



Innovative Forestry: New Equipment, Big Data Potential

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The forest products industry has long worked together with the U.S. Forest Service to reduce wildfire risk across the landscape.

It's a relationship with multiple benefits. Industry is essential to reducing vegetation in overstocked forests which increases forest health, lowers wildfire risk to communities, and contributes nearly [\\$39 billion and 177,000 jobs](#) to California's economy annually.

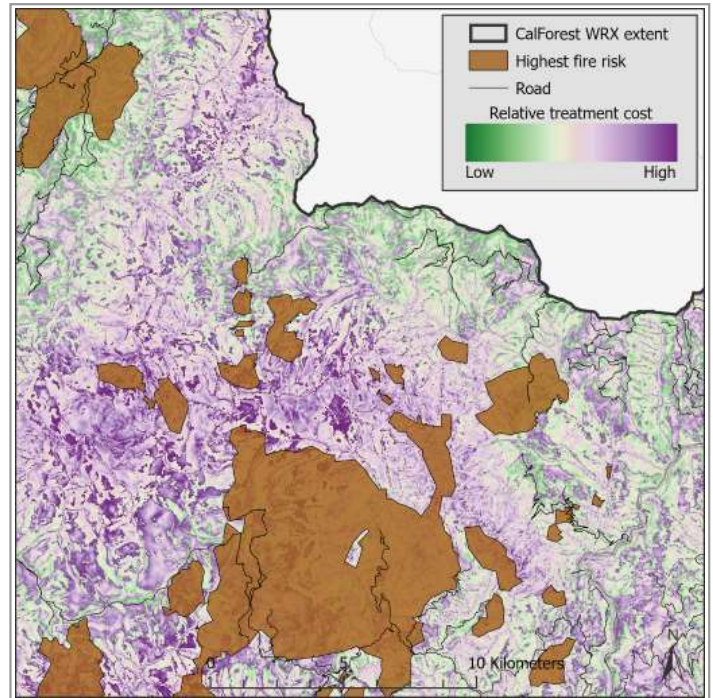
But it is not so easy to provide these benefits in some landscapes. Some sections of forests are filled with species and sizes of trees that have little commercial value, the stand location may be far from existing roads or mills, or on steep terrain.

In northern California, steep terrain is a common challenge. The Forest Service — along with private, nonprofit, academic, tribal and government partners across Humboldt County — are exploring how to remove vegetation from these most difficult areas.

A Smaller Footprint

Steep slopes are notoriously hard to operate on and easier for heavy equipment to damage.

“We must be very careful to avoid soil disturbance when operating on steep slopes where churning and compaction from tracks might tear up the forest floor,” said Mike Carroll, logging superintendent at Green Diamond Resource Company, with 25 years of experience in the forest products industry.



A section of the CalForest WRX relative treatment cost model overlaid with highest fire risk locations. Areas with steeper slopes further from roads and mills appear as purple, while those most accessible are green. (USDA Forest Service photo by Andrew Avitt)

Fortunately, recent innovations in timber harvesting machinery are mitigating these hurdles. Green Diamond met with [Six Rivers National Forest](#) employees and partners from across Humboldt County to demo the Ponsse harvesting equipment, that can operate on slopes up to 60%.

As the machine moves through the forest, its boom can select and cut trees up to 25 feet to either side. The log is then cut down to size, leaving the low value material like tops of the trees and small limbs, to be moved in front of the machine. This creates a running surface for the equipment to move across, protecting the forest floor beneath

“This equipment changes the calculus of the amount of work that we can get done while also limiting environmental effects,” said Carroll.



New equipment designs have made it possible to operate on slopes like never before. Now entire segments of the landscape that were not cost efficient for companies in the past are traversable potential with this new equipment. (USDA Forest Service Photo)

reducing wildfire risk to communities.

“Incentivizing businesses to do the much-needed work that will protect communities. It's a business model that will work for companies and that will also support healthy forests. It's an exciting prospect,” said Collier.

High-tech equipment, science and geospatial-data-driven models may very well be a part of future forest management.

Data Modeling & the Opportunities

Chris Collier, a graduate student in the Department of Wildlife at Humboldt State University, was there to witness the machineries increased capabilities.

“They showed us an area that had been treated, and it looked really good,” said Collier. “The spacing of the trees and how little of an impact that equipment had on the ground was cool to see — there was almost no erosion. I couldn't even tell where they had been until they had pointed it out.”

Collier is not as interested in the mechanics of this state-of-the-art machinery as he is the land management opportunities it could create.

He is working with Assistant Professor Ho Yi Wan to map areas that can now be treated using the equipment, and the how those areas intersect with

Carroll has seen a lot of forestry practices and equipment come and go over the years, but there is a significant and optimistic trend, he said.

“Our grandfathers had to carve out a lot of Mother Nature for this country to be built, they didn't give much thought to the harm they were doing. But with each generation we have new ways of looking at and understanding our ecosystem, how to do what’s best for nature, and for industry.”

The Innovative Finance for National Forests (IFNF) program is excited to announce the third round of IFNF awards. The program supports the development and implementation of innovative finance models using private and public capital other than U.S. Forest Service annual appropriations. Awarded projects will enhance the resilience of the National Forest System and deliver commensurate returns to stakeholders. The IFNF program is co-managed by the U.S. Forest Service and U.S. Endowment for Forestry and Communities.

The Requests for Proposals to review submission and application details is housed on the [U.S. Endowment](#) website. Applications opened on Nov. 21, 2022, and are due March 6, 2023.

The collaborative known as [CalForest WRX Alliance](#) was recently awarded an [Innovative Finance for National Forest grant](#). This grant helps explore financial models that encourage the right land management practice at the appropriate scale, in areas that are most cost prohibitive.



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