

Overgrown Sierra forests gulping water that could flow to Valley

BY J.N. SBRANTI

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Numerous billion-dollar proposals to create more water storage in California are competing for attention and funding during this third year of drought.

But there may be a less-expensive way to increase water flows into the Central Valley: Start thinning out the overgrown Sierra Nevada forests.

Cutting down trees may not sound environmentally friendly, but researchers from UC Merced and elsewhere think that may be just what's needed to restore forest health and increase water runoff.

"It's one of the lower-cost options (to increase California's water supply) ... and it also would reduce the probability of big destructive fires," said Roger Bales, a UC Merced engineering professor who specializes in mountain hydrology. "There could be measurable and significant gains" – a hypothesized 9 percent increase in snowmelt runoff – if the forests are properly thinned.

Bales and his fellow researchers may get a chance to prove their theory in the Stanislaus National Forest, where talks have begun with the U.S. Forest Service to launch a 10,000-acre thinning demonstration project.

If all goes as suggested, that project could increase water flows, decrease destructive fires, create jobs and improve the health of the remaining trees.

"We may not be able to help with the drought this year, but we might be able to help the next generations," said Bales, who also is the academic director of the Sierra Nevada Research Institute.

To do that will require "a little bit of forest engineering ... to shift the predominant species from fir back to pine," Bales explained.

Much of the underbrush clogging the forests also needs to be removed, which Bales said is something small fires used to do naturally.

That changed about a century ago when fire suppression policies became the norm.

“There’s about double the biomass in the forest now,” Bales said. “Instead of a few big trees, there are a lot of smaller trees.”

All those extra trees gulp water that once would have flowed to the Valley. They also prevent snow from hitting the ground and melting into the soil. A lot of snow gets caught in the tree canopy, where it evaporates.

The plan is to thin the overgrowth to create gaps in the forest floor so more snow can collect on the ground – as it did in centuries past.

“There are 2½-to-3-times more trees today than there used to be, and they’re sucking up water,” explained Eric Knapp, a research ecologist with the U.S. Forest Service’s Pacific Southwest Research Station. “A lot of the Sierra is in pretty bad shape” because it’s so overgrown.

Knapp does research in the Stanislaus-Tuolumne Experimental Forest, within the Stanislaus National Forest next to Pinecrest Lake. The Forest Service began thinning trees there in 2011.

“We know the thinning has had some effect” on water flows, Knapp said.

Capturing snowmelt is crucial to California’s economic health, said Mitch Dion, general manager of the Calaveras County Water District. He calls the Sierra snowpack “the state’s biggest reservoir.”

“Climate change is upon us,” Dion warned. “The snowline is moving up the hill.” He said forest overgrowth is worsening the impact of that change by reducing water flows.

The region is a very different place now than it was 150 years ago when “you could have ridden your horse through the Sierra forests with relative ease,” Dion said. Now, he said, it is “jungle-like with all the underbrush.”

Dion said the U.S. Forest Service has been planning to thin the Stanislaus National Forest, but now the idea is to team with Bales and his researchers to “put the science into the project ... to make sure our results are credible.”

Dion said doing that may cost an extra \$450,000 to \$500,000, but it could enable Bales and his people to scientifically measure the results on water flow.

That could prove – or disprove – Bales’ water flow theory. If tree thinning produces the expected results, the project could be replicated elsewhere to bolster runoff throughout the Sierra.

Thinning at the demonstration site could start in 2016, and it would take more than two years to complete.

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