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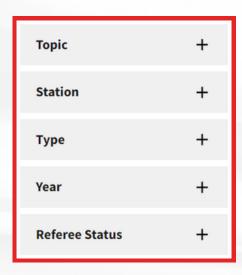
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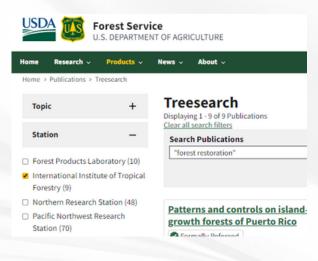


#### Tips:

- Use scientific names when searching about species.
- Use "quotation Marks" to search for a phrase.
- Avoid using grammatical articles and pronouns as keywords (the, a, that).

## Example:

Keywords: "forest restoration" Filter: International Institute of Tropical Forestry



## **Treesearch**

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<u>Patterns and controls on island-wide aboveground biomass accumulation in second-growth forests of Puerto Rico</u>

Formally Refereed

... of biomass accumulation in second-growth tropical forests following land use abandonment is important for informing ecosystem carbon models and forest restoration efforts. There is an urgent need for a broad ...

**Authors:** Sebastián Martinuzzi, Bruce D. Cook, Eileen H. Helmer, Michael Keller, Dexter Locke, Humfredo Marcano-Vega, María Uriarte, Douglas C. Morton

**Keywords:** <u>carbon</u>, <u>forest succession</u>, <u>lidar</u>, <u>restoration</u>, <u>tropical forests</u>

**Source:** Biotropica **Year:** 2022

## Patterns and controls on island-wide aboveground biomass accumulation in second-growth forests of Puerto Rico

Formally Refereed

Authors: Sebastián Martinuzzi, Bruce D. Cook, <u>Eileen H. Helmer, Michael Keller, Dexter Locke, Humfredo Marcano-Vega</u>, María Uriarte, Douglas C. Morton

Year: 2022

Type: Scientific Journal (JRNL)

Station: International Institute of Tropical Forestry
DOI: https://doi.org/10.1111/btp.13122

Source: Biotropica



#### Abstract

Understanding the heterogeneity of biomass accumulation in second-growth tropical forests following land use abandonment is important for informing ecosystem carbon models and forest restoration efforts. There is an urgent need for a broad sample of second-growth forests to enhance our knowledge of carbon accumulation in human-dominated landscapes, especially for older forests. Puerto Rico has predominantly second-growth forests, ranging in age from approximately 25 to more than 80 years. We used an island-wide sample of airborne lidar from the NASA Goddard Lidar, Hyperspectral, and Thermal (G-LiHT) Airborne Imager collected on March 2017, forest inventory data, and data on forest age, precipitation, soils, and land use to estimate aboveground biomass stocks in moist and wet, second-growth tropical forests. Biomass accumulation rates in Puerto Rico were lower, on average, than in other Neotropical forests. Median biomass across >16,700 ha of older secondgrowth forests was 105 Mg ha<sup>-1</sup>, and sampled biomass rarely surpassed 250 Mg ha<sup>-1</sup>. Differences in biomass by age were large and persistent across different substrates and land uses, with a plateau in the pattern of island-wide biomass accumulation after about 33 years. A spatial regression model showed that multiple factors were related to biomass accumulation, including time since abandonment, geologic substrate, past land use as coffee or pasture, precipitation, topographic wetness index, and slope. Our findings have important consequences for the total carbon storage and expected climate mitigation benefits of large-scale reforestation efforts, and highlight the value of airborne lidar for quantifying biomass variability in complex tropical landscapes.

#### Keywords

carbon, forest succession, lidar, restoration, tropical forests

#### Citation

Martinuzzi, Sebasti n; Cook, Bruce D.; Helmer, Eileen H.; Keller, Michael; Locke, Dexter H.; Marcano Vega, Humfredo; Uriarte, Mar a; Morton, Douglas C. 2022. Patterns and controls on island wide aboveground biomass accumulation in second growth forests of Puerto Rico. Biotropica. 15: 26-. https://doi.org/10.1111/btp.13122.

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