



# Forest Owner Carbon and Climate Education (FOCCE)

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## Resources

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Learn how forests help us understand climate change and how forests may respond to a changing climate

### [Forest Carbon Management](#)

Learn how forest management can help enhance carbon storage and protect forest resources under climate change.

### [Forest Carbon Incentives](#)

Learn about the value of forest carbon on private lands, and potential benefits to family forest owners.

### [Planning and Decision-making](#)

Advice on how to integrate climate-smart forestry and carbon incentives into forest management plans for family forest owners.

### [Glossary of Key Terms and Concepts](#)

Catalogue of over 60 terms and concepts associated with forest carbon management on private forestlands.

## contact us

Name \*

First

Last

Which of the following best describe you? \*

- ☐ Land Management Professional
- ☐ Landowner
- ☐ Academic/Education
- ☐ Other

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Mailing address

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# FOCCE

Forest Owner Carbon and Climate Education

## ARTICLES

# Forest Carbon Stocks Based on Land Ownership in the U.S.

Forests play an important role by absorbing large amounts of carbon dioxide and storing it in vegetation and soil. This article explores how forest carbon storage varies across different ownership types in the United States.

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Updated: December 18, 2024



## The Role of Forests in Carbon Storage

Forests in the United States store over 866 million metric tons of carbon annually, playing a critical role in offsetting greenhouse gas emissions. Estimates from the EPA indicate that as much as 54% of total carbon stored in forests can be found in the soil, yet as of right now, the majority of carbon crediting sources do not account

for carbon storage in their estimates (US EPA, 2020). Because of this, the two main pools used in this study are aboveground biomass, which includes trees and shrubs, and belowground biomass, which consists of roots. However, land use changes like deforestation and urbanization can release this stored carbon back into the atmosphere. Sustainable forest management is essential to preserving these carbon stocks.

The county level data presented in this paper were the result of a capstone project submitted to the Masters of Geographic Information Systems Program in the Department of Geography at Penn State. To access the full report or datasets, contact Melissa Kreye at [mek1244@psu.edu](mailto:mek1244@psu.edu). The full report provides a more in-depth overview of the methodology and sources used for this paper.

## Ownership Patterns and Carbon Distribution

The ownership of U.S. forests is diverse, with significant implications for carbon management. Private forest lands in the United States account for between 58–69% of all forested land, with exact ownership numbers fluctuating year to year. The forests are distributed across various ownership categories, including family, corporate, and investment-based entities such as Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs). 31% of the nation's forest area can be found on Federal lands and is concentrated in the northwestern regions, where dense, old-growth forests store the highest levels of carbon. These protected areas, as defined by the United States Geological Survey (USGS), are lands managed to preserve biodiversity and provide natural, recreational, and cultural benefits (USGS, 2022). While federal lands are considered protected areas, they still have other uses, including some levels of timber harvesting, hunting, and even grazing. These areas include fee-owned lands (outright ownership by public agencies, nonprofits, or private entities), easements (legal agreements restricting land use to protect conservation values), designations (policy-determined protections), proclamations (tribal, military, or congressionally appointed lands), and marine areas (protected water zones).

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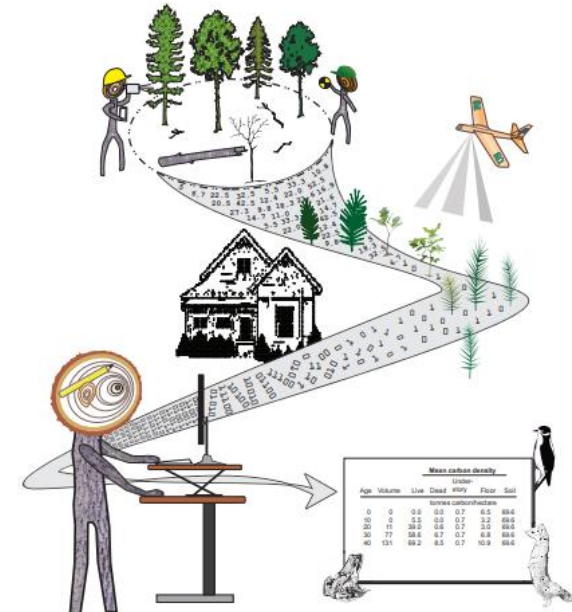


Forest Service  
U.S. DEPARTMENT OF AGRICULTURE

Northern Research Station | General Technical Report NRS-202 | November 2021

# Standard Estimates of Forest Ecosystem Carbon for Forest Types of the United States

Coeli M. Hoover, Ben Bagdon, and Aaron Gagnon



PennState Extension

# Help us build an AI tool for landowners!

We need examples of questions users may have about carbon markets.

Use the QR code to submit questions you would ask a professional about forest carbon markets.

