

CARY SCIENCE CONVERSATION

VIRTUAL EVENT

Forest Carbon Offsets: Too Good to be True?

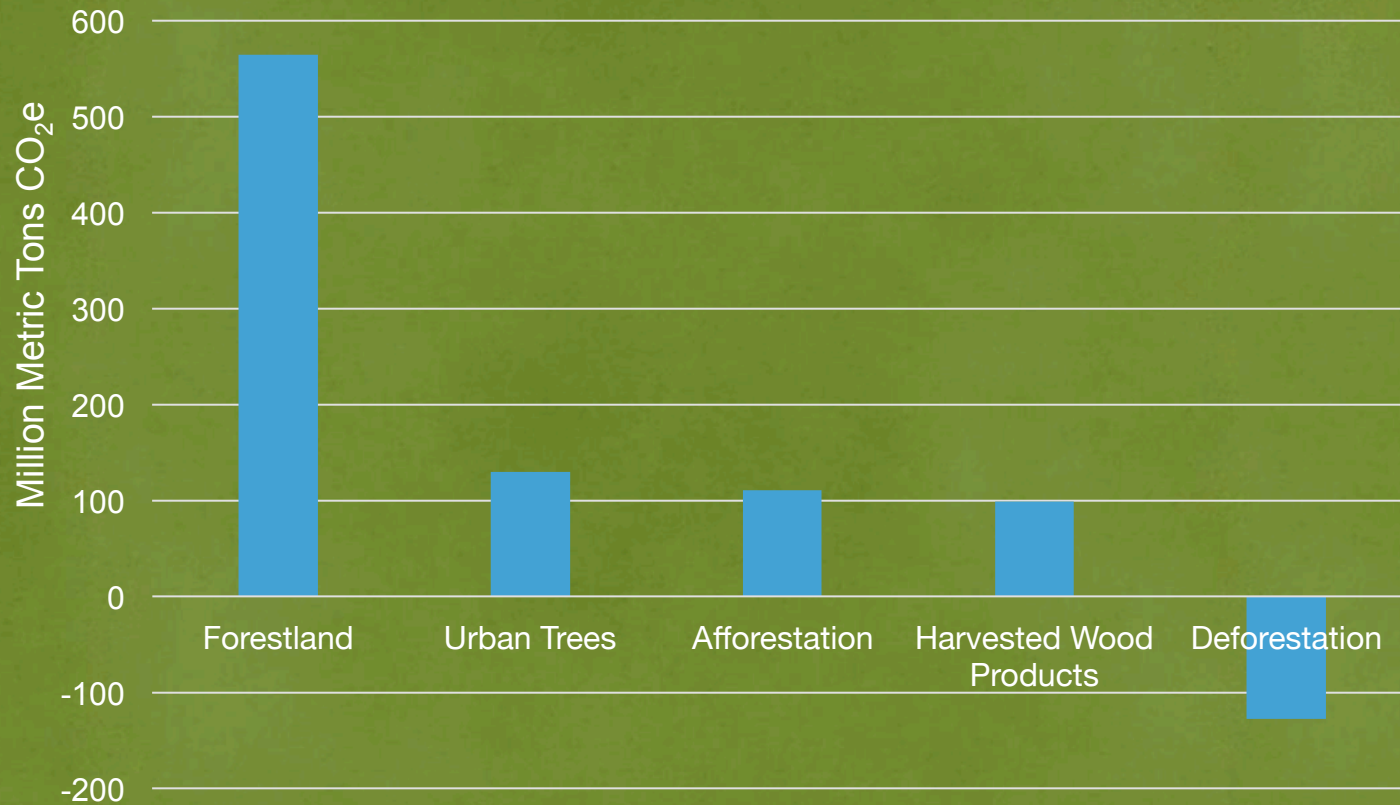
Presented by

Drs. Charles Canham and Joshua Ginsberg

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HOW MUCH CARBON DO US FORESTS STORE EACH YEAR?

