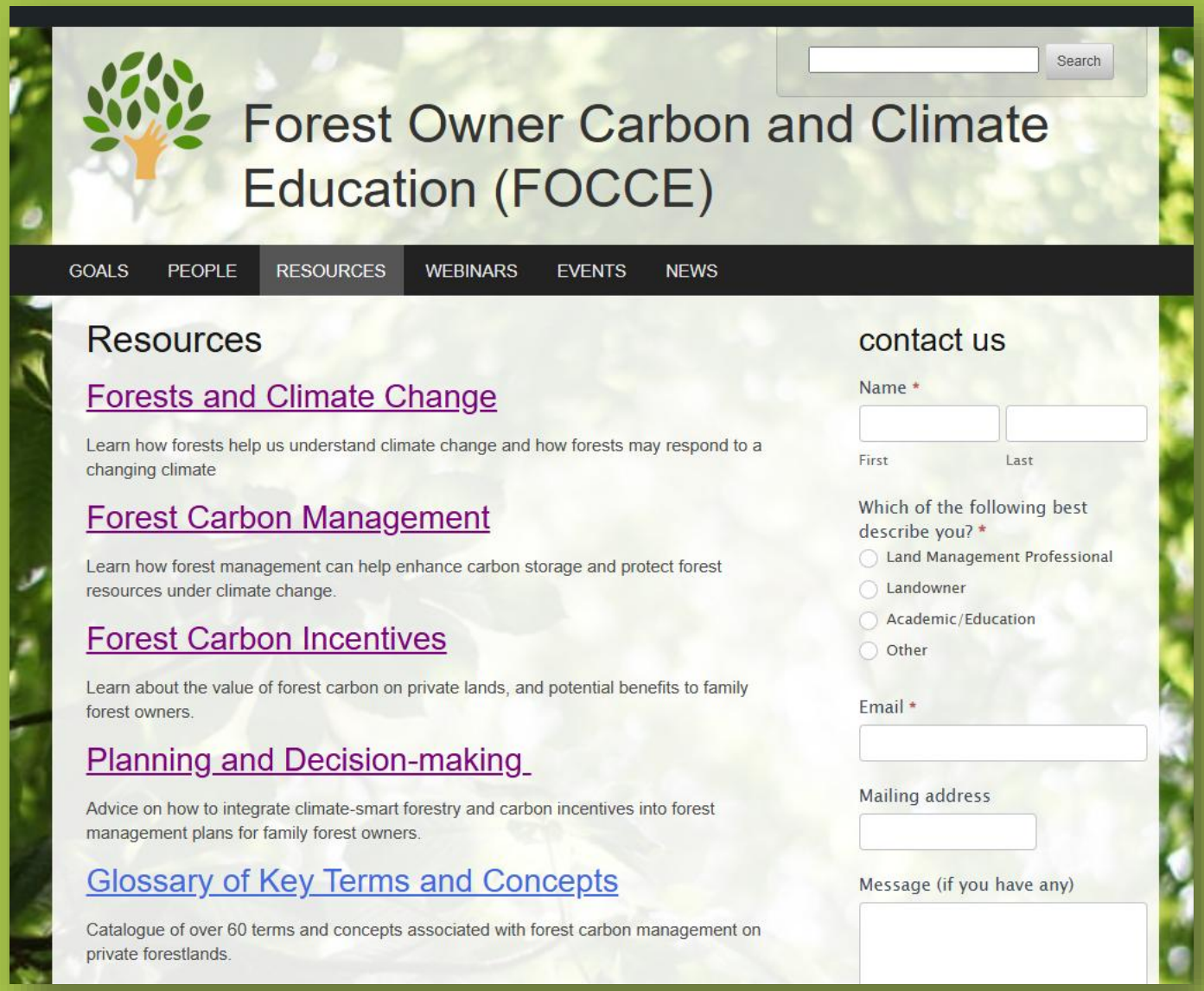

FOCCE

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.

Save for later Print Share **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 are 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 mxk1244@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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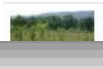
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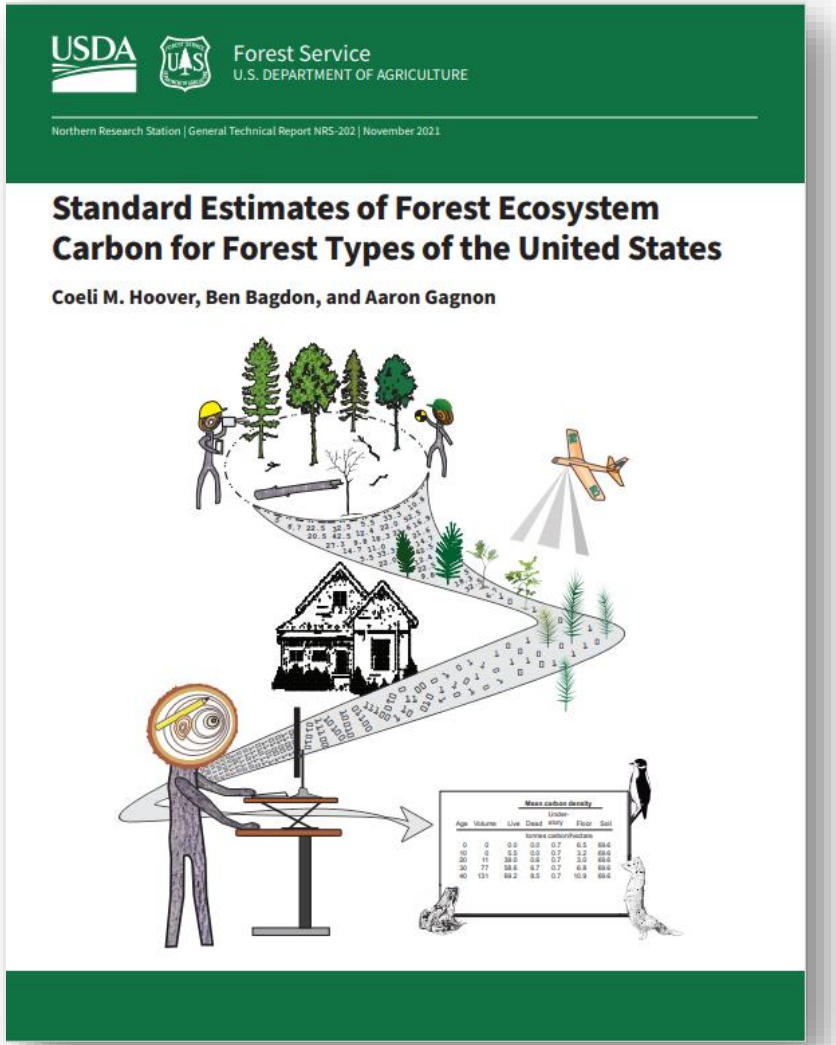

PennState Extension

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.