

Forest Fragmentation: Implications for Sustainable Private Forests

By Neil Sampson and Lester DeCoster

Abstract:

The long-term trend for private forests in the United States is that of more people owning smaller pieces of wooded land for amenity values. This shows no sign of slowing, and indications are that it may be speeding up. The fragmenting of forests into smaller pieces appears to be driven by powerful social and demographic forces that consistently under-tax and over-serve developed areas, while over-taxing and under-serving traditional rural land use, such as forestry.

In a book we authored in 1997, we concluded that the already-large population of American forest owners was growing, and that the demographics of the owners and their motivations for owning forestland were changing so fast that public programs for promoting sustainable forestry were becoming outmoded (Sampson and DeCoster 1997). Although some may have disagreed with that conclusion, the USDA Forest Service and university research—on which our opinions were based—has become widely accepted in the forestry community. Birch (1996); Virginia Department of Forestry (1997); USDA-NRCS (1999), and a recent rash of meetings on the subject indicate that fragmentation has reached a high profile.

Birch (1996) provides the basic data showing that forest ownership demographics are changing. He found that of the estimated 9.9 million private forest landowners in the United States in 1994,

- 94 percent owned less than 100 acres of forest apiece.
- The owners of more than 90 million acres of forest were age 65 or older, indicating ownership turnover in the near future.
- The average individual's (noncorporate) forest holding was 24 acres.
- Those owning 10 to 50 acres of forest—a size in our opinion too large to ignore and too small to manage as a sustainable unit with most traditional methods—numbered 4 million and represented 60 million acres. These numbers roughly doubled in the 16 years between 1978 and 1994.

In addition, our trend analysis revealed the following (Sampson and DeCoster 1997):

- There are in the neighborhood of 150,000 new forest landowners every year.
- By 2010, some 150 million acres of America's productive forests will be held in pieces of 100 acres or smaller, and the average size of individual forest ownerships will be about 17 acres.
- With increasingly urban backgrounds and lifestyles, these new owners are less likely than their predecessors to participate in standard public forestry programs, largely because they see forestry as irrelevant to their landowning objectives and immediate concerns.

Although much of our analysis has focused on the heavily populated East, there are many fast-growing and sprawling urban areas in the South and West that are also creating forest-fragmenting conditions (US Department of Commerce 1999). What follows are some of the factors we see as combining to increase forest fragmentation at an even faster pace, and the consequent challenges that this crisis presents to foresters.

Off-Balance Taxation

Forest-owner taxes yield little in forest-helping services. While community leaders talk about how valuable forests are, local governments often have imbalanced property tax systems, and tax owners for more than their forests can yield. Thus, the economic viability of owning forests is put at risk.

Local taxes paid on undeveloped land often are triple the cost of public services received by that land (American Farmland Trust 1993). These studies, comparing tax treatment of land uses for farms, forests, and developed uses, have shown that property owners in developed areas pay higher taxes but receive public services commensurate with, or even exceeding, their payments. Consequently there are strong incentives—in the realms of both private economics and publicly funded services—to split forestland into smaller pieces and move it toward development.

Our review of Department of Commerce data on public agency budgets indicates that general public investment to help maintain private forests is minimal—typically less than one-half of one percent of every public dollar spent (US Department of Commerce 1999). Federal spending in 1998 was about \$1.5 trillion, or about \$48,000 per second. At most, 0.4 percent of this goes back into any programs that might benefit private forests. At the state level, Maryland, for example, spent \$8 billion in 1998 (State of Maryland 1999). At most, about 0.5 percent went into services related to private forests. At local government levels, about 0.1 percent of public funds go to service private forests. Such a profound imbalance, if continued year after year, can be a profound disincentive for private owners to further invest in their forests.

Urban Power

Urban politics and economies can readily overwhelm rural land economies. In addition to government-assisted concentrations of money and power in developed areas, there is a general demographic differential between urban and rural areas. We recently compared Delaware and Maryland state demographics against those of their more rural Eastern Shore counties. In Delaware and Maryland, 12.2 percent of the population is 65 or older, while on the Eastern Shore this age group is 16.3 percent of the population. In per capita annual income, the state average is \$28,225; on the Eastern Shore it is \$19,990, about \$8,000 less per year (State of Delaware 1999; State of Maryland 1999). We find this situation to be typical for rural areas surrounded by more urban areas. Many of the people who presently own viable tracts of rural land are older with less income than their urban neighbors. Without major changes in public policy toward working private land, the combination of urban money, political power, and demographics will turn much of the private rural land of the Eastern Shore into smaller parcels owned by wealthier people for nonforestry, nonfarming purposes, and some of the more publicly attractive parcels will move into public ownership. This is the story of rural lands near urban edges in many locations.

Demographic-driven Changes

New data indicate that fragmentation may be worse than we thought. The latest National Resources Inventory, which is taken every five years, indicates that the conversion of forestland to development greatly accelerated between 1992 and 1997 (USDA-NRCS 1999). In that five-year period, an average of 2.26 million acres of forest were converted each year to housing and other uses, up more than 50 percent from the average annual conversion rate between 1982 and 1992 (USDA-NRCS 1999).

Census estimates indicate that most of America's fastest-growing populations are found in the East, where private forestlands dominate land uses: these forestlands often overlap with prime land for residential-driven development. The same conditions exist for the coastal counties along the West Coast, and many parts of the prime forest-growing areas of the South. As urban areas are spreading, they are controlling and consuming their surroundings (Noble 1999). Each urban gain expands the ways and means to grow more. Often the result is both a loss of land and a loss of the ability to manage forestland. The latter is often a very subtle change; difficult to measure but nonetheless real.

