Sustaining Forests While Saving CO2 with Wood Products

in

Wood at Work 2020

Sustainable Wood for Cities Virtual Roundtable

December 10, 2020

10 AM -2 PM EST

Chad Oliver

Professor Emeritus

School of the Environment

Yale University

chad. oliver@yale.edu

CORRIM
Consortium for Research on Renewable Industrial Materials

Begun 1998
Website: www.corrim.org

Institutional Members:

Voting Institutions

1. State University of New York (SUNY)
2. Oregon State University (OSU)
3. University of Tennessee (UT)
4. University of Idaho (UI)
5. University of Washington (UW)
6. FPInnovations
7. Brooks Forest Products Center, Virginia Tech (VPI)
8. FNR, Purdue University
9. University of Maine (UMaine)
10. State University of New York (SUNY)
11. APA, The Engineered Wood Association
12. WWPA (Western Wood Products Association)
13. Global Institute of Sustainable Forestry, Yale University
14. Louisiana State University (LSU)
15. Northern Arizona University (NAU)
16. Washington State University (WSU)
17. University of Tennessee (UT)
18. University of Washington (UW)
19. CPA (Composite Panel Association)
20. North Carolina State University (NC State)
21. Mississippi State University
22. Penn State University
23. University of Minnesota

CORRIM Advisers/Cooperators

24. USDA Forest Service, Forest Product Laboratory
25. Navarro Research & Engineering, Inc.
    US Department of Energy Golden Field Office
26. University of Washington (UW)
27. American Wood Council (AWC)
28. American Wood Council (AWC)

Similar activities in Other Countries

Outputs:

- **20 years of Life Cycle Inventory (LCI) data collected across U.S.A. & many products. Life Cycle Assessments of GHG, GWP, particulate matter, carcinogens compatible with international LCA standards (ISO14044 2006)**
- **LCA on material and energy inputs and outputs affecting CO2 for every stage of forest growth, wood production, and end uses.**