2018 net flux of CO₂e in US forests, urban trees, and harvested wood products



In 2018, the 691 million acres of US forestland sequestered **564.5 million tons CO₂e**

Net sequestration across all 5 categories **offsets 11%** of total US greenhouse gas emissions annually

Source: Domke et al. (2020) USDA Resource Update FS-227

NOT ALL US FORESTLAND IS A CARBON SINK

Eastern US

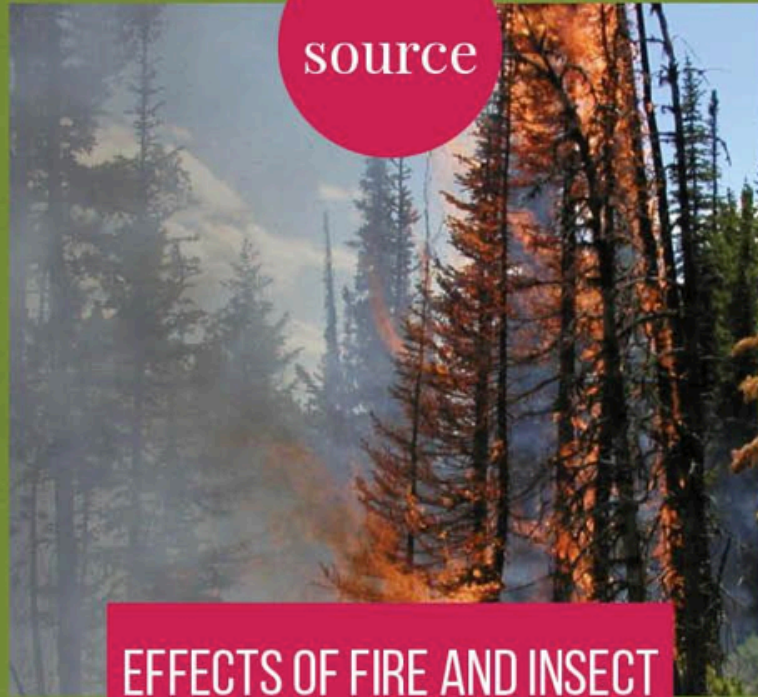
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=85%
OF TOTAL FORESTLAND
SEQUESTRATION

Rocky Mountain states

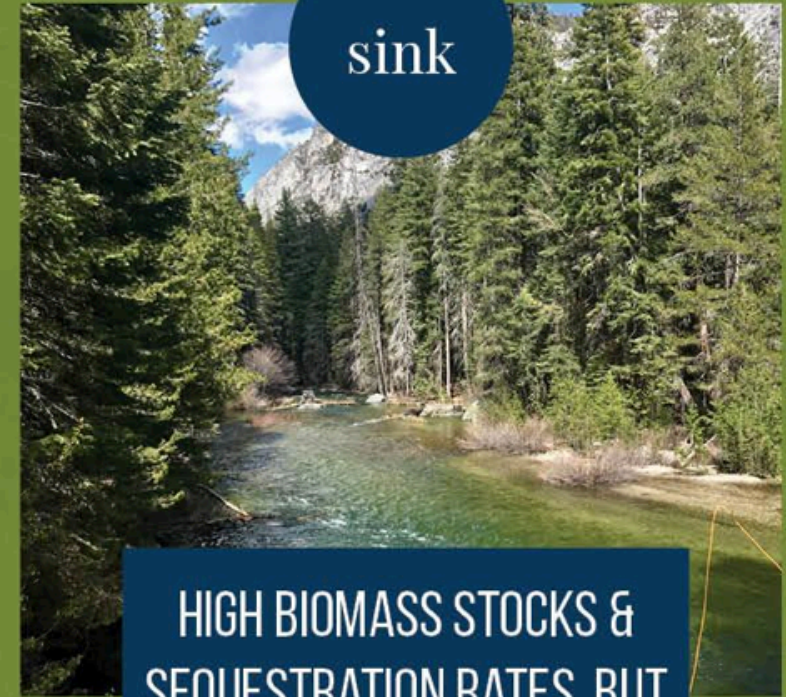
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EFFECTS OF FIRE AND INSECT
DAMAGE