As urbanization encroaches onto rural land, businesses with low economic yields—such as farming, logging, tree farming, and milling—are pushed out, and their workers move away. Unfortunately, in the case of forestry, what is also lost is the knowledge and services that once maintained the forests. A Virginia Department of Forestry (1997) study found that the probability of sustainable forest management in an area approaches zero when population density reaches levels above 235 people per 1,000 acres. Probabilities of active forestry were 25 percent at densities of 100, 50 percent at 70, and 75 percent at 30 people per 1,000 acres. The study concluded that as much as half of the forestland still in Virginia will not be used as working forest because urbanization has pushed out the needed forestry infrastructure. Many of the rapidly growing southern states where forestry is looking for its future already have population densities that may foreshadow the same problem.

Loss of Income

Managing a forest costs money, and most of that money comes from the ability to periodically sell a forest product or service. Timber is the traditional product, but far from the only one. In many locations, leased hunting provides another important form of annual income; it also multiplies the number of active eyes and ears helping to monitor and manage the land. But a rapidly expanding urban area can threaten both sources of income.

In the case of timber, income loss may be caused by the gradual loss of markets, as mills go out of business or contractors quit or move away because of diminished activity. When an owner can no longer find a market or hire a contractor, management options dry up. Large owners may be able to find a way around the problem, but small owners seldom can.

For those with hunting leases on their land, the construction of a school or subdivision on neighboring land can spell the end of that income source, as safety concerns escalate. We increasingly hear these stories from landowners (often with an accompanying tale of a recent increase in property taxes) whose bottom line is: "Don't know how much longer I'll bother to own the place. Those big land prices are sounding better all the time."

Crisis in Maintaining Forests

The United States faces a growing crisis in maintaining sustainable private forests. The crisis is not centered on how to teach people to value and manage forests properly; it is more basic than that. We as a society need to figure out ways to retain private lands in forests. Once the forest gives way to asphalt, no forestry skill will fix it.

This crisis demands at least three new challenges for today's foresters:

1. *Help people to manage very small properties well.* Foresters talk about landscapes and ecosystems, but in fact we are increasingly challenged to work with postage stamp-size

properties. Practical, sustainable strategies for small parcels are vital.

2. *Help local governments to plan their growth patterns.* Foresters generally abhor land-use regulations, but some kind of “smart growth” had better happen soon or productive forests will either be gone or unmanageable.

3. *Convince the conservation community that sustainably managed forests, linked to economic use, protect forests for the future.* And they do so at least as surely as a conservation easement, and at less public cost. It is disturbing to hear conservation groups justify their lack of support for a proposed forest tax reform because it might increase intensive forest management and decrease the use of easements. The fact is, foresters have not been able to raise the needed clout to reform taxes and make forest ownership a better economic option without the support of conservation groups, so convince them we must.

The farmland protection movement successfully convinced people that to save farmland you must save working farms. But decades of political strife over forests have many environmental organizations insisting that the only way to protect a forest is to stop any form of active forest management. “No timber harvest on public lands” is one campaign slogan, and it is spreading to private lands. As a result, while agricultural and environmental interests link arms to protect farmland, forestry and environmental organizations battle each other to the point where forest protection programs remain small and ineffective. Somehow, those holding these polar opinions need to agree on a form of sustainable forest management that is both practical and achievable for forest owners, and adequate and permanent for environmental protection. It remains to be seen whether or not the fast-growing forms of forest certification around the world can help achieve that.

However we set out to achieve these three actions, there is not much time. The trends that threaten our future forests are strong and fast-moving, powered by an economic and demographic engine that, for the moment, shows no signs of slowing.

We may sound like alarmists, but every time we think we have overemphasized the problem, new data indicates that we are still underestimating it. Without powerful and coordinated leadership from the forestry profession, from conservation and environmental organizations of all persuasions, and from government at every level, the future of the private forests that have so effectively been restored in the 20th century may turn very bleak in the 21st.

Literature Cited

American Farmland Trust (AFT). 1993. Open space and taxes. *Connecticut Woodlands*, Spring:10.

Birch, T.W. 1996. *Private forest-land owners of the United States, 1994.* Research Bulletin NE-134. Radnor, PA: USDA Forest Service, Northeastern Forest Experiment Station.

Noble, C. 1999. Lifeline for a landscape. *American Forests* 105(1):37–9.

Sampson, R. N., and L.A. DeCoster. 1997. *Public programs for private forestry: A reader on programs and options.* Washington, DC: American Forests Forest Policy Center.

State of Delaware. 1999. The state website at www.state.de.us was used to gather information for the state as a whole and for Sussex County.

State of Maryland. 1999. The state website at www.state.md.us was used to gather information for the state as a whole and for the Eastern Shore counties of Caroline, Dorchester, Somerset, Wicomico, and Worcester. Some economic data also were gathered at www.mec.state.md.us.

USDA Natural Resources Conservation Service (USDA-NRCS). 1999. *Summary report: 1997*

National Resources Inventory. Washington, DC. US Department of Agriculture. The 1997 National Resources Inventory data are available at www.nhq.nrcs.usda.gov.

US Department of Commerce. 1999. *Statistical abstract of the United States 1998*. Washington, DC: US Government Printing Office. Data are available from the Bureau of Economic Analysis at www.bea.doc.gov.

Virginia Department of Forestry 1997. *Virginia forest land assessment*. Charlottesville.

Neil Sampson is president, The Sampson Group, Inc., 5209 York Road, Alexandria, VA 22310; Lester DeCoster, APR, is president, The DeCoster Group, Inc., Reston, Virginia.