70 MJ FF/m2 used

3 kg CO2/m2 saved

^^516 MJ FF/m2

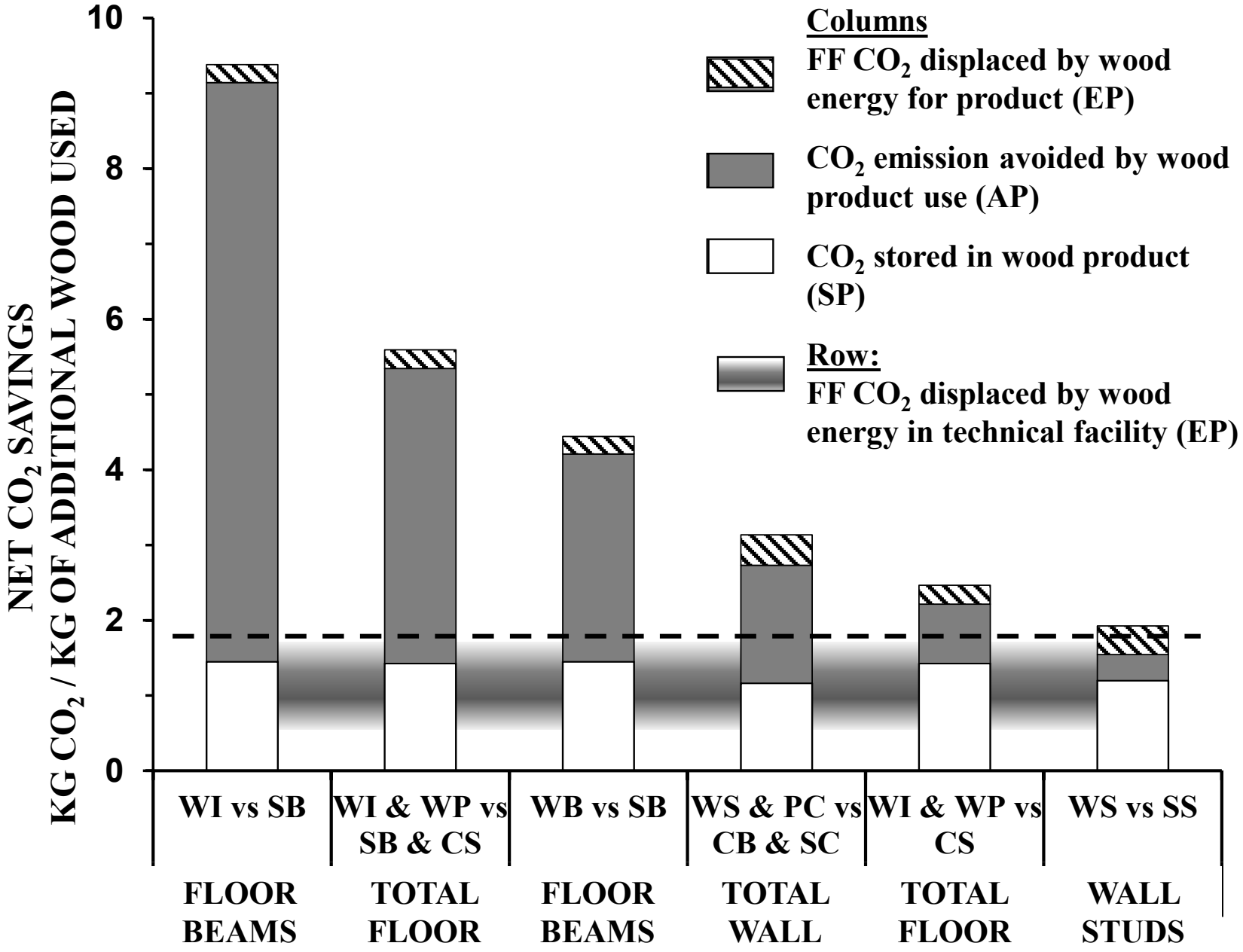
40 kg CO2/m2 emitted

80 MJ FF/m2 used

13 kg CO2/m2 saved

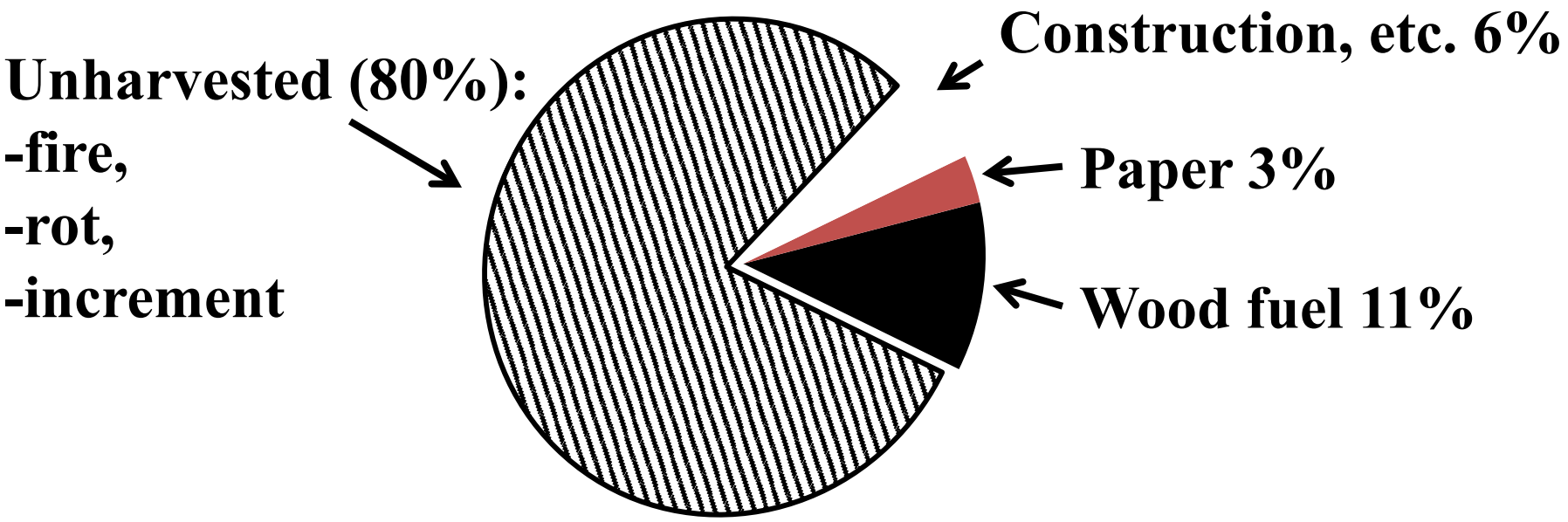
806 MJ FF/m2

67 kg CO2/m2 emitted>>



Oliver, C.D., Nassar, N.L., Lippke, B.R., McCarter, J.B., 2014. Carbon, fossil fuel, and biodiversity mitigation with wood and forests. Journal of Sustainable Forestry 33: 248-275.