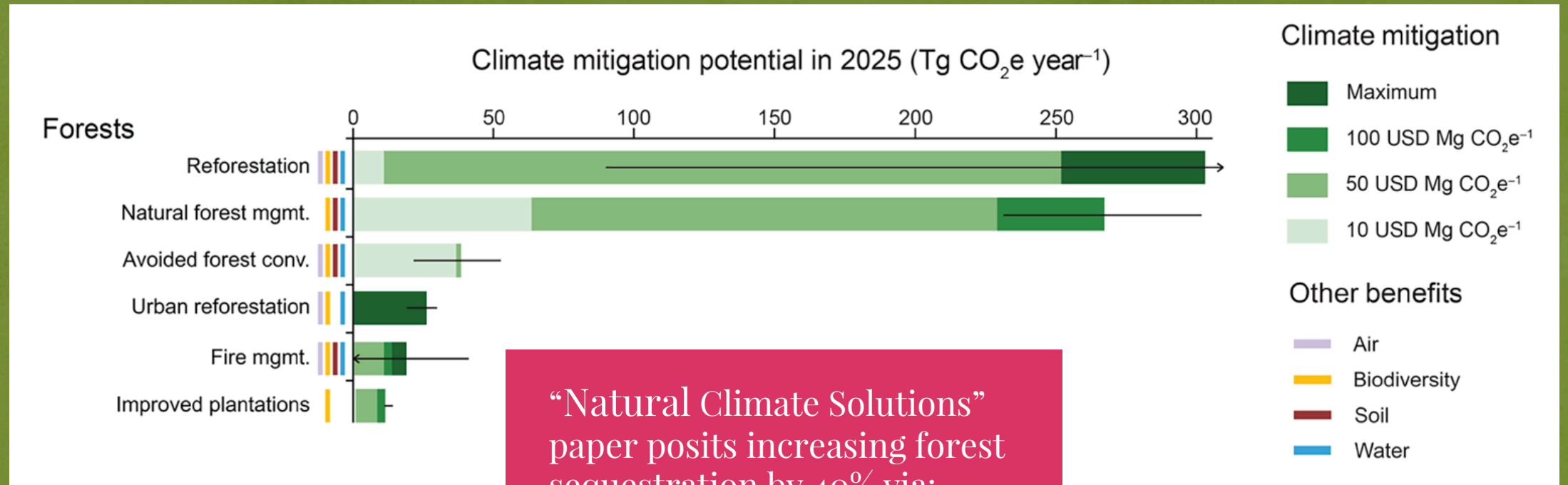
Pacific Coast

sink



HIGH BIOMASS STOCKS &
SEQUESTRATION RATES, BUT
THREATENED BY FIRE

“NATURAL CLIMATE SOLUTIONS”: UNREALISTIC DEMANDS ON OUR FORESTS?



“Natural Climate Solutions” paper posits increasing forest sequestration by 40% via:

Source: Fargione et al. 2018, Science Advances

Raising the price of forest carbon credit from ~\$10 to ~\$50 a ton

Halting all harvests on private non-plantation forestland across the US

Making up the lost harvest through reforestation & thinning fire-prone forests in the west

MONETIZING FOREST CARBON OFFSETS

Emergence of a booming carbon offset market

REGISTRIES



Certify credits on both voluntary and compliance markets

Develop standardized methods for calculating the offsets generated by a very wide range of activities (not just forestry)

3 KEY STANDARDS FOR CARBON CREDITS

ADDITIONALITY



Credits counted **only** for **additional** sequestration that happens above what would occur in the absence of the deal

NO LEAKAGE



Harvest reduction to produce new offsets on one property doesn't drive increased harvests elsewhere

PERMANENCE



CO_2 removed from the atmosphere stays out of the atmosphere indefinitely

CARBON CREDITS IN PRACTICE

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These Trees Are Not What They Seem

How the Nature Conservancy, the world's biggest environmental group, became a dealer of meaningless carbon offsets.

By Ben Elgin
Published: December 9, 2020, 5:00 AM | Updated: December 9, 2020, 3:15 PM

Dec. 9, 2020

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Rethinking forest carbon offsets

By Dr. Charles D. Canham

A critical examination of markets for forest carbon offsets in the United States suggests that offset deals provide little if any true "additionality" that enhances rates of forest carbon sequestration, and that the majority of credits sold on those markets, particularly for credits based on unrealistic baselines, provide no real offset to greenhouse gas emissions at all. The flaws in the markets are structural and deep, and may be irredeemable.

