

Fire Management in Dynamic Systems.

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The USDA Forest Service's Northern Research Station is facilitating several initiatives in the New Jersey Pinelands that are based at the Silas Little Experimental Forest (Rutgers Pinelands research Station) in Brendan T. Byrne State Forest. This work is focused on improving the National Fire Danger Rating System (NFDRS) for use as a local decision support tool for wildfire staffing and suppression operations. Additional work is making use of emerging remote sensing technologies to derive high-resolution vegetation maps derived from Landsat and LiDAR (Light Detecting and Ranging) measurements of stand height and canopy density. These maps are calibrated using Forest Inventory and Analysis (FIA) census data, fuel photoseries plots, and intensive forest inventories and are being used to obtain accurate estimates of fuel loads, and biomass, for approximately 500,000 acres of the Pinelands. New methods for processing LiDAR data are being used to evaluate the arrangement of branches and foliage within the forest to detect the presence of "ladder fuels, in a three-dimensional environment. These maps are being used to evaluate the effectiveness of fuels management treatments in the Pinelands, to guide future fuel reduction treatments, and to evaluate wildfire severity. Collectively, these high-resolution maps of forest structure and fuel loading are being linked with meso-scale atmospheric models to provide spatially explicit fire danger projections for the Pinelands.