

Are We Underinvesting in the Nation's Forests?

V. Alaric Sample

The recent bridge collapse in Minneapolis is raising anew questions about how best to maintain and ensure the safety of the basic public infrastructure on which we all rely. This tragedy cost thirteen people their lives, but considering that an average of 200,000 people each day traversed this particular bridge, things could have turned out much, much worse. The immediate reaction of political leaders in cities and towns across the country was to ask their civil engineers, "Could it happen here?" Astonishingly, in *thousands* of cases, their answer was, "Yes." In and around the nation's capital itself, 25 bridges were found to be "structurally deficient," just as the I-35W bridge has been deemed years before its tragic collapse.

Adequate public services with inadequate public investment?

The next question our political leaders ask is "How much will it cost to fix?" and the answer is truly staggering. "Where are we going to find that kind of money?" "How could we have let things deteriorate this badly?" Before the finger pointing begins, let's be honest. What happened at the I-35W bridge is symptomatic of the cherished tradition in American society to focus on the near-term, and let the long-term take care of itself. But the long term has a nasty habit of showing up when least expected, and when the bill comes due it puts politicians-and taxpayers- into serious sticker shock.

Our political leaders campaign on platforms to "put tax money back in your pocket, because you know better how to spend out money than the government." This sounds very appealing, and may get them elected. But it is a dereliction of public duty, an evasion of responsibility that borders on negligence. Every one of the 200,000 people who used the I-35W bridge on a daily basis needed it to be maintained and kept safe. Could they act as individuals to maintain this bridge? Of course not. They rely on the department of transportation to ensure their safety, and on their elected leaders to ensure that DOT has the resources to fulfill this responsibility. This is not an argument for big government or against lower taxes, but it is important to "right-size" government services so that our elected leaders and the agencies they oversee have the basic resources to ensure the quality and safety of the necessary public infra-

structure on which we depend, and which we take for granted until there is some major failure. Regrettably, highway bridges are only one small part of the problem.

What we may soon find out is that our systematic underinvestment in America's forests is an even greater threat to public health and well being, and its coming at us faster than we think.

Forests' environmental services and the lessons of history

There are few things more basic to human needs than water, and there are few things more important to ensuring a reliable supply of usable water than forests. The rate at which we are losing forests in the US today, and the deteriorating conditions in many of the forests that remain, suggest that big problems lie ahead. And it's not just a matter of expense. We can spend money to repair our highway bridges. We can't manufacture water.

Most of the water consumed in the US today—for agriculture, industry, or municipal drinking water—begins as a raindrop falling in a forest. Forests do more than capture water. They store it in deep forest soils that recharge underground aquifers. They release their water gradually, not as destructive topsoil-laden floods, but as innumerable clear brooks and springs that feed reservoirs and rivers. Throughout history, the loss of forests has resulted first in floods, erosion of fertile soils, reduced productivity, followed in many parts of the world by increased poverty, population dislocations and civil strife.

Writing at the time of America's great westward expansion, US ambassador to Italy G.P. Marsh recognized that the dry, barren landscapes around the Mediterranean had not always been that way (Marsh 1864). The depletion and destruction of the region's forests—the cedars of Lebanon, the pines of Rome, and great forests of the Anatolian coast cleared to build Cleopatra's navy—fueled the development of classical civilization. By Marsh's time, however, these same lands were dry, dusty, deeply eroded and capable of supporting little more than nomadic herds of goats and sheep. There was a lesson in this, Marsh wrote, for his native country, which at the time was depleting its forest at an alarming and clearly unsustainable rate.

The lessons in Marsh's *Man and Nature* were not lost, but helped give birth to the nation's first conservation

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movement, aimed largely at protecting the remaining large areas of forests as reserves to be held permanently in the public trust. Priority was given to protecting those forests from which or where sprang the headwaters of navigable streams and rivers, and those that provided water for irrigated agriculture.

Many of America's forests that were already in private hands continued to be depleted, however, often stripped of their trees and left abandoned. Subsequent floods and catastrophic fires prompted Congress to allow public forestry agencies to reacquire some of these cutover private lands, where they have gradually recovered. Today they form the mountainous backbone of public forests on the eastern half of the country.

Although many of these public forest reserves were established more than a century ago, we are only now beginning to recognize their full economic value to the nation as a whole—and how costly it would be to find a substitute for the critical role they play. The federal forest reserves now “national forests” were protected explicitly to protect watersheds and provide a sustainable supply of wood, but it was not long before Americans discovered they had other values as well—for wildlife habitat, outdoor recreation, even wilderness preservation. Conflicts amount these uses erupted into controversy in the mid-20th century, and disputes remain to this day over endangered species and the protection of the last remaining old-growth forests and wilderness areas.

Forest carbon—unpriced but invaluable

Lately, though, certain mega-trends in human society and new developments at the global scale, are causing users to view forests in an entirely different light.

There is a growing consensus that the global climate is changing in ways that do not bode well for either humans or our fellow species, and that decisive action is needed to reduce human-induced “greenhouse gases” like carbon dioxide and methane. A few major carbon-emitting industries, notably those that use fossil fuels for generating electric power, voluntarily invested in planting forests, whose growth over time would absorb or sequester an amount of carbon dioxide roughly equivalent to the amount coming out of their smokestacks.

