

## LANDFIRE Product Application Summary

### An Assessment of the Ecosystems Nantahala-Pisgah National Forest and Surrounding Lands: A Synthesis of the eCAP Methodology and LiDAR Vegetation Analysis

**Citation:** Unpublished report of the Western North Carolina Alliance

**Author:** Josh Kelly, Western North Carolina Alliance

**Application Location:** Approximately 35 20' 56" N 82 02' 13" W, Eastern U.S. - S. Blue Ridge

#### ***Objective:***

Compare current vegetation conditions with desired conditions in order to explore and highlight the management needs of 10 major ecosystems in a 1,700,000 acre study area of global conservation significance.

#### ***Project Description:***

Local experts and LANDFIRE staff gathered in November 2012 to revise LANDFIRE Biophysical Settings (version February 26<sup>th</sup> 2009) for the Southern Blue Ridge. LANDFIRE Biophysical Settings (BpS) were chosen as reference, or desired condition, because many of the ecosystems in the study area lack sufficient historical and contemporary information to define their conditions under a natural disturbance regime. Like many areas in eastern North America, huge changes in ecosystems due to industrialization and other factors and concerns over shifting baselines make defining a reference condition problematic. LANDFIRE BpS allowed local practitioners to model the natural range of variation in ecosystems by inputting the best available information about their disturbance regimes and other dynamics to model reference conditions.

Ten ecosystems were examined using Ecological Zone Mapping and Light Detection and Ranging (LiDAR) technology to define ecosystem boundaries and to measure vegetation height, canopy cover, and shrub density. LiDAR technology allowed the measurement, possibly for the first time in the study area at a landscape scale, of the legacy human and natural disturbances on ecosystem structure. Results from LiDAR analysis were compared to BpS models to calculate ecological departure for each ecosystem.

- Ecosystems with a frequent historic fire return interval were found to be most departed from desired conditions with all oak and pine ecosystems lacking open-canopied structural classes.
- Hardwood systems in which an old-growth age class was modeled were deficit in that class.

***LANDFIRE products used:***

LANDFIRE Biophysical Settings were chosen as reference, or desired condition, because many of the ecosystems in the study area lack sufficient historical and contemporary information to define their conditions under a natural disturbance regime.

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

The identification of the most departed ecosystems and surplus and deficit classes of age and structure provide a framework to prioritize ecological restoration activities in the globally significant biodiversity hotspot of the Southern Blue Ridge.

***Online resource:***

A webinar of an early version of this project can be viewed here:

<https://nethope.webex.com/nethope/lr.php?AT=pb&SP=MC&rID=67037897&rKey=02d57cfd6f3f0e0b>



Photo by Josh Kelly