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March 29, 2022

The Honorable Ro Khanna
Chairman
House Oversight Subcommittee on Environment
2157 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Ralph Norman
Ranking Member
House Oversight Subcommittee on Environment
2105 Rayburn House Office Building
Washington D.C. 20510

Re: Fighting Fire with Fire: Evaluating the Role of Forest Management in Reducing Catastrophic Wildfires

Dear Chairman, Ranking Member, Members and Staff;

On March 16th, 2022 we attended both in-person and virtually the Subcommittee on Environment's hearing, 'Fighting Fire with Fire'. We at the John Muir Project appreciate the effort and timeliness of this hearing, and wanted to provide some context for certain points during said hearing for the record.

We will cover four areas of concern that were brought up:

- Dead trees
- Time since fire
- 'Thinning'
- Post-fire natural regeneration

During the first panel, Chief Moore failed to acknowledge how naturally resilient forest ecosystems are or how mechanical thinning and other so-called "management" through tree removal/logging disrupts this natural resilience. In addition, the importance of forest ecosystems was also undermined by the demonization of natural processes that have shaped these ecosystems over hundreds of millions of years and the desperate claim that forests are a problem because of fire. As a result, Chief Moore focused on logging under the guise of fuel reduction as a way to build resiliency even when such activities disrupt resiliency by: releasing more carbon into the atmosphere while removing the very trees and vegetation

that are actively storing and sequestering carbon; eliminating wildlife habitat and damaging the function and productivity of our forest ecosystems; causing chronic runoff which negatively impacts aquatic ecosystems and downstream water users; increasing, rather than lessening, how intensely fires burn and how fast they spread; and by costing taxpayers billions of dollars in subsidies. In order to build resilience for our economy, climate and ecosystems we must turn away from false solutions and business as usual, to actions which stimulate the economy while protecting people and communities, preserving ecosystems and mitigating the climate crisis.

1. (Dead) Trees

Forests are complex ecosystems that depend on all parts of the lifecycle of vegetation. Dead trees and downed logs decay extremely slowly (decades to a century or more), and eventually return their nutrients to the soil, which helps maintain the productivity and carbon sequestration capacity of the forest. They are therefore necessary to maintaining healthy, resilient forest ecosystems. The problem is that federal and state agencies use theoretical models to estimate carbon emissions from forest fires and dead trees, but the models wildly exaggerate carbon emissions from decay and fire.

We have empirical research which has investigated whether the number of dead trees in a given area drives fire behavior. The most comprehensive scientific studies (including one prepared by NASA) found that forests with more dead trees burn *the same* as other forests or burn at *lower* intensities [1]. While it may seem counterintuitive, soon after trees die (whether from drought or beetle activity), they shed their needles and small branches which fall to the ground and decay into soil and there is no real mechanism to carry flames; in addition, when dead trees fall they soak up huge amounts of water, like giant sponges, and hold 25 times more water per unit of cubic area than the surrounding soil, even during a drought.

2. Time Sincer Fire

Despite widespread public misconceptions about long-unburned forests being “overgrown” or being prone to higher fire severity due to “fuel accumulation”, the overwhelming weight of scientific evidence contradicts this assumption. In fact, long-unburned forests tend to burn at equal or lower severities, due to the cool, moist microclimate from denser, mature forests with higher canopy cover [2].

3. ‘Thinning’, aka forest management, increases CO2 emissions and fire intensity, degrades forest ecosystems, and exacerbates climate change

Logging, whether you call it thinning, vegetation management, forest management or biomass removal, actually makes things worse in terms of wildfires and climate change [3,4]. It is simply another part of the carbon economy.

Logging in U.S. forests emits 617 million tons of CO2 annually. Further, logging involves transportation of trucks and machinery across long distances between the forest and the mill. For every ton of carbon emitted from logging, an additional 17.2% (106 million tons of CO2) is emitted from fossil fuel consumption to support transportation, extraction, and processing of wood. In fact, annual CO2 emissions from logging in U.S. forests are comparable to yearly U.S. emissions from burning coal, and commercial “thinning” emits 3 times more carbon per acre than wildfire alone [3].

Most of the carbon in trees that are logged quickly ends up in the atmosphere, with only a small portion ending up being stored in wood products. Logging also removes nutrients from forests and compacts soils, reducing the overall productivity and function of the forest ecosystem as well as its carbon sequestration and storage capacity [3,4].

Maintaining this current course of forest "management" on public lands is already contributing to our climate and biodiversity crises. It is exacerbating the impacts of climate change not just in localized areas, but across the country, increasing inequities and disproportionately affecting people and communities who do not have the means to adapt to climate change impacts. Increasing the pace and scale of forest management and eliminating laws and regulations to streamline these activities would exacerbate climate change, not mitigate it, and is inconsistent with the goals of building back better.

