

AN ANALYSIS OF BURN-SEVERITY MAPPING METHODS FOR USE IN SAND PINE SCRUB

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ABSTRACT

In the western United States, remote sensing has been used extensively to map and delineate burn-severity patterns in forested vegetation following fire. Burn-severity maps are assessment tools, providing critical information regarding fire effects that can be used when planning for and developing prescribed fire management programs. Burn-severity mapping methods have never been assessed for application in sand pine scrub, a stand-replacement fire type natural community endemic to Florida and Alabama, USA. Sand pine scrub is a fire-dependent community that requires infrequent (20–60 years) high-intensity fire. Despite a lack of methods for mapping post-fire burn severity, management plans that include the use of prescribed fire are being implemented within the Ocala National Forest and other managed areas containing sand pine scrub. Attempts at understanding the efficacy of these fire management programs are dependent on study of the effects of fire within sand pine scrub. Developing methods for mapping burn severity within sand pine scrub will provide new assessment tools to quantify and visualize the effects of prescribed fire management programs at landscape scales. This study assessed three different image sources (digital aerial photographs, Landsat, SPOT) using multiple image classification techniques for accuracy in delineating and mapping four levels of burn severity following a 2006 fire in the Juniper Prairie Wilderness of the Ocala National Forest. The results of this study found that a supervised classification of a post-burn Landsat 5 TM image produced the most accurate sand pine scrub four-level burn-severity map (mean map accuracy = 68%) when assessed using field-recorded burn-severity sample plots. These results provide evidence that previously established mapping methods currently used in other ecotypes can be applied to produce burn-severity maps of sand pine scrub.

Keywords: burn severity, remote sensing, sand pine scrub, wilderness.

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