S. Walter. (2022). Contribution of the forest sector to total employment in national economies - Estimating the number of people employed in the forest sector. Rome and Geneva, FAO and ILO. <https://doi.org/10.4060/cc2438en>
- “Land Tenure History.” n.d. Indian Land Tenure Foundation. Accessed September 11, 2023. <https://iltf.org/land-issues/history/>.
- MacCammon, S. 2015. “The Story Behind ‘40 Acres and a Mule’”, NPR. <https://www.npr.org/sections/codeswitch/2015/01/12/376781165/the-story-behind-40-acres-and-a-mule>.
- McRoberts, R., M. Nelson, L. Mahal, C. Flather, R. Alig, & S. Comas. 2010. Northern Research Station. *Journal of Forestry*. V. 108. No. 2. March 2010. Pp. 61-70 (10).
- National Association of State Foresters. 2019. *Protecting the Nation’s Water: State Forestry Agencies and Best Management Practices*. <https://www.stateforesters.org/wp-content/uploads/2019/12/NASF-2019-BMP-Final.pdf>
- National Woodland Owner Survey (NWOS). N.d. Accessed March 25, 2024. <https://www.fs.usda.gov/research/programs/fianwos>
- NatureServe. (2023). *Biodiversity in Focus: United States Edition*. https://www.natureserve.org/sites/default/files/NatureServe_BiodiversityInFocusReport_medium.pdf

- Oswalt, S., W. Smith, W. Brad Smith, P. Miles, & S. Pugh. 2019. *Forest Resources of the United States, 2017: a technical document supporting the Forest Service 2020 RPA Assessment*. Gen. Tech. Rep. WO-97. Washington, DC: U.S. Department of Agriculture, Forest Service. <https://doi.org/10.2737/WO-GTR-97>.
- Pitti, A., E. Omar, & R. Smith. 2020. "The case for urban and reclaimed wood in the circular economy." *BioResources* 15 (3): 5226-5245. https://jratm.textiles.ncsu.edu/index.php/BioRes/article/view/BioRes_15_3_5226_Pitti_Urban_Reclaimed_Wood.
- Sass, E., M. Markowski-Lindsay, B. Butler, J. Caputo, A. Hartsell, E. Huff, & A. Robillard. 2021. Dynamics of Large Corporate Forestland Ownerships in the United States. *Journal of Forestry*. 119(4): 363-375. <https://doi.org/10.1093/jofore/fvab013>.
- Sass, E., B. Butler, & M. Markowski-Lindsay. 2020. Forest ownership in the conterminous United States circa 2017: distribution of eight ownership types - geospatial dataset.
- SFLR (Sustainable Forestry & African American Land Retention Network). 2025. <https://sflrnetwork.org/>
- Stein, S.M. McRoberts, R., M. Nelson, L. Mahal, C. Flather, R. Alig, & S. Comas. 2010. *Private Forest Habitat for At-Risk Species: Where is it and where Might it be Changing?* Northern Research Station. *Journal of Forestry*. V. 108. No. 2. March 2010. Pp. 61-70 (10). https://www.fs.usda.gov/nrs/pubs/jrnl/2010/nrs_2010_stein_001.pdf
- ThinkWood. 2020. "When it Comes to Sustainability, Material Choice Matters". https://thinkwood-wordpress.s3.amazonaws.com/wp-content/uploads/2020/09/22162151/BSLC_Infographic-Sust-Mgmt-Forests-1172020.pdf
- Trada. 2018. "Timber and Healthy Buildings: Indoor Air Quality." *Trada*, <https://asbp.org.uk/wp-content/uploads/2019/03/Timber-and-healthy-buildings-indoor-air-quality.pdf>
- US Census Bureau. *Census Bureau Tables*. 2020, <https://data.census.gov/table?d=ACS+5-Year+Estimates+Comparison+Profiles>.
- USDA Forest Service. n.d. "Private Land." *USDA Forest Service*, <https://www.fs.usda.gov/managing-land/private-land> . Accessed March 2024.
- USDA Forest Service. 2017. *Forest Resources of the United States, 2017*. https://www.fs.usda.gov/research/publications/gtr/gtr_wo97.pdf
- USDA Forest Service, Research Data Archive, Fort Collins, CO. Available online at <https://www.fs.usda.gov/research/treesearch/61623> ; last accessed March 25, 2024.
- USDA. 2012. *Future of America's Forests and Rangelands – Forest Service 2010 Resources Planning Act Assessment*. USDA – Forest Service. Gen. Tech. Rep. WO-87. August 2012.
- USDA. 2022. *Forests to Faucets 2.0*. *USDA Forest Service, GTR WO-99*. https://www.fs.usda.gov/research/publications/wo/gtr_wo99.pdf Accessed May 2024.
- USDI Bureau of Indian Affairs. *Report on the Status of Indian Forest Lands - Fiscal Year 2019*. May 2020.
- Watson, Reed. n.d. *Market Access and Forest Stewardship: How Sustainability Certification and Renewable Biomass Mandates Threaten Nonindustrial Private Forests*.

Dovetail Partners' mission is to provide authoritative information about the impacts and trade-offs of environmental decisions, including consumption choices, land use and policy alternatives.

Dovetail Partners is a non-profit 501(c)(3) organization

Connect with us.



www.dovetailinc.org

All photos were provided by the Forest Landowners Foundation.

2025

