

LANDFIRE Product Application Summary

Modeling Vegetation Dynamics and Habitat Availability in the Southeastern U.S.

Citation

Noss RF, Platt WJ, Sorrie BA, Weakley AS, Means DB, Costanza J, Peet RK. 2015. How global biodiversity hotspots may go unrecognized: lessons from the North American Coastal Plain. *Diversity and Distributions* 21: 236–244.

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Application Location: Coastal Plain from Virginia to Florida. Point: 33 38 40.23 N 79 32 30.24 W [Near Williamsburg, SC]

Objectives

- Project the effects of climate change on vegetation dynamics
- Use the projected vegetation dynamics to model potential future habitat distribution for avian species

Project description

In this project, we identified a new global biodiversity hotspot: the North American Coastal Plain (NACP). By definition, a global biodiversity hotspot is a place that meets two criteria: (1) it contains over 1500 endemic vascular plants, and (2) it has lost over 70% of its historic vegetation. We used plant species records to determine that the NACP meets the first criterion because it has 1816 endemic vascular plants. For the second criterion, we used a combination of LANDFIRE data and records of recent fires from the region to show that 85.5% of the NACP has been lost. In this paper, we emphasize that the NACP has been overlooked as a biodiversity hotspot, and use the NACP example to illustrate that ecologists and conservation professionals may have misconceptions that bias where they expect to find high biodiversity. In particular, we discuss four sets of common misconceptions about biodiversity and the ecology of the NACP. These misconceptions have to do with the relative geologic youth of the region, its relative homogeneity and modest topography, and an underestimate of the ecological importance of

fire in the NACP, and have led to an underestimate of the biodiversity and biological significance of the region.

LANDFIRE data played a substantial role in this project because it was the only available data set that allowed a consistent assessment of historic vegetation loss across the NACP region. Many land cover data sets show urban and agricultural areas, which can aid estimates of the amount of vegetation that has been converted to these land uses over time. But because frequent fires play an important role in most ecosystems in the NACP, areas that have not experienced fire recently would also have substantially altered vegetation. Only LANDFIRE data products include estimates of the historic fire regime across the region, and we used those to determine where the landscape has experienced a substantially altered fire regime. Thus, our measure of vegetation loss included vegetation conversion as well as alteration of the fire regime.

LANDFIRE products used

BpS, S-class, VDDT models

Value of the work to the natural resource management/conservation community

This work is valuable because it identifies a new global conservation priority region.

Online resource:

http://www.cepf.net/news/top_stories/Pages/Announcing-the-Worlds-36th-Biodiversity-Hotspot.aspx

Two pictures of Longleaf pine-wiregrass savanna, next page.



Longleaf pine-wiregrass savanna. St. Mark's National Wildlife Refuge, FL. Credit: Alan Cressler



Longleaf pine-wiregrass savanna. Wade Tract, Arcadia Plantation, Thomas County, GA. Credit: Alan Cressler