



Parcelization, Fragmentation, and the Loss of Private Forestland in the United States

A Position of the Society of American Foresters

Originally adopted on December 2004, this position statement was revised and renewed in December 2009, December 2015, and May 2020. This position statement will expire in 2025, unless, after subsequent review, it is further extended by the SAF Board of Directors.

Purpose

To prevent loss of working forestland, promote private forestland management, and raise awareness of policy and management tools available to mitigate loss of forestland.

Scope

Policies and programs that contribute to or detract from maintenance of private forestlands.

Position

The Society of American Foresters (SAF) supports land use and land management policies that strive to minimize forest loss and recognize the ecological, economic, and social importance of privately-owned forestland. The type of forestland lost, and the drivers of change vary geographically, but generally involve urban or low-density development. This problem is exacerbated as the nation's urban population growth outpaces the country's overall growth rate, putting significant pressure on nearby working forestlands. SAF therefore encourages development of incentives to conserve private forestland, including the following broad categories, further described in the background section: economic incentives for ecosystem services, and for both existing and new forest products markets; changes to tax and land use policies; federal funding for land retention and management in the private sector; technical assistance to landowners; and innovative private investment vehicles. Because owning forestland is a long-term proposition, landowners need policy assurances that mitigate risk and incentivize sound forest management.

Issue

According to the 2016 update of the Resources Planning Act (RPA) Assessment (USFS 2016), high population–growth scenarios could increase urban and developed land in the United States by up to 95 million acres by 2060, more than double the amount of current urban area. Urban and suburban expansion often occurs at the expense of forestland, and the primary driver of forestland loss is development (Alig et al. 2010, Drummond and Loveland 2010). Forest losses are projected to range from 16 to 34 million acres in the conterminous United States by 2060 (US Forest Service 2016). From an ecological perspective, the permanent loss of forests due to development often leads to degraded hydrologic conditions and associated aquatic/riparian habitat. The loss signifies a reduction in terrestrial habitat available for wildlife, insects, nutrient development of soils, and genetic diversity. Furthermore, forests contribute to the stabilization of regional climates by helping to control atmospheric greenhouse-gas levels through the sequestration of carbon at higher levels than alternative land uses (see SAF position statement on forest management and climate change).

The loss of forestland is also an economic and social concern. Real estate market values can become too high for landowners to resist development pressure, and as populations move to suburban and wildland urban interface areas, conversion of traditional rural land uses may be viewed as a higher and better use to support this new influx of people. As managed forests are lost to other uses, so too, are the essential roles they play in providing watershed and water-quality protection, wildlife habitat, outdoor recreation opportunities, carbon sequestration, and forest products that contribute to social and economic well-being. The gradual, but largely irreversible, fragmentation of private forests into smaller, disconnected tracts undermines the economic viability of forestland owners. Once forests are fragmented or parcel size is reduced, remaining forested tracts may become too small to support ongoing investment in forest infrastructure. Landscape-scale forest management, in which landowners work across ownership boundaries to address large-scale issues such as wildfire risk, can also be impacted by fragmentation as more landowners need to coordinate in a highly fragmented landscape.

Background

Trends in Forestland Area

Through much of the 20th century, forestland lost to agricultural land conversion and urban expansion was offset by natural regeneration of marginal or abandoned agricultural land and by government-sponsored reforestation and afforestation programs, particularly the Soil Bank, Forestry Incentive, and Conservation Reserve programs (Wear and Greis 2002, Alig et al. 2003). In contrast, today's forestlands are being permanently converted to residential, commercial, and other non-forestland uses, which often have much higher short-term market values. Forests in the South have experienced a net loss of almost 10 million acres since 1977 (Oswalt et al. 2014). On the Pacific coast, the reduction in forestland acreage since late 1970 represents one million acres (Oswalt et al. 2014).

Complex social and economic factors influence landowners' decisions regarding the retention or sale of forestlands. For small-scale forest landowners (also called smallholders, family forest owners, or non-industrial forest landowners), decisions to retain or to sell land are related to management objectives and economic circumstances, including intergenerational

transfer. Eighteen percent of family forest landowners are considering selling or transferring some or all of their forestland, according to the most recent National Woodland Owner Survey (Butler et al. 2016a). In terms of large landowners, integrated forest-product companies (industrial landowners) have sold much of their forestlands since the mid-1990s. Ownership of these lands has been restructured into timberland investment management organizations (TIMOs) or real estate investment trusts (REITs). These TIMOs and REITs sell some of these forestlands for development in order to maximize returns, raising concern that this trend will increase forestland loss (Binkley 2007, Bliss et al. 2010).