Fate of annual, global potential wood growth

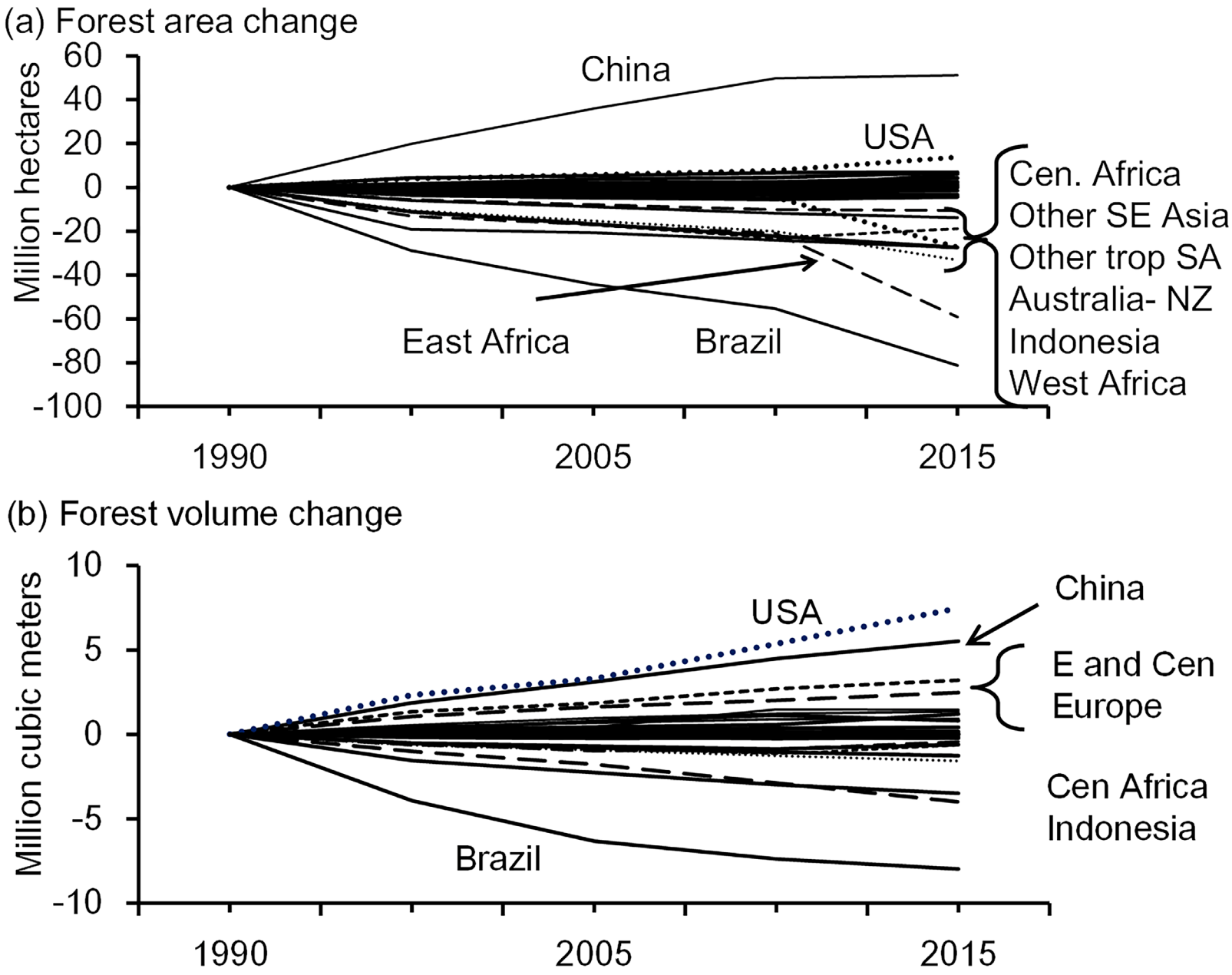


Oliver, C.D., and F.A.Oliver. 2018. Global Resources and the Environment. Cambridge University Press.

