



INTO THE FOREST

A search for value in forest restoration
in Northern California (May 2020)





"There can be no purpose more inspiring than to begin the age of restoration, reweaving the wondrous diversity of life that still surrounds us." (E.O. Wilson)

Healthy (well-managed) forests are one of our most valuable natural resources

Forests store carbon and fight global warming, they provide water, food, medicine, timber and livelihood, they prevent natural disasters and produce cleaner air. They provide habitats for biodiversity and they improve mental health.

But we struggle to find ways to quantify and monetize that value; Solving this challenge could fund much of the potential 2 billion hectares of forest restoration work needed.

THIS LAND IS YOUR LAND.

You are an incredibly wealthy person!

You have people.
An army of highly educated and trained public servants work tirelessly on your behalf to ensure that your public lands are taken care of and are in the best condition possible for your visit.

You own property.
As an American Citizen, you are the largest land owner in the country. Your vast land holdings truly stretch from sea to shining sea encompassing 640,000,000 Acres about 28% of all of the land in the country.

You have hidden wealth.
Like many wealthy people, you have hidden wealth that not everyone knows about. Yes, your land has billions of dollars in gold on it, but your true gems are your lakes that sparkle like diamonds, the emerald green rivers that offer amazing fishing and the smiles of the friends you share your land with. You are truly wealthy!

TAHOE NATIONAL FOREST
American River Ranger District

Caring for the Land and Serving People

We visited 12 restoration sites (within the Tahoe, Plumas, and El Dorado National Forests) and spoke to 30+ forestry professionals to learn about how to scale up forest restoration. The main takeaway was: make forest restoration more financially valuable.



Funding is one of the most significant constraints to scaling up forest restoration: the average total investment for the 12 projects we visited was over \$1M



Context: Forest restoration isn't just about planting trees

Restoration is about returning a forest back to its natural ecosystem. While restoration usually involves planting trees (e.g., on land that has been deforested), in California much of the forest has actually become too thick (and unhealthy). This is because we suppressed fire for 100 years, and fire is actually a natural part of a regenerative ecosystem.

As a result, the forest has become overly dense, trees don't reach their full height or size, and the forest has become a high-risk for catastrophic wildfire.

Much of the restoration work in CA, then, focuses on returning the forest to its natural (pre-logging) state through fuel reduction (removing small and unhealthy trees), prescribed fires, and replanting natural tree species that have struggled to thrive.



Top: Cal Fire Chief Steve Garcia (left) and his colleague survey an active prescribed burn on private land in Colfax. Bottom: Forester Rich Adams (US Forest Service) reviews a prescribed burn in Burton Creek State Park (Tahoe National Forest)

Carbon credits can provide critical funding for forest restoration

Carbon credits are one way project developers can quantify and monetize the value forest restoration provides. For example, the Conservation Fund has earned nearly \$60M in carbon credits across 4 restoration projects. "It's made all the difference in the world, for our ability to do what we're doing," their California Project Manager said.

Another promising example is the Family Forest Carbon Program recently launched by the Nature Conservancy (TNC) and American Forest Foundation, with Amazon as their leading carbon credit investor.



Catastrophic wildfires, such as the 97,000 acre King Fire (above), release billions of tons of carbon each year. Restoring this land will cost millions, and carbon credits can help fund this work. But restoration work (e.g., fuel reduction, prescribed burns, replanting fire-resistant tree species) can also be done in forests where wildfire hasn't yet reached, to return that land to its natural ecosystem and make it wildfire resistant.



There are many challenges facing carbon credits



Firstly, the process to register for carbon credits is not transparent. As one project developer at French Meadows (a multimillion, 30K acre restoration project) shared: "We have been facing challenges about how to actually enter the carbon market and don't have much guidance about that process... We are definitely interested in exploring further."



As a result, only 5 of the 21 projects we visited or spoke to had received carbon credit revenue.

Secondly, there are many valid concerns that investors have about the quality of existing carbon credit projects.



Business can play an increasing role in forest restoration

Many organizations are beginning to see the value of business principles within their strategies and operations. "At first there was a lot of resistance," one project developer said, when talking about the business tools they leveraged to mobilize \$60M in carbon credit revenue. "It's not because leadership is opposed to it, but because there is a learning curve." Business and technical assistance could play a major role in helping access carbon credit revenue, he said.

Images are from L.A. Moran Reforestation Center, which is a nursery and (the only state-run) seed bank in California. After 88 years in operation, they had to close the facility in 2003 due to budget cuts. They recently reopened and are using novel business principles to earn needed revenue to fund their operations.

