

TEMPERATE FORESTS



OVERVIEW OF A HIGH-IMPACT DRAWDOWN SOLUTION

Restoring and protecting temperate-climate forests has many benefits including carbon sequestration from trees, soil and other vegetation.

TECHNOLOGY AND MARKET READINESS

Almost 60% of land in Georgia is comprised of naturally-recruited and planted temperate forests, and Georgia is the number one forestry state in the nation, so this is definitely a market-ready solution (Edwards et al. 2013). For example, about 150,000 acres are planted in Georgia with pine seedlings each year (GFC, 2019).

LOCAL EXPERIENCE AND DATA AVAILABILITY

With our large extent of temperate forests and the importance of forestry for the state's economy, we have abundant local experience and data availability on Georgia's temperate forests from universities; county, state and federal agencies; NGO's and businesses.

TECHNICALLY ACHIEVABLE POTENTIAL FOR INCREASED CO₂ SEQUESTRATION

Almost 60% of land in Georgia is comprised of native and planted temperate forests, and Georgia is the number one forestry state in the nation. Georgia's forests offset approximately 8% of the state's CO₂ emissions, and can sequester one to four tons of carbon per acre, per year (GFC, 2019). Based on Forest Inventory and Analysis (FIA) data, between 2007 and 2017 forests of Georgia accumulated an average of 27 Mt CO₂ annually in living tree biomass above and below ground [1]. A preliminary estimate of annual carbon uptake in state soils is 3 Mt CO₂ (Richter et al. 1999, Carey et al. 2016, Crowther et al. 2016, Machmuller et al. 2018). This brings the total estimated annual carbon sequestration of Georgia's forests to 30 Mt CO₂.

An increase in this annual carbon sequestration by 1 Mt CO₂ by 2030 could be achieved by expanding Georgia's forest acreage by 2.9%. To put this in perspective, a 15% increase of forest acreage would be achieved if Georgia's forests in 2030 covered the same acreage as it did in 1974.

COST COMPETITIVENESS

Almost 60% of the current State of Georgia is comprised of native and planted temperate forests so little cost would be associated with maintaining these forests and this solution relative to other solutions. For planted pines with management, the cost of aboveground carbon storage is about \$11 per ton C. The cost for unmanaged forests is essentially \$0 per ton C in Georgia (Fuller and Dwivedi, unpublished data).

BEYOND CARBON ATTRIBUTES

Positive environmental impacts from this solution include improved air quality from trees' natural ability to provide oxygen, as well as increasing wildlife habitats and biodiversity (Bonan, 2008). Estimates suggest that trees and forests removed 17.4 million tonnes (t) of U.S. air pollution in 2010 (Nowak, et al., 2014). Increased air quality greatly improves public health of communities in the surrounding areas, which was valued at \$6.8 billion in annual health effects in 2010, avoiding over 850 deaths and 670,000 acute respiratory symptoms. Forests offer improved water quality through soil protection, reduced water runoff and evapotranspiration (Trabucco, et al., 2008).

Forests create jobs in the areas of forest protection and management, corresponding to the areas with the highest forest coverage, [2] but temperate forests may also need to be legally managed (Guariguata, et al., 2010). Another positive benefit is improved quality of life forests provide by offering recreational opportunities for people in the local community and/or tourists [3]. Since there is little to no cost for these recreational opportunities, this solution is highly accessible to low-income families.

A potential barrier is that the temperate forest land use may restrict rural land available for farming/food and could potentially lead to a reduction in timber-related jobs (Chazdon, 2008).

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Endnotes:

1. <https://www.fia.fs.fed.us/>
2. <https://www.drawdown.org/solutions/land-use/temperate-forests>
3. <https://www.bls.gov/careeroutlook/2016/article/forestry-careers.htm>
4. <https://discovertheforest.org/partners>

Corresponding Authors:

Jacqueline E. Mohan, M.E.M., Ph.D.
**Associate Professor, Terrestrial Ecosystem
Ecology & Biogeochemistry**

**Odum School of Ecology
University of Georgia
517 BioSciences Bldg.
Athens, Georgia 30602, USA
Web: <http://www.uga.edu/mohanlab/>**

and

Dr. Puneet Dwivedi
Associate Professor (Forest Sustainability)
**Warnell School of Forestry and Natural
Resources**

University of Georgia
180 E Green St Athens GA 30602
Email: puneetd@uga.edu
Twitter: [@PuneetDwivedix](https://twitter.com/PuneetDwivedix)
Publications: [Google Scholar](#)
Website:
<http://forestsustainabilitylab.uga.edu/>