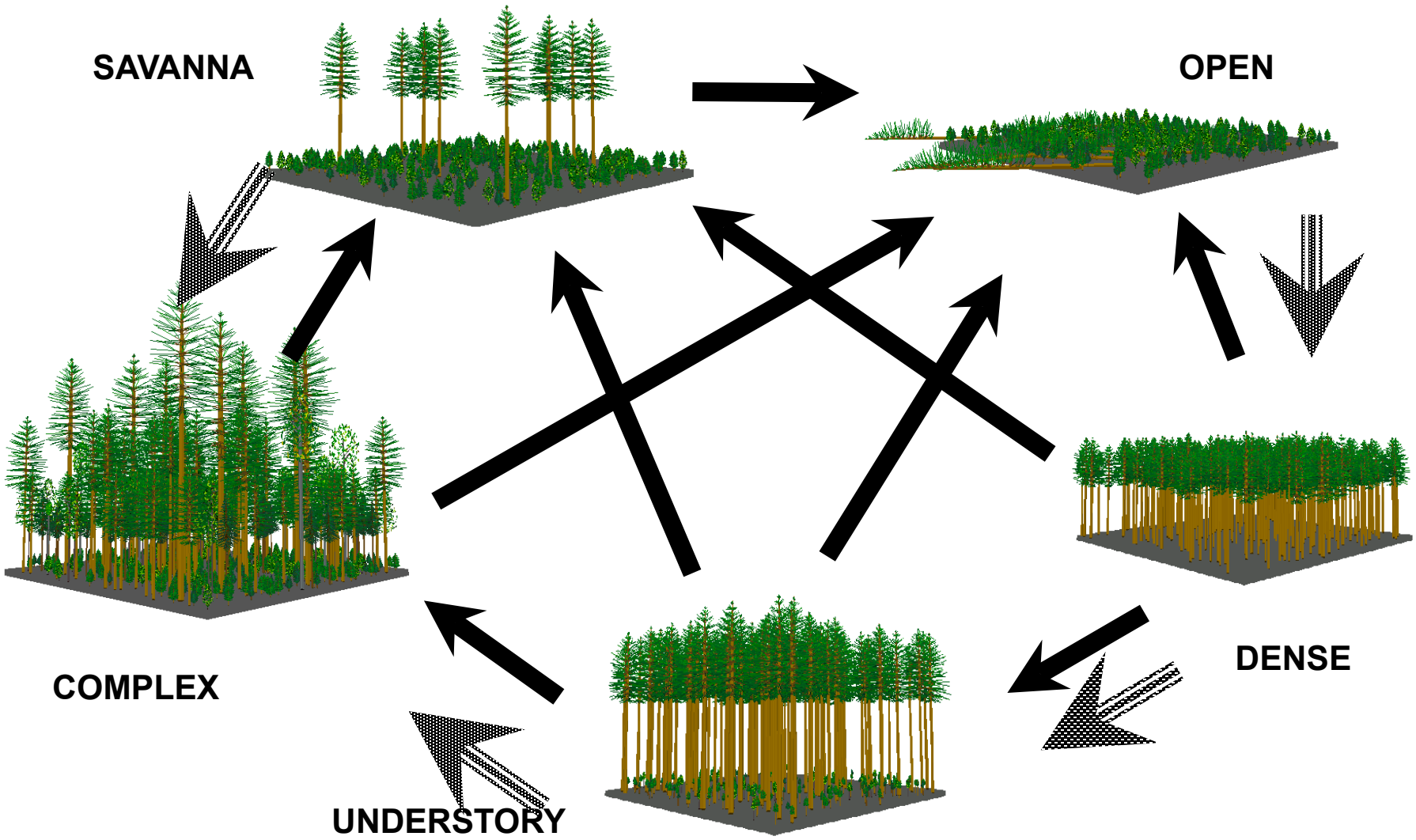
Native wood cargo ship, Costa Rica. https://www.bbc.com/future/article/20201117-clean-shipping-the-carbon-negative-cargo-boats-made-of-wood

