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FOREST SERVICE BACK ROADS: UTILIZATION OF GPS/GIS TECHNOLOGY FOR ACQUIRING ROAD INFRASTRUCTURE DATA IN THE OZARK-ST. FRANCIS NATIONAL FORESTS

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Abstract

This presentation describes how one Forest Service unit uses GPS/GIS technology to update and maintain information regarding its road network.

The Ozark-St. Francis National Forest (OSFNF) has developed an integrated field collection and GIS process method to digitally capture spatial and tabular information about travel routes, road features, travel route conditions, and other related features, to assist in land management planning activities and environmental assessments.

The methodology draws from 5+ years of experience incurred by the Ouachita National Forest, The Nature Conservancy, and the Watershed Conservation Resource Center to inventory road locations and prioritize maintenance recommendations. These earlier activities were useful for updating Forest Service applications, or collecting variable for use in environmental prediction models such as WEPP: Road.

Currently the USFS maintains road information in an Oracle database accessed through an application known as INFRA travel routes which interfaces with an Electronic Road Log (ERL) for conducting automated updates. This tool makes available changes to tabular information fields but does not support spatial updates to GIS data layers. The methodology described in this project is manual; however the intent is an expanded amount of highly organized tabular and spatial information, collected in the field, using a standard suite of hardware/software components. These features make this methodology appropriate for dissemination to other FS units, and could easily be automated as a one-click update tool.

The OSFNF methodology uses Trimble Geoexplorer GPS units and a custom data dictionary for the collection and organization of tabular and spatial information. Post-processing methods that remove errors, correct for spatial requirements, provide QA/QC, and format the output products are clearly defined. This output is then migrated into applications such as INFRA travel routes; INFRA travel route GIS data layers, and forest specific datasets that accommodate related information. This methodology allows the OSFNF to maintain databases and GIS layers to the appropriate standards while providing an expanded dataset of road related features for land and resource management planning.

The goals of this project are to increase the spatial accuracy of road related data and to develop a tool where multi-skilled users can generate consistent outputs for this type of information. This project also seeks a method for updating tabular INFRA data and spatial GIS data layers simultaneously in order to increase the efficiency of field inventories. Ultimately, updating travel route information without ERL hardware requisites, increasing the intensity of field inventories, and achieving greater consistency will expand the OSFNF capabilities for conducting environmental assessments and opportunity analysis.