While very tangible, this direct connection was awkward and difficult, so markets such as that on the London

Stock Exchange soon developed to indirectly connect carbon emitters to carbon absorbers through a system of credits. As the need to reduce greenhouse gases becomes increasingly acute, it is expected that the value of a carbon credit will continue to rise. Currently the credit for sequestering a ton of carbon is just under US\$42.

US forests are estimated to have roughly 57.8 billion tons of carbon locked away in their woody biomass—trunks, limbs and roots. These forests are estimated to be adding carbon at a rate of 508 million tons annually through tree growth and planting. So hypothetically, the value of the carbon currently being stored by US forests is more than \$21 billion annually.

Forest burning is estimated to account for one-fifth of all human-induced greenhouse gas emissions. Actions taken to avoid wildfires, or deforestation for development or agriculture, can help ensure that the carbon already locked away in forests stays there, and that these forests will continue to grow and absorb yet more carbon. How much of all this forest carbon is saleable will depend on how the rules get written in international agreements such as the Kyoto Protocol. Any way you look at it, though, in a warming climate and a carbon-constrained economy, forests are enormously valuable and will become more so.

Water from the nation's forests—what is it worth?

If water is such a precious commodity, and forests play such an essential role in providing this commodity, then what kind of value might forests represent strictly in terms of watershed protection?

Americans use an enormous amount of water. Water consumption in the US for municipal, industrial and agricultural uses totals more than 408 billion gallons per day, or an average of more than 1400 gallons per person *per day*. As with energy use, Americans' per capita water consumption is among the highest in the world. And most of this water—more than two-thirds—comes from the nation's forests, both public and private.

For a closer look, let's consider the National Forests. The 193 million-acre National Forest System contains less than one-fifth of the nation's forest land. Nevertheless, it is the largest single system of protected forest in the country, and one of the largest in the world. On average, the National Forests provide about 14 percent of the nation's water, but in some regions of the country this proportion

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is much higher. In the states west of the Mississippi River, the average is 33 percent, and in California nearly 50 percent of the water comes from National Forests.

What is this worth? Using a conservative but widely agreed upon valuation of \$40 per acre-foot (an acre-foot of water is 325,851 gallons) the water the National Forests provide is worth roughly \$3.7 billion annually.

Underinvesting in the nation's forests

But what does it *cost* to produce this? After all, protecting and managing 193 million acres of National Forest is not free—nor is it even cheap. Last year it cost taxpayers nearly \$2.4 billion to manage the National Forest System, not including another \$746 million spent on putting out wild-fires. Even so, this translates to an average of only about \$12 per acre—or \$16 per acre even when firefighting costs are included.

Just the \$3.7 billion per year in water values *alone* are worth more than the entire annual cost to taxpayers of conserving and sustainably managing the National Forests. Although they represent only one-fifth of the total area of US forests, the National Forests account for more than three-fifths of the net growth in US forests. If the carbon being sequestered by this forest growth were to be traded as carbon credits on the London Stock Exchange at today's prices, the value of carbon being sequestered by the National Forests would exceed \$13 billion annually. All the other values—the wildlife habitat, recreation, endangered species protection, carbon sequestration—come along as part of the package at no added charge.

This is a good deal for the American taxpayer. In fact, it may be too good. Wildfires burned some 9.8 million acres of National Forest in 2006, a modern record. More than 85 percent of the nearly \$760 million it cost to extinguish these fires was spent on protecting homes and other structures adjacent to the forest—not the forest itself. In spite of another \$6 million spent on seeding and restoration of burned areas it will be years before they will fully regain their ability to protect water quality. In a place like Colorado, where major wildfires on National Forest lands have severely damaged two of the major reservoirs sup-

plying drinking water to Denver and other Front Range communities, this is a serious shortcoming that absolutely must be addressed.

The Forest Service knows how to address the problem, but the hazardous fuels reduction treatments run \$500-700 per acre, and the agency estimates that at least 140 million acres are in need of treatment. How did it get this way? It didn't happen overnight. Unfunded treatments get deferred to the next year, then the next, until the price tag becomes so astronomical as to be almost meaningless.

Like the interstate highway bridges, the "long-term" has a nasty habit of coming around when it is least expected.

We are systematically underinvesting in America's critical infrastructure, whether it is the bridges traversed by a quarter-million commuters each day, or the forests that supply tens of millions of citizens with reliable supplies of clean drinking water. This is not about simply throwing more money at the problem in vague hope that it will go away. It is about taking a responsible approach to maintaining the investments a previous generation made for us, so that we don't dump it on our children so worn out and broken down that it no longer meets the essential needs for health, safety and economic sustainability.

Early conservationists like Gifford Pinchot, who a century ago, helped establish America's system of forest reserves, left us more of a legacy than even they themselves may have realized. Only in recent years have we recognized the importance of forests for protecting endangered species, or locking up atmospheric greenhouse gases. Yet the forest reserves were providing these important values all along. What other critical functions are these forests serving today, that we ourselves will not recognize or appreciate until perhaps decades from now? A higher level of public investment is necessary to sustain the basic productivity of the natural resources and the unseen but essential services they provide to even the most urban component of our growing population. It is a sound investment not just in the environment, but in the nation's future economic well being.

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