https://beta.companieshouse.gov.uk/company/04142625 TULIPWOOD in London

https://www.wholeforest.com/pages/countertops-and-bar-slabs



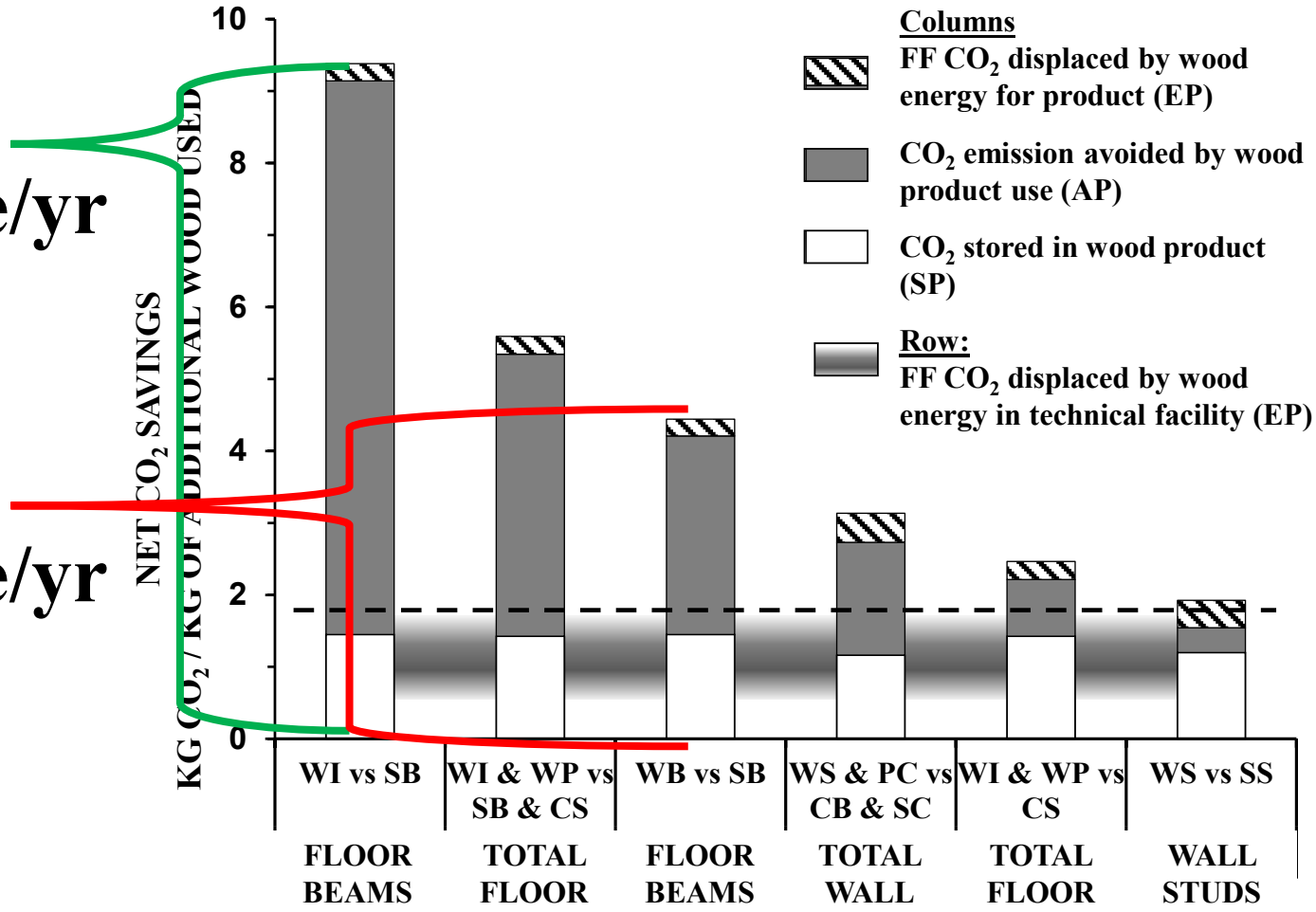
Oliver, C.D., and F.A.Oliver. 2018. Global Resources and the Environment. Cambridge University Press.

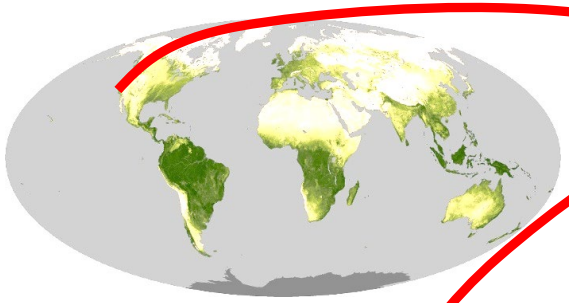

SAVANNA
OPEN
COMPLEX
DENSE
UNDERSTORY

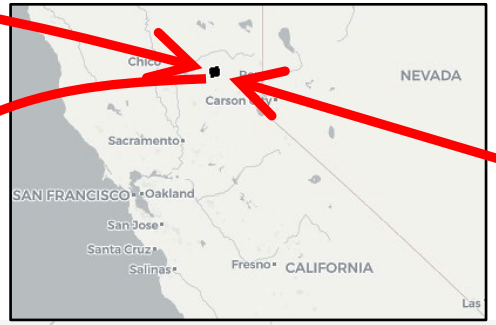
Carbon Credit Value (estimated)