DONATE

May 19, 2021

WHAT IS TRULY ADDITIONAL?

THE IMPORTANCE OF THE BUSINESS-AS-USUAL BASELINE

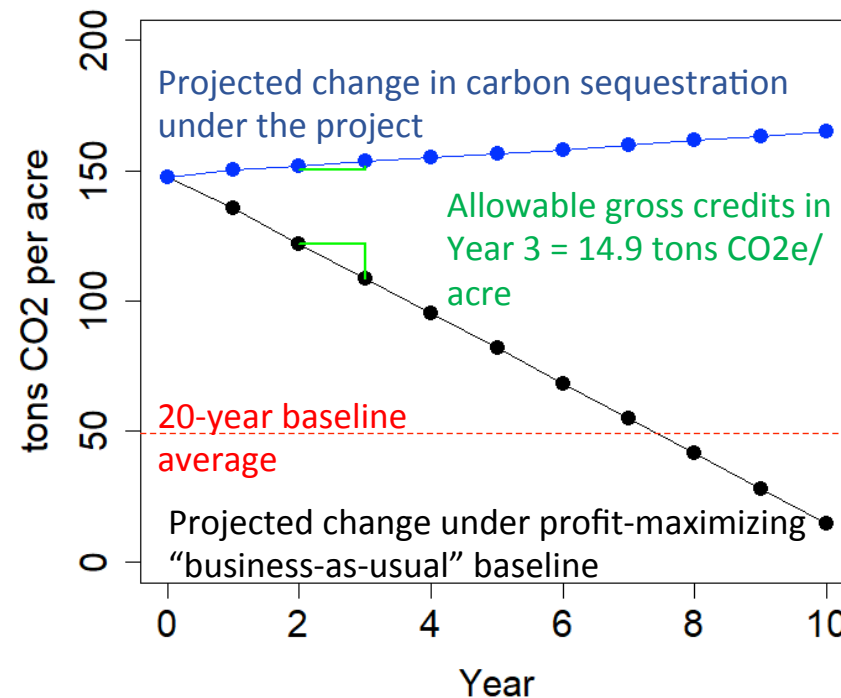
THE CALCULATION

Baseline - forest biomass is reduced by 90% in the first 10 years

“Gross” credits - reduced by 55% to allow for leakage (40%) and disturbances (15%)

Tradeable credits in first 7 years = 196,834 tons from 4,439 acres

Tradeable credits in next 3 years = 11,178 tons



THE RESULT

Project sells credits for ~ 197,000 tons over the first 7 years

But only 7,900 credits are expected from growth of current forests over the same period

96%

Credits sold due to the wildly unrealistic baseline calculation

REALITY CHECK: TRUE POTENTIAL ADDITIONALITY



	CO ₂ E/ACRE
50 yr average net sequestration given the actual mix of forests and current harvest practices	1.7 TONS
Potential sequestration if all harvests were halted	2.3 TONS
Potential “additional” sequestration	0.57 TONS
Subtract 40% for leakage	0.37 TONS
Subtract 15% for disturbance	0.26 TONS

Net proceeds per acre (assuming 20% brokerage fee, and \$4/acre compliance)

@ \$15/TON = **\$0.94**

@ \$25/TON = \$1.10

@ \$50/TON = \$6.20

UNINTENDED CONSEQUENCES OF US FOREST CARBON OFFSET MARKETS?



POLLUTION CONTINUES IN VULNERABLE COMMUNITIES



DRIVES FOREST PRODUCTS INDUSTRY OVERSEAS

ACHIEVING NET ZERO:

WHAT ROLE SHOULD FORESTS PLAY IN A CARBON NEUTRAL, SUSTAINABLE WORLD?



WHAT CAN YOU DO?

Corporations/Businesses



Purchase legitimate carbon credits

Forest Owners



Evaluate whether joining the forest carbon market is of net benefit to attaining global carbon reduction goals

Use Your Voice



Demand transparency in net zero goals and in the methods employed for valuing carbon credit projects