Proceedings of the 7th Southern Forestry and Natural Resources GIS Conference

December 7-9, 2009
Athens, Georgia

Editors:

K. Merry, P. Bettinger, J. Hepinstall-Cymerman, J. Fan, J. Siry, J. Kushla, T. Litts, B. Song

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Estimating Forest Structural Diversity in the Southern Appalachian Mountains using LiDAR and its Implications in Mapping Hazardous Fuels for Wildfire

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Abstract

Structural differences in forest stands can indicate occurrence of past disturbances and provide important information for various ecosystem management objectives, including fire management, habitat assessment, and ecosystem restoration. Fire suppression in the southern Appalachian Mountains has resulted in an alteration of stand structure and the accumulation of fuels; of particular concern is the expansion of ericaceous shrubs like mountain laurel (*Kalmia latifoila*) and rhododendron (*Rhododendron* species). These shrubs can change the vertical arrangement of vegetation, influence species composition and tree regeneration, and quickly cause a surface fire to become a crown fire. Our objective is to use LiDAR to compare structural diversity and fuel loads between disturbed (damage from thinning, fire, wind storms, and southern pine beetles) and undisturbed stands in the southern Appalachian Mountains of North Carolina. We will also analyze LiDAR in conjunction with other remotely sensed imagery and field data from 245 plots to map and assess fuels within a ten square mile area on the Nantahala National Forest in North Carolina.

[Abstract Only]

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Geospatial Analysis and Genetic Relatedness in *Elliottia racemosa* (Georgia plume) to Determine Conservation Practices

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Abstract

Elliottia racemosa (Georgia plume) is a small tree endemic to Georgia. It is listed as a threatened species. Currently it is presumed to exist only in 36-50 locations. The species is of important conservation interest because of its apparent lack of sexual reproduction in the wild and environmental factors that affect the distribution of the species. The current study examines environmental data and uses geospatial analysis to develop a more complete picture of how *E. racemosa* is distributed through its range and to determine environmental preferences. This study also examines the relationships of individual populations and individuals within populations using DNA Amplification Fingerprinting (DAF) combined with GIS, to study of relatedness of populations and of parentage.

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