$400/MBF;
$80-$400/acre/yr

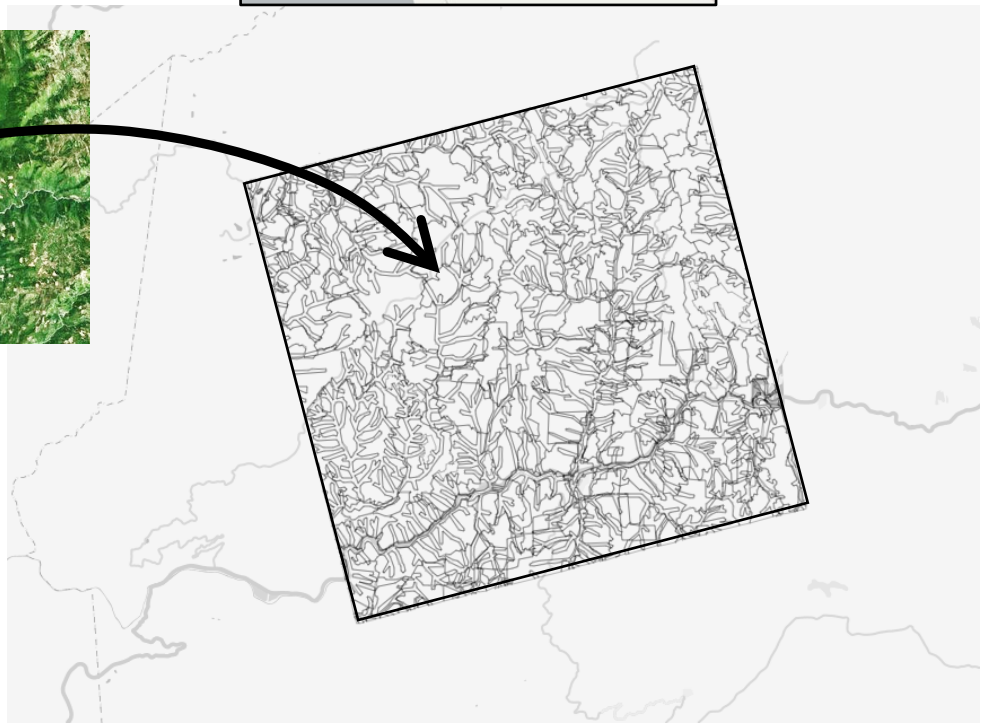
$200/MBF;
$40-$200/acre/yr

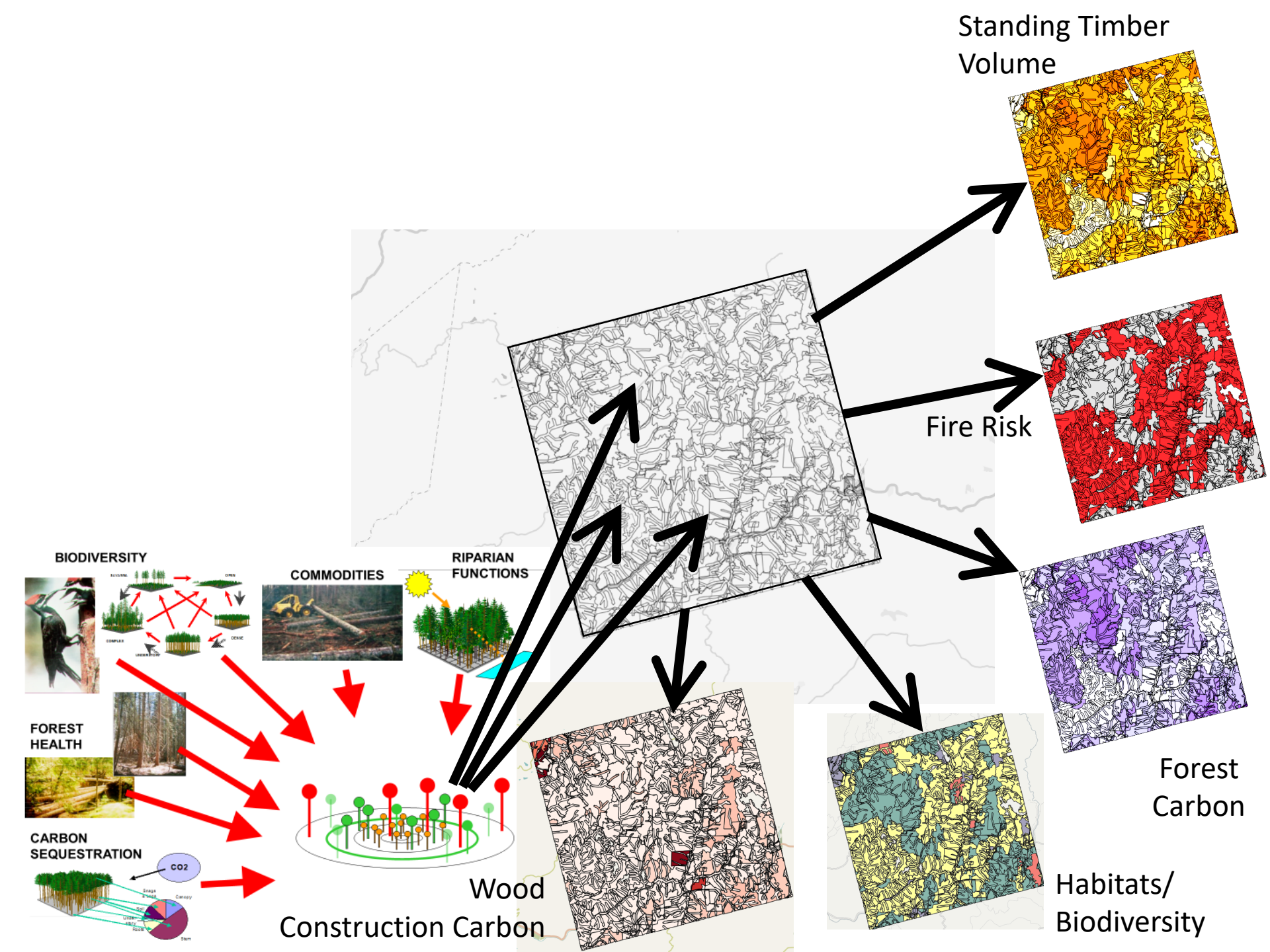




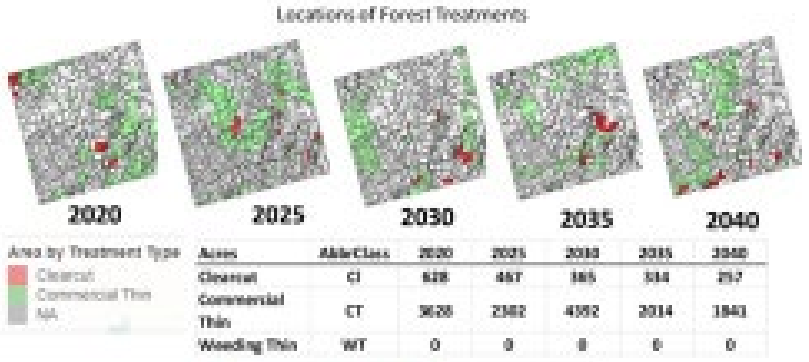


ESRI forestry (US)
Treemetrics (Israel)
Intelescope (Ireland)
Forest Metrix (USA)
Image Tree (USA)
SilviaTerra (USA)

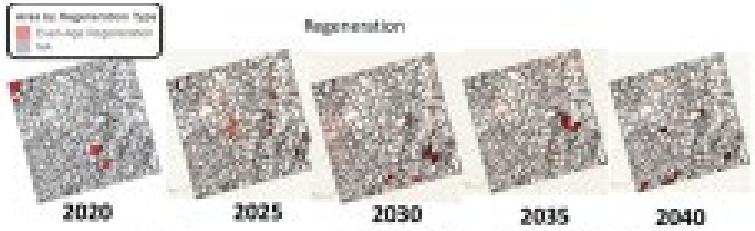



Standing Timber Volume
Fire Risk
Forest Carbon
Habitats/ Biodiversity
Wood Construction Carbon
BIODIVERSITY
COMMODITIES
RIPARIAN FUNCTIONS
FOREST HEALTH
CARBON SEQUESTRATION
CO2

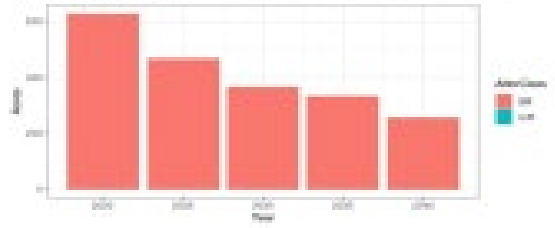
A generic management is written in FEMS. And, a management plan can be written that is specific to certain landowners.