Tech can play a growing role in forest restoration

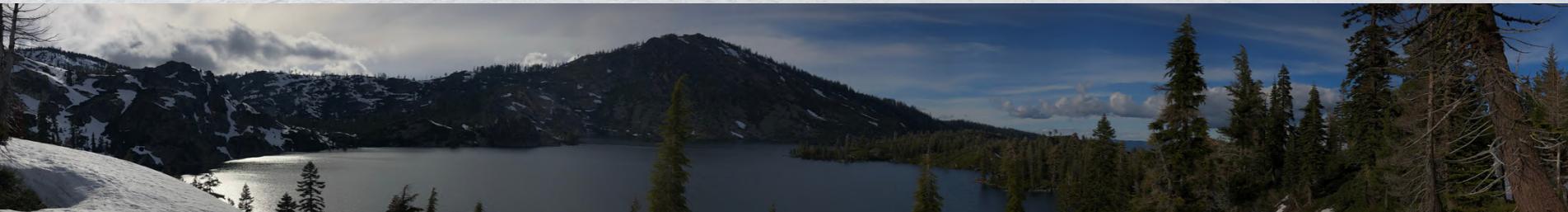
Several projects we visited have piloted emerging technologies (e.g., managing forests with big data and novel software, measuring forest health with remote sensing and satellite imagery, planting trees with drones): They believe these tools can play a growing role in streamlining forest restoration work and in overcoming the quality challenges facing carbon credit verification and monitoring (which has historically been a very labor intensive and expensive process).



There are several emerging ways to monetize forest work

Water availability is one possibility with exciting potential. A healthier forest means there is more water to flow into watersheds, which is increasingly important in drought-prone places like CA.

Other emerging opportunities include biochar (soil amendment), agroforestry (food products), biomass, air quality and mental health.



We visited three projects (French Meadows, Yuba Project and Caples Creek, pictured above) that have already been able to monetize and fund forest restoration through water improvement, via investments from Fortune 500 beverage companies (Coca Cola, Coors) and via government water agencies. While this is very promising, there are still significant challenges to scale this up, as the protocols to quantify water improvement are still very nascent.



The ability to monetize the forest's value depends on existing infrastructure

Project developers are often not able to monetize forest products (e.g., timber, biomass, biochar, firewood, agroforestry) because their forest restoration site is too remote to access the processing facilities. E.g., In Northern CA, there is only one major mill, Sierra Pacific Industries (SPI), which is often too far away to economically transport forest products.

Without accessible infrastructure, project developers have to throw their forest products into piles for burning (as pictured here): Not only does this eliminate revenue opportunities, it also releases the harmful carbon back into the atmosphere.



Timber can play an important role in monetizing the value of the forest, when harvested sustainably

When there is an accessible mill, revenue from timber plays a vital role in funding forest restoration. If the timber is used for long term wood products (furniture, lumber), this can also lead to long term carbon storage.

In California, project developers focus on removing a small percentage of unhealthy or young trees (e.g., white fir) that out-compete native and fire resistant species (e.g., sugar pine).



Unhealthy white fir trees marked for removal by foresters in French Meadows



White fir, incense cedar and Jeffrey pine logs at the Deer Creek restoration site waiting to be loaded and trucked to the closest mill (SPI in Lincoln). When the forest is too dense, each individual tree fails to reach its full height and health, making it weaker and more prone to catastrophic wildfire. Removing young or unhealthy trees allows for the older trees to grow stronger and healthier, helping restore a more sustainable and fire-resistant forest.

Need to create public awareness about forest health and management

In California, there are many misperceptions about timber harvesting, fire suppression and even the role the forest can play in water availability and food security.

According to the Nature Conservancy (TNC), US Forest Service and others, helping the public perception evolve could also help generate more support and funding for forest restoration.



Individuals could help monetize forest restoration by: investing in carbon offsets, purchasing FSC-certified wood products (instead of metal or concrete products), purchasing products from companies that have made public carbon-neutral commitments (and are making tangible progress towards that goal), managing their own land sustainably, voting for a carbon offset tax and other Green New Deal initiatives, etc.

Partnerships are critical to scale and amplify forest restoration

Many of the most exciting projects we visited or discussed involved multilayered partnerships, with various partners contributing in unique ways (e.g., forestry expertise, HR, technology, funding, business acumen, markets, etc.)



Examples include Yuba Project (pictured above, involving TNC, National Forest Foundation, US Forest Service, Cal Fire, Blue Forest, Yuba Water); French Meadows Restoration (TNC, American River Conservancy, US Forest Service, Cal Fire, Placer Water, SNC); and Family Forest Carbon Program (American Forest Foundation, TNC)

A group of five people is walking through a sunlit forest. The foreground is filled with tall, golden-brown grass. The background is a dense forest of large, leafy trees. The sun is shining brightly through the trees, creating a lens flare effect. The overall scene is bright and natural.

Join us as we explore what more can be done to
increase forest restoration at theunderstory.me