Ecological Effects of Loss of Forestland

Loss of protective forest cover due to changes in land use can result in more rapid runoff following storm events, higher peak stream flows, increased soil erosion, reduced groundwater infiltration, stream channel instability, and increased sedimentation. Such adverse changes in watershed hydrologic conditions degrade water quality for human uses and aquatic and fisheries habitats (Ice et al. 2004, Mapulanga and Naito 2019).

Forests also provide essential habitat for numerous species of plants and animals, including many at-risk species. Permanent loss of forest cover results in a reduction in available habitat and in fragmentation, creating conditions unsuitable for forest-dwelling species that require large, contiguous forested landscapes (Fahrig 1999). Forest fragmentation also often results in proliferation of invasive plant species (Evans 2014).

With the loss of forestland, forests may also change their role in carbon sequestration and mitigation of climate change. The IPCC report “Climate Change and Land” (2019) makes numerous references to the importance of forested landscapes and sustainable forestry for the maintenance of carbon stocks and carbon sinks (IPCC 2019). In the United States, forest ecosystems and forest products represent a significant carbon dioxide sink of more than 750 MMT (million metric tons) of CO₂ emissions in 2013, offsetting roughly 14 percent of US greenhouse-gas emissions from industrial, commercial, and transportation sources (US EPA 2015). Reducing forest loss can have an important effect in the mitigation of global climate change (SAF 2014).

Socioeconomic Effects of Loss of Forestland

Parcelization is the subdivision of a large, contiguous tract into multiple tracts, which can lead to land sales, fragmentation, and an increase in the number of individual landowners. This often increases the cost and complexity of forest management, including management for forest health and wildfire risk in the wildland urban interface. Ultimately, forestland losses lead to declines in timber production, impacting employment and economic well-being of nearby communities. Although many forestland owners conduct commercial timber harvests currently, the likelihood of future commercial harvests decreases as land ownership size diminishes (Butler 2016a).

Forest parcelization and fragmentation can also impact outdoor recreation, which continue to be popular for forest-based activities like bird watching, hunting, fishing, camping, and hiking (US Forest Service 2016). As the size of forest parcels decreases, private landowners may be less likely to allow recreation and hunting on their land. Currently, about 73% of private family-owned forestland is posted to restrict public access (Butler et al. 2016b). In addition,

as forestland is converted for development, the aesthetic value of a forested landscape can be degraded.

Tools to Maintain Forests as Forests

The following policy approaches may be effective in reducing or slowing the loss of forestland by alleviating the economic pressures faced by landowners (both large and small) who are considering selling or converting forestland. Not all forest landowners respond to the same tools. Consequently, a variety of tools should be available for mitigating or avoiding forestland conversion. While emerging opportunities exist (such as green infrastructure approaches that have been used to protect drinking water supplies, manage stormwater runoff, mitigate flood risk, reduce energy usage, and filter air pollutants), convincing decision makers to implement these non-traditional strategies can sometimes require external capital investment.

Policy and management tools include:

Economic Incentives

- Programs that support and expand forest product markets, including research and development into new markets;
- Economic incentives for the provision of ecosystem services such as carbon sequestration, water supply, wildlife habitat and biodiversity, and recreation;

Tax and Land Use Policies

- Forest taxation systems that a) favor long-term investment in sustainable forest management, and b) do not increase parcelization (see SAF position statement on tax policy);
- Conservation easements that maintain forest management, encourage reversal of parcelization, and discourage fragmentation, through voluntary but legally binding agreements;
- Land-use and forest management policies that recognize the multiple functions and values of forests, including land-use policies such as the recognized right to manage (including timber harvest), or zoning that promotes or protects forest management;
- Forest management policies that do not constrain landowner options, including those related to timber management (see SAF position statement on state policies regarding private forest practices);
- Tax credits and other incentive programs to reforest after natural disasters (e.g., hurricanes) and to mitigate income lost due to forest damage.

Public Funding for Land Retention and Management

- Federal programs, such as through the Farm Bill, that are designed to finance the retention and management of private forestland;
- Federal programs such as Forest Legacy funds that provide avenues for community or conservation-based forestland ownerships that purchase private lands in order to maintain them intact;
- Landowner technical assistance, education, and incentive programs that focus on the importance of investing in and managing private forests.

Private investment vehicles

- Conservation finance programs which involve raising and managing capital to support environmental conservation, whether public, private, or collaborative partnerships;
- Expansion and innovative design of private investment vehicles and strategies that are intended to promote ecological benefits and sustainable forestry, such as impact investing, green bonds, and forest offset projects, all of which leverage existing private forestland to provide both financial returns to investors and deliver ecosystem services for public benefit (See SAF position statement on forest offset projects for more information).

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