

Speech

U.S. Forest Service
Washington, DC



Water Delivery from Forests in an Era of Climate Change: Landscape-Scale Conservation

Forest Service Chief Tom Tidwell
Seventh National Water Monitoring Conference
Denver, CO—April 29, 2010

It's a pleasure to be here. Thank you for inviting me. The work all of you do to protect our water resources is critically important.

As you might know, watershed management was one of the reasons for founding the Forest Service more than a century ago. It was a time of rampant deforestation in the United States. In the second half of the 19th century, America lost about 200 million acres of forest, an area almost six times the size of New York. Almost all of that loss was due to land clearing in the East and Midwest for timber and agriculture.

Most people didn't understand the consequences. Most thought America's forests were inexhaustible or even an obstacle to development. But some who grew up watching that loss were appalled. They saw the damage to forested watersheds, and they understood what that meant for water delivery and for the health of our rivers and streams.



Gradually, a radical idea took hold—the idea that forested parts of the public domain in the West should be permanently reserved for timber and watershed protection. It was a controversial idea, but Congress eventually gave the President the right to set aside federal forest reserves—and in 1891, he did.

By 1905, when the Forest Service was established, there were 83 forest reserves covering about 75 million acres. Today, that area has grown to 155 national forests and grasslands covering 193 million acres in 43 states and Puerto Rico. It's an area almost twice the size of California. One of the core purposes of the national forests—and of the Forest Service—has always been to furnish plentiful supplies of pure, clean water to the American people.

The Importance of Forests

I open with this bit of history to tell you a little bit about the Forest Service ... but also to show the central role of water in the way we think about forests and forest management in the United States. Gifford Pinchot, the first Forest Service Chief, put it this way, and I quote:

Speech

U.S. Forest Service
Washington, DC



“The relationship between forests and rivers is like father and son. No father, no son.”

Forests are vital to our nation for a whole range of benefits they provide to the American people. They purify the air we breathe. They store carbon and regulate climate. They form soils and control runoff and erosion. They protect biodiversity, providing habitat for wildlife. They furnish rich opportunities for collecting wild foods ... for hunting and fishing ... for outdoor recreation, spiritual renewal, and aesthetic enjoyment ... I could go on.

But maybe the most compelling reason why forests are so important has to do with the basic human need for water. Secretary of Agriculture Tom Vilsack has set forth a vision for the nation’s forests, and central to his vision is water.

Americans tend to take their drinking water for granted. Eighty percent of us live in urban areas, where we expect water to come out when we turn on the tap. But most of our drinking water comes from outside our cities—from our forests, farms, and ranches. In fact, our forests, farms, and ranches provide 87 percent of the

Speech

U.S. Forest Service
Washington, DC



surface supply of drinking water in the United States. I can't think of a more compelling reason to manage these lands sustainably.

Ultimately, our success at the Forest Service will be measured in terms of watershed health on those 193 million acres of national forests and grasslands. Those lands alone deliver 18 percent of our surface supply of drinking water, even though they cover less than 9 percent of our land area. Watersheds capable of delivering plentiful supplies of pure, clean water can also deliver all the other services that people get from forests—biodiversity, soil protection, outdoor recreation, and more.

Climate Change and Associated Stresses

Unfortunately, America's watersheds are too often in poor or declining health. The symptoms are clear:

- Many areas are besieged by drought, especially in the Interior West. Drought-stressed forests are especially vulnerable to wildfire as well as to outbreaks of insects and disease.

Speech

U.S. Forest Service
Washington, DC



-
- In much of the West, a legacy of fire exclusion has left forests overstocked and full of hazardous fuels. In terms of fire and fuels, we are in a whole new era. In the last 10 years, at least nine states, including Colorado, have had record-breaking fires. In 2000, for the first time since the 1950s, more than 7 million acres burned in a single year. Two years later, more than 7 million acres burned again. In 2004 and 2005, more than 8 million acres burned; in 2006 and 2007, it was more than 9 million. Some experts anticipate future fire seasons on the order of 10 to 12 million acres.
 - Overstocked, drought-stressed forests are also susceptible to devastating outbreaks of insects and disease. As you know, entire landscapes are dead or dying not only here in Colorado, but also elsewhere in the West, at all elevations and latitudes ... from pinyon pine, to lodgepole pine, to whitebark pine ... from Arizona, to Wyoming, to Idaho, to Alaska.
 - Our grasslands are often overgrown with noxious weeds and invasive species of all kinds, from cheatgrass, to leafy spurge, to spotted knapweed. Saltcedar and other invasive species have compromised the health of many riparian areas, putting water supplies at risk.

Speech

U.S. Forest Service
Washington, DC



-
- Drought-stressed forests ... catastrophic fires ... outbreaks of insects and disease ... invasive species ... partly, these are symptoms of a changing climate. Changes in temperature and precipitation, in the timing and magnitude of weather events, are altering ecosystems and fire regimes. Milder winter temperatures are letting bark beetles reproduce faster and spread upslope and northward. Alaska alone has billions of trees killed by insects and other effects of a warming climate. Think of climate change as the common backdrop for all these developments.

Climate change and its associated stresses all have major consequences for watershed health—for our water supplies and all the other ecosystem services that Americans want and need from their forests. It is no exaggeration to say that land managers today may face challenges as great as any in our nation's history.

Ecological Restoration

So where are we headed?

Speech

U.S. Forest Service
Washington, DC



One of the earliest Forest Service employees was Aldo Leopold, the great conservationist and wilderness advocate. Leopold served in the 1910s and 20s on national forests in the Southwest, where he saw landscapes that were severely degraded. In response, he called for, and I quote:

“... a positive exercise of skill and insight, not merely a negative exercise of abstinence or caution.”