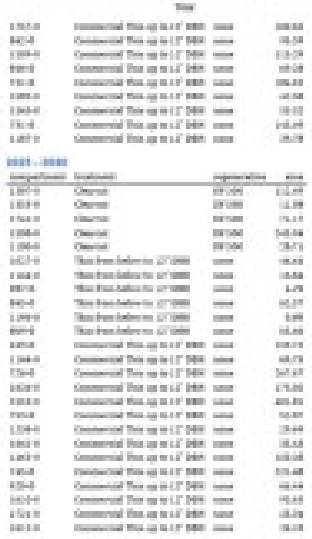


Acres	Able Class	2020	2025	2030	2035	2040
Clearcut	CC	628	467	365	334	257
Commercial Thin	CT	3620	2582	4352	2014	1843
Weeding Thin	WT	0	0	0	0	0



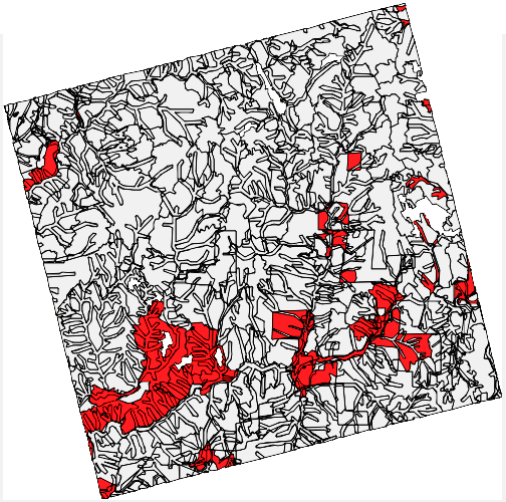
Acres	2020	2025	2030	2035	2040
Even-Age Regeneration	628	467	365	334	257
Uneven-Age Regeneration	0	0	0	0	0

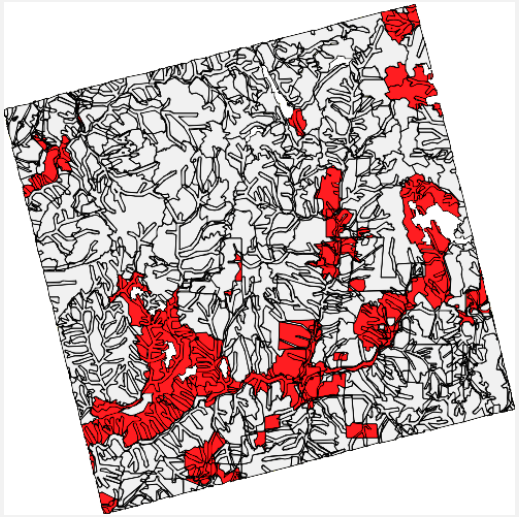




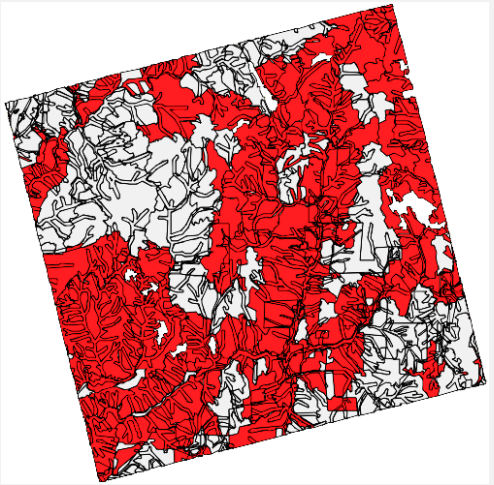
New inventory for monitoring by comparing expected are actual results.

Expected (from projection 5 or 10 years ago)





Result from new inventory



GOOD FIT

POOR FIT

On-the-ground or drone cameras for monitoring using visualizations of expected stands.

GOOD FIT

EXPECTED

← ACTUAL →

POOR FIT