

Plan to Save Aspen Trees: (GOOD OR BAD?)

Clear-cutting Could Give Seedlings Chance to Replace Dying Trees

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The U.S. Forest Service plans to clear-cut several thousand acres of southwestern Colorado aspen in a last-ditch effort to save dying stands of the slender, creamy-barked tree that's synonymous with the state's high country.

Clear-cutting large swaths of forest may seem like an unlikely cure.

But the idea - which has not been tried before in Colorado - is to remove all the adult aspen trees in an ailing stand to allow thousands of new seedlings to sprout and grow without having to compete against mature aspen for sunlight.

"It's a drastic treatment, very similar to an amputation," said research forester Wayne Shepperd of the Rocky Mountain Research Station in Fort Collins.

"It's something that we're going to try that may or may not work," Shepperd said. "Like cutting a leg off, if you don't get all the infection, you might still lose the patient."

Prescribed fire also is being considered for inaccessible aspen stands and those that aren't worth logging, said Phil Kemp of the San Juan National Forest's Mancos-Dolores Ranger District, north of Cortez.

"We want to be able to save whatever we can," said Kemp, manager of the district's timber and reforestation program. "It's not just another excuse for logging."

But a Utah ecologist who has studied aspen for 34 years warned that clear-cutting could backfire and hasten the demise of the very aspen stands Kemp hopes to save. And the executive director of a Durango-based environmental group called the plan a risky experiment.

"One has to ask, would they regenerate more quickly if we did not disturb the soil by harvesting trees and running mechanized equipment all around to remove the trees?" said Ryan Bidwell of Colorado Wild.

Accelerating Decline

The West's quaking aspen have been in retreat for about 150 years, according to longtime Forest Service aspen ecologist Dale Bartos. The acreage they occupy has shrunk 50 percent to 60 percent during that span, he said.

The slow decline is mainly because of the aging of the region's aspen stands combined with a century of wildfire suppression and the chomping of countless cows, deer and elk.

But in the past several years, the pace of the decline has accelerated dramatically, notably in places such as southwestern Colorado's San Juan Mountains. No one is sure why it's happening, but a delayed response to the region's multiyear drought is a prime suspect.

Colorado is home to about half the West's aspen, and the San -Juans host one of the nation's densest concentrations.

About 26 percent of the 1.9 million-acre San Juan National Forest - some 490,000 acres - is cloaked in aspen forest.

Over the last three years, San Juan foresters have noticed an alarming increase in aspen mortality in such places as the Mancos-Dolores district. In some stands there, aspen mortality jumped from 9 percent in spring 2003 to 60 percent this spring, Kemp said.

Across the district, about 8.6 percent of the aspen are dying, he said.

The first sign of a serious problem comes when the trees lose their light green, heart-shaped leaves. From a distance, great swaths of defoliated white treetops stand in stark contrast to the surrounding greenery.

Up close, the leafless trees display dead trunks and branches.

"Usually the biggest and healthiest trees go first, and it spreads from there," Shepperd said. "The first thing you notice is the thin tops with very few leaves. When you get up close, you see the tree is already dead."

Rapid Regeneration

Mancos-Dolores district officials are planning at least 10 small aspen clear-cuts totaling about 200 acres. The 10 cuts would form a single timber salvage sale to be offered to contractors for bid next spring, Kemp said.

If the decline continues, several thousand acres of the district's aspen eventually could be cut in salvage sales, he said.

How can clear-cutting an aspen stand help save it?

In the West, nearly all aspen reproduce asexually through a process called suckering. New shoots sprout from horizontal roots and grow into trees that are genetically identical to their neighbors.

A typical aspen "clone" can contain several thousand trees sharing a common root system and covering up to 20 acres. The largest known aspen clone - nicknamed Pando - is just south of Utah's Wasatch Mountains and contains 47,000 trees on about 100 acres.

The aspen is the most widely distributed tree in North America.

Some researchers consider big aspen clones to be the world's largest organisms. Members of a clone leaf out simultaneously in spring and turn the same color at the same time in fall.

In a stand of mature aspen trees, the leaves produce a growth-inhibiting hormone called auxin that flows down to the roots and blocks sprouting. But if those trees are removed - by wildfire, rock slide, blowdown or chainsaw - the auxin vanishes and the suckering process shifts into overdrive.

After a wildfire or a clear-cut timber harvest, 15,000 to 25,000 new seedlings per acre can sprout in a single summer, Kemp said. And they grow like weeds because they're not competing against mature trees for sunlight, water and soil nutrients.

San Juan foresters want to exploit this behavior to save some of the dying aspen stands.

To do so, they need to get to them before the mysterious killer finishes them off. If foresters can reach the stand when 50 percent to 70 percent of the trees are still alive, then most of the root system is probably still viable as well, Kemp said.

Next step: cut or burn the entire clone.

"As I recognize that a particular aspen clone is going through this sudden decline, I want to get in there and either cut the entire clone or burn the clone, so that I maximize the sprouting potential and the growth potential of that clone," Kemp said.

But Forest Service aspen ecologist Bartos warned that the plan could boomerang.

"I would not recommend that," Bartos said. "It bothers me a little bit, because if the roots are dying and you cut the parent tree, it's going to hasten the demise of those roots and you could see the clone dying out completely."

Colorado Wild's Bidwell said while a healthy aspen stand can sprout 15,000 to 25,000 seedlings per acre after a wildfire or a clear-cut, there's no telling how much regeneration will occur in a stand that's crippled by the mysterious die-off.

He urged the Forest Service to move slowly, monitoring the response to the first small clear-cuts before committing to removing thousands of acres.

What is causing the die-off?

No one knows for sure what is causing the die-off, but Forest Service pathologist Jim Worrall said some of the pieces in the puzzle are coming together.

The die-off seems to fit the definition of a phenomenon ecologists call decline disease. In decline disease, several factors work sequentially: Predisposing factors are followed by inciting factors, which open the door for contributing factors.

In this case, a predisposing factor is the age of aspen stands in the West. Aspen are short-lived trees; in Colorado, most don't live more than 80 to 120 years.

Across the state, 98 percent of aspen stands are at least 80 years old, and 70 percent are more than 100 years old, Worrall said.

In the decline-disease scenario, inciting factors are short-term events that stress trees. The recent multi-year drought, which affected large portions of the West, is "a likely candidate for an inciting factor" in the regional aspen die-off, Worrall said.

Third in the progression are the contributing factors. These are the opportunistic insect pests and diseases that prey on weakened trees.

In the current aspen die-off, a deadly canker, two types of boring insect and an aspen bark beetle have been detected.

In some instances, the bugs and diseases have been blamed for the tree deaths. But it's possible they're just delivering the *coup de grâce*, Worrall said.

He stressed that much more work will be needed to determine if the decline disease theory is correct.

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