4. Natural Post-fire Forest Regeneration

Forests naturally regenerate very well even after the biggest fires [5]. A confounding aspect of the concept of "reforestation" is that it is almost exclusively preceded by environmentally damaging, carbon emitting logging--mostly post-fire clearcutting. The US Forest Service and other federal land management agencies are currently in the commercial logging business, selling public timber to private logging companies and keeping most of the revenue to pad their agency budgets. Logging activities, especially after fires, include clearcutting on public lands, and the agencies are required to plant trees within several years after they clear-cut. However, appropriated funding for tree planting is limited, which then limits the amount of clearcutting that occurs on public lands. Increased funding for tree planting, or "reforestation" on National Forests and other public lands would, in practical effect, increase funding for clearcutting, since clearcutting and tree planting are inextricably linked. Ironically, clearcutting after forest fires actually kills most of the natural forest regeneration, as the conifer seedlings and saplings are crushed under the treads of logging machinery [5]. So, rather than actually contributing to drawing carbon out of the atmosphere, spending more money on reforestation on public lands would actually increase logging, which would increase carbon emissions while preventing the forests from reaching their full carbon storage potential, thus exacerbating climate change.

We hope that you have found the above information helpful and we urge you to consider the foregoing, as you identify new priorities for federal public lands. Please let us know if you have any questions or would like more resources related to the topics discussed above.

Sincerely,

Chad Hanson, Ph.D.
Chief Scientist and Director
John Muir Project

Jennifer Mamola
D.C. Forest Protection Advocate
John Muir Project

Endnotes

1: (a) Hart, S.J., T. Schoennagel, T.T. Veblen, and T.B. Chapman. 2015. Area burned in the western United States is unaffected by recent mountain pine beetle outbreaks. Proceedings of the National Academy of Sciences of the USA 112: 4375−4380; (b) Meigs, G.W., H.S.J. Zald, J.L. Campbell, W.S. Keeton, and R.E. Kennedy. 2016. Do insect outbreaks reduce the severity of subsequent forest fires? Environmental Research Letters 11: 045008; (c) Amaranthus MP, Parrish DS, and Perry DA (1989) Decaying logs as moisture reservoirs after drought and wildfire. In: Alexander EB (ed.) Proceedings of Watershed '89: Conference on the Stewardship of Soil, Air, and Water Resources. USDA-FS Alaska Region. RIO-MB-77 191–194.

2: (a) Odion, D.C., et al. 2004. Patterns of fire severity and forest conditions in the Klamath Mountains, northwestern California. Conservation Biology 18: 927-936; (b) Odion, D.C., and C.T. Hanson. 2006. Fire severity in conifer forests of the Sierra Nevada, California. Ecosystems 9: 1177-1189; (c) Campbell, J., D. Donato, D. Azuma, and B. Law. 2007. Pyrogenic carbon emission from a large wildfire in Oregon, United States. Journal of Geophysical Research Biogeosciences 112: Article G04014; (d) Odion, D.C., and C.T. Hanson. 2008. Fire severity in the Sierra Nevada revisited: conclusions robust to further analysis. Ecosystems 11: 12-15; (e) Odion, D. C., M. A. Moritz, and D. A. DellaSala. 2010. Alternative community states maintained by fire in the Klamath Mountains, USA. Journal of Ecology 98: 96-105; (f) van Wagtendonk, J.W., K.A. van Wagtendonk, and A.E. Thode. 2012. Factors associated with the severity of intersecting fires in Yosemite National Park, California, USA. Fire Ecology 8: 11-32.

3: https://bit.ly/3BFtIAg

4:
https://johnmuirproject.org/wp-content/uploads/2020/05/200TopClimateScientistCongressProtectForestsForClimateChange13May20.pdf

5: (a) https://www.elsevier.com/books/the-ecological-importance-of-mixed-severity-fires/dellasala/978-0-12-802749-3 ; (b) https://www.kentuckypress.com/9780813181073/smokescreen/

East Bay Times

Did rare grove survive inferno?

By Lisa M. Krieger

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Relics of the past, a single stand of rare cypress trees once grew atop a small slab of sandstone on a remote, rugged ridge along the San Mateo County coast.

They were alone in the world. And then they burned up.

Is the grove forever gone? On an early March morning, two years after 2020's catastrophic CZU Lightning Complex Fire, a team of San Mateo County Parks naturalists ventured miles into the wilderness to find out. A Bay Area News Group reporter and photographer tagged along.

"We know they can regenerate after a fire," said Hannah Ormshaw, assistant director of San Mateo County Parks, who led the expedition.

"But they are so specialized, and restricted in their range, that any loss would be extreme," she said.

Setting out after sunrise, the team hiked 4 miles and 2,000 feet up an old logging road in Pescadero Creek County Park,

then dropped into deep woods, scrambling for a quarter-mile down a steep hillside littered with burned stumps and ash. The faint smell of soot still lingered in the air.

Sean Correa, a natural resource specialist from Moss Beach, kneels among trees burned by the CZU Fire at Butano Ridge in Loma Mar.