Leopold knew that conservation is active, not passive. Conservationists have a fundamental obligation to *act* to restore degraded landscapes, and today we are continuing in that same tradition. The Forest Service is responding to climate change by restoring the functions and processes characteristic of healthy, resilient ecosystems.

By restoration, I do not mean returning to the past. That would be impossible. Our forests have been changing for thousands of years in response to both natural and human drivers. For example, ponderosa pine, the state tree of Montana, was absent from that state as recently as 2,000 years ago.

Speech

U.S. Forest Service
Washington, DC



By restoration, I mean learning from the past as we look toward a future that will be very different from today. Our approach to restoration is adaptive. It's like preparing for a long and difficult trip, planning for every contingency, taking all the risks and uncertainties into account, then being prepared to cope with the unexpected. Through restoration, the Forest Service is conditioning and repairing the key functions of ecosystems across landscapes so they can withstand the stresses and uncertainties associated with our new management environment.

A good example of watershed restoration is on the Plumas National Forest in California's Sierra Nevada. Streams there have worn gullies into floodplains and dried out the surrounding meadows. Using a "pond-and-plug" technique, the Forest Service has elevated the streams to their original floodplains. Storms no longer send floods ripping down gullies, but rather spread streams across their entire floodplains, allowing the original meadow vegetation to return. The meadows again act like sponges that soak up water and gradually release it in summer, when it is needed downstream.

Here's another example, this one affecting water supplies right here in Denver. Last May, we announced a project funded through the American Recovery and

Speech

U.S. Forest Service
Washington, DC



Reinvestment Act to restore watersheds in Teller County, Colorado. Working with partners, the Forest Service is thinning dense conifer stands to restore a semblance of historically open woodland conditions. The project will prevent catastrophic fires like Hayman, which was a disaster for Denver’s municipal water supplies. An additional benefit is to supply a nearby power plant with woody biomass as fuel.

The project responds to climate change in two ways: first, by offsetting greenhouse gas emissions through the use of woody biomass as fuel; and second—even more important—because open pine woodland is far better able to withstand and recover from climate-driven stressors and disturbances like drought, wildfire, disease, and insect attack. The Forest Service has similar restoration projects all over the country.

An All-Lands Approach

No matter how effective we are, though, a piecemeal approach will not be enough. No single organization, acting alone, can come to grips with a challenge so vast, complex, and far reaching as climate change. We need an all-lands approach.

Speech

U.S. Forest Service
Washington, DC



Aldo Leopold understood that. Although the issues he was dealing with did not include climate change, Leopold was ahead of his time. In a sense, he was already calling for an all-lands approach in the 1930s, and he dedicated much of his later career to working with private landowners across boundary lines. He called for, and I quote:

“a universal symbiosis with land, economic and esthetic, public and private. To this school of thought public ownership is a patch but not a program.”

“A patch but not a program.” Aldo Leopold recognized the true patchwork nature of our landscapes. He strongly supported federal land management, but he also knew that government alone can never do the job; we all need to pull together in a symbiosis with the land.

Here’s why. The National Forest System contains only 20 percent of the nation’s forests. Fifty-seven percent are in private landownership, and another 23 percent are in state, tribal, county, municipal, and other federal ownerships. Forest ecosystems are typically mosaics—mosaics of plant and animal communities *and* mosaics of landownerships and human communities. This is true not only in the

Speech

U.S. Forest Service
Washington, DC



East, but also here in the West, where the critical issues are the same—forest health, invasive species, fire and fuels, water quantity and quality, and wildlife habitat connectivity. Such issues neither begin nor end at national forest boundaries.

The Forest Service has therefore adopted an all-lands approach to conservation. We are integrating our programs for research, management, and landowner assistance to address climate change in high-priority landscapes across the country. The 2008 Farm Bill requires the states to identify landscapes critical to the future of conservation. Based in part on the results, the Forest Service will work with the states and other partners to protect and restore a series of landscapes that are valuable, vulnerable, and amenable to collaborative planning and management.

A good example is the Chesapeake Bay drainage, which covers much of the mid-Atlantic region. As you know, the health of the bay is threatened by development and resource overexploitation. The Forest Service has long collaborated with EPA and other public and private partners in restoring the Chesapeake Bay. We manage 1.4 million acres of national forest land in the watershed, protecting the quality of the water that flows into the bay. We also use our authorities to work through state



and municipal partners to protect and restore ecosystems in the watershed, partly by planting urban trees, improving forest management on private land, and acquiring conservation easements for sensitive lands at risk of development.

Rising to the Challenge

To summarize: Forests are key to water purification and delivery, and the Forest Service has a long history of watershed protection. But climate change has placed us in a whole new environment for land and resource management. At the Forest Service, we are working to restore healthy, resilient ecosystems capable of delivering clean water and all the other ecosystem services that Americans want and need.

We can and will do more, but we cannot succeed alone. Success will require a series of collective endeavors—coalitions of organizations and individuals working collaboratively across broad geographic areas, with the full knowledge and support of the American people.

I will end with one final quote from Aldo Leopold:

Speech

U.S. Forest Service
Washington, DC



“The hope of the future lies not in curbing the influence of human occupancy—it is already too late for that—but in creating a better understanding of the extent of that influence and a new ethic for its governance.”

In that same spirit, I ask you to join us in formulating a new ethic for the governance of the landscapes we share as Americans. Working together across borders and boundaries, we have an opportunity to make a difference, even in an era of climate change. Through landscape-scale conservation, we can restore healthy, resilient watersheds—landscapes capable of delivering plentiful supplies of pure, clean water, for the sake of generations to come.