

Public Abstract

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A Comparison of Forest Change Detection Methods and Implications for Forest Management

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Currently, oak decline and the red oak borer are affecting large portions of the Missouri Ozarks. The challenge to resource managers is that once the decline is visible on the ground, the forest stand is beyond treatment and must be salvage logged. Local forest resource managers are interested in a remote sensing technique that is capable of detecting subtle changes in forest health, so that remediation measures can be applied before the stand is totally lost. Therefore, the goal of this project is to determine the ability of the Tasseled Cap Transformation (TCT) to detect forest change in the Mark Twain National Forest using only the wetness component (TCW), and compare this technique to the more common Short wave-infrared/Near-infrared (SWIR/NIR) ratio technique used extensively in the eastern United States for forest change detection. This project tested the usefulness of this easy and inexpensive technique by applying it to the Missouri Ozark forest landscape in order to detect changes in forest biomass, characterize the structure of forest change patches, and assess contrasting rates of change on public and privately owned forests. This study found that the TCW detected biomass decrease as well as the SWIR/NIR ratio, forest change patch shapes worked well in identifying anthropogenic change, and that rates of biomass change were higher on private lands than public lands.