Communities help pay for ecosystem services provided by forests

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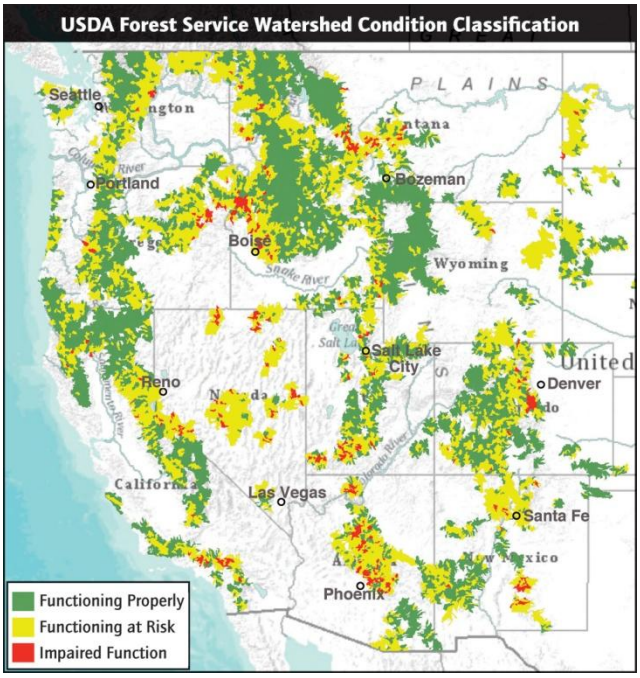
In the February 20th Issue



Strontia Springs Reservoir, 30 miles south of Denver, Colo., looks like water you'd want to scoop up in your dipper. Sunshine and pine reflect off its aqua-blue surface. But 16 years ago, it looked more like a latte clogged with cinnamon bark. In 1996 and 2002, major forest fires scorched the Upper South Platte River watershed. In the aftermath, heavy rains washed debris, burned logs and more than 750,000 cubic yards of sediment into the reservoir, which supplies over 7,000 acre-feet of drinking water annually to Denver.

Denver Water -- the utility that supplies 1.3 million people in the metro area -- spent more than $26 million dredging Strontia Springs, treating the water and reseeding the watershed's forests. The U.S. Forest Service spent millions more to reinforce hillsides, reseed and plant trees. But the damage to the city's drinking water could have been much worse: Just 150,000 acres burned out of the 2.5 million acres in Denver's watersheds.

In hopes of avoiding future expensive wildfires, in 2011, Denver Water and the Forest Service signed a $33 million cost-sharing agreement for watershed restoration. The average residential water user will pay an extra $27 over the course of five years to match the Forest Service's $16.5 million allocation. The money will fund tree-thinning and prescribed burns on 38,000 acres.

Denver's agreement is an example of an emerging financial tool, "ecosystem services," in which a market value is applied to environmental functions that users usually exploit without payment. Healthy forests and wetlands filter rain and snowmelt, regulate runoff and slow soil erosion, delivering clean, safe drinking water at far lower cost than it would take to build infrastructure to replace those services.

The national forest system has over 18,000 watersheds, many of them near major cities. In an era of shrinking federal budgets, financing watershed restoration can be accomplished through

an ecosystem-services approach, in which water users bear some of the cost. Projects in Latin America, China and India already use this model. "You can't really put a dollar amount on what you think you're going to save," says Don Kennedy, environmental scientist for Denver Water. But "we're going to get a lot more (forest restoration) work done on a landscape level, and that's crucial."

In the West, watershed protection and rehabilitation have become increasingly urgent. Experts predict that climate change and drought will exacerbate water shortages and cause larger, more intense wildfires that essentially caramelize forest floors, increasing flooding and sedimentation. Thinning can help protect a watershed from such fires and free more water to flow into creeks and reservoirs.

The Forest Service has always had a mandate to create "favorable conditions of water flow," but recently, the agency made watershed health one of its primary objectives. Last May, it announced the Watershed Condition Framework, which prioritizes five years of watershed projects and attaches restoration plans to each. In fall 2011, the Forest Service also unveiled the Forests to Faucets project, which uses GIS technology to rank watersheds most important to surface water and identify localized threats like insects, development and fire risk. Municipalities and conservation groups use that information to determine areas for joint watershed investments.

Watershed investment partnerships have been implemented in several Western cities, including Aurora, Colo., and Portland, Ore. But these programs face a number of obstacles. They're expensive, and policy-makers must convince water users that the additional cost is warranted. Environmental groups sometimes object to thinning projects, and negotiating payment schemes for public land puts agencies at risk of breaking the law. The Forest Service cannot solicit funds outside of its congressional appropriations, so it must rely on third-party intermediaries to broker negotiations with cities and utilities.

The city of Santa Fe started a working group that, in 2010, successfully began a watershed investment program with the Forest Service, but it faced a political challenge early on. The city feared that a wildfire like the 2000 Cerro Grande Fire, which cost the Los Alamos utility $9 million, could one day devastate the Santa Fe Municipal Watershed. But Santa Fe's water division had already raised water rates in 2009 by 50 percent; requesting more money was politically unpopular. So it applied for a $1.3 million state grant to work with the Forest Service on prescribed burns and thinning projects until 2013. The grant also financed public education about the benefits of protecting watersheds. Santa Fe has since learned that the original 50 percent rate hike will cover the cost of watershed maintenance after the grant expires. Elsewhere, paying for watershed services hasn't been nearly as controversial as expected. In a 2011 survey funded by the National Science Foundation, Abe Springer, a professor in the School of Earth Sciences and Environmental Sustainability at Northern Arizona University, found that downstream irrigators understood the link between forest restoration and water quality and supply, and were willing to pay for such work. "Never underestimate an Arizonan's knowledge about water," says Springer.

Despite growing public acceptance, watershed restoration partnerships have been challenged by some environmental groups. Bozeman, Mont., and the Gallatin National Forest are trying to coordinate a plan to split the costs of thinning the city's watershed. But three environmental groups oppose it. Although the groups recognize the danger of severe fires, they contend that forest thinning carries another set of risks. "Building new roads and logging is going to put sediment into the water and harm watersheds," says Michael Garrity, executive director of Alliance for the Northern Rockies. Lake Tahoe has faced similar opposition to its watershed plans.

Watershed investment projects could help rewrite the book on new models of forest management that use landscape-scale treatments for multiple goals. Arizona's Four Forests Restoration Initiative (4FRI), an ambitious 20-year, 2.4 million acre restoration project between the Coconino, Kaibab, Apache-Sitgreaves and Tonto national forests, aims to treat 50,000 acres per year. The 4FRI steering committee is considering a watershed investment program as one possible funding source, since the forests' watersheds provide over 190,000 acre-feet of water to the Verde Valley and Phoenix metro area. According to Marcus Selig, co-chair of the steering committee, watershed investments could provide funds for ancillary goals essential to healthy watersheds, like spring restoration, aspen rehabilitation and wildlife enhancement.
The potential for forest restoration on an even larger scale exists within the Colorado River's watersheds, according to Carpe Diem West, an organization working to assure Western water supplies. Most of the 246,000 square miles of watersheds feeding the Colorado reside on public land, and their 24.6 million water users could help fund large, long-term restoration work. Kimery Wiltshire, the group's director, says, "We look at watershed programs as investing the hearts, minds and votes of downstream water users."

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