PHOTOS BY SHAE HAMMOND — STAFF PHOTOGRAPHER

A Butano cypress seed-bearing cone was burned enough to release seeds at Butano Ridge, but did the seeds germinate?

Their quest: to find survivors of the sole stand of Butano cypress, a variety of Hesperocyparis abramsiana, a small and contorted evergreen tree with cones, needle-like leaves and a bracing balsamic fragrance. If the grove perished, the team wondered, might seeds have somehow survived?

Genetically unique, the grove grew on Butano Ridge, a 1,000-foot spine of ancient marine rocks in the Santa Cruz Mountains.

“This tree is found only in this one place in the whole world,” said Jodi Mc-Graw, a biological consultant and rare plant expert. “That makes it unique, and it’s important to conserve such an extraordinarily rare species.”

Records show that the cypress grove was already mature in the early 1900s when first visited by famed Stanford botanist William Dudley, who collected its cones for his historic archive of California flora, now stored at the California Academy of Sciences. The grove’s location was lost for decades, but rediscovered in 1949.

Cypress were once much more abundant in California, flourishing when our climate was cooler and wetter. Fossil evidence shows that cypress dominated local forests.

But during the past 20 million years, as mountains were uplifted and the climate turned arid, theses vast cypress

woodlands largely vanished. The trees can't compete against tougher and more droughtresistant chaparral and coastal scrub species. They succeed only in rocky and nutrient-poor soil, where little else grows.

Now, guided by a map, the team searched for the 10-acre grove, an "arboreal island" of an estimated 5,000 trees. The trees have siblings, called Santa Cruz cypress, in four other small groves in Santa Cruz County, according to a 2009 U.S. Fish and Wildlife Service study. But the DNA code, oils and cone size in the Butano grove are distinctive.

Because these "islands" are geographically isolated, the trees have undergone gradual genetic changes to create the present-day varieties of the species, according to Ken Hickman, a wildlife researcher hired to help the cypress search.

Along the route, hopes were buoyed by the vista. The burned forest was dense with other species of young plants — ceanothus, flannel bush, peak rush rose, brittleleaf manzanita, Hickman's checkerbloom and fragrant California hedgemint — that thrive in ash and sun.

Fire is not an enemy of cypress; in fact, periodic wildfires have shaped the reproductive strategy of these trees, said David Greenberger, conservation management specialist with Golden Gate National Parks Conservancy.

Cypress germinate from seeds, tucked inside cones. The cones, which resemble little soccer balls, are held together by resin. When fire melts the resin, seeds spill out.

A fire history map shows that the grove had not burned in at least 80 years, perhaps longer, according to Hickman. Without fire, it would have died of old age, never creating the next generation. Then other species move in, replacing it.

But the team worried that the CZU Fire was no ordinary blaze. Cypress have evolved to live with low- and mixed-intensity ground blazes, not hot megafires that race through the forest canopy. Humancaused climate change and aggressive fire suppression have combined to drive unusually large and intense wildfires.

Ignited by multiple lightning strikes on Aug. 18, 2020, the CZU Fire caused trees to combust on a scale rarely seen before. The worst blaze in the area's recorded history, it roared through 86,509 acres in San Mateo and Santa Cruz counties, consuming an area nearly three times the size of the city of San Francisco.

And the fire has been followed by two unusually dry and warm winters, with little moisture to trigger germination.

After four hours of hiking, the team finally found the grove. The scene was funereal. As feared, the grove had turned to

charcoal. Skeletal trees were black and contorted.

But the ground was carpeted with thousands of tiny bright green cypress seedlings.

“Look at this one! They’re everywhere! Do you see them all?” exclaimed Hickman, stooping to study sprouts that stood only inches tall. Sunshine gleamed off their healthy needles.

Scanning the site, Ormshaw said, “this is really special. Regrowth and regeneration are taking place, on their own course.”

The team surveyed the landscape, counting plants. Over time, McGraw will monitor its health and welfare, studying whether the population expands or contracts.

These infant trees don’t guarantee the survival of the grove, cautioned Mc-Graw, who has a threeyear grant from the U.S. Fish and Wildlife Service to study the trees’ post-fire recovery.

They need rain to keep growing, she said. Because seeds only germinate after a fire, there are no second chances.

“We basically have one shot at establishing a new cohort of trees to replace all of the dead trees — and if the drought curtails that, we’ll have a reduced popu-lation,” she said.

There's an additional concern: a repeat fire. Today's youngsters won't reach reproductive age for at least a decade. For the grove to endure, it must live long enough to create seeds. Another fire could be catastrophic.

But if the young trees survive, the CZU Fire will have given the rare old grove a new lease on life.

"Because the adult trees all died," Greenberger said, "now the seedlings have lots of light, and lots of open soil."

"That's by design," he said. "That's how their life works."

A Butano cypress grows at Butano Ridge in Loma Mar, the only place on Earth this type of cypress grows.

SHAE HAMMOND — STAFF PHOTOGRAPHER