

EMPLOYING A FEATURE BASED CLASSIFIER TO DEVELOP A HIGH SPATIAL RESOLUTION LAND COVER / LAND USE MAP FOR THE BUFFALO RIVER SUB-BASIN

Robert C. Weih, Jr.
Spatial Analysis Laboratory (SAL)
University of Arkansas at Monticello
Arkansas Forest Resources Center
School of Forest Resources
110 University Court
Monticello, AR 71656
Email: weih@uamont.edu

Abstract

Landcover classification maps have been derived from satellite imagery for many years and have many applications, including habitat suitability mapping and conservation planning. Typically, digital landcover classification data-layers have a spatial resolution of 30 meters and a minimum mapping unit (mmu) of 100 hectares (ha). An example of such a data set is the Arkansas-GAP Landcover / Landuse classification. Some management and research applications, however, require highly accurate landcover data-layers with high spatial resolutions and small mmu. The Landcover / Landuse Classification (LLC) was developed for an 11-county region in north-central Arkansas for the Buffalo River sub-basin. The base data for our LLC was color-infrared aerial photographs taken from 2000-2002. The LLC consists of six classes: Water, Roads, Urban, Agriculture / Pasture, Conifer, and Oak / Hickory. More than 500,000 features (polygons) represent the six classes in the LLC study area. The spatial resolution of the color-infrared aerial photographs is one meter. The minimum mapping unit for the study is 0.8094 ha (2-acres). The classification was conducted using Feature Analyst®, Imagine®, and ArcGIS® software. Feature Analyst® employs hierarchical machine-learning techniques to extract the feature class information from the imagery using both spectral and contextual classifiers. The process involves both automated and manual interpretation.

[Abstract Only]

In Proceedings of the 6th Southern Forestry and Natural Resources GIS Conference (2008), P. Bettinger, K. Merry, S. Fei, J. Drake, N. Nibbelink, and J. Hepinstall, eds. Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA.