Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: DEVELOPMENT AND UTILITY OF MULTISPECTRAL, REMOTELY-SENSED IMAGERY TO MAP WILLOW DISTRIBUTION IN THE NORTHERN PORTION OF YELLOWSTONE NATIONAL PARK

Type of Project: Research/natural resources

Funding Agency: National Park Service

Other Partners/Cooperators: Yellowstone Ecological Research Center, University of Montana, NASA

Effective Dates: August 15, 2003 - May 1, 2004

Funding Amount: $23,000

Investigators and Agency Representative (include name, address, phone, email):

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Project Abstract:

As part of a multi-year project to create potential willow habitat maps and current willow distribution across the Northern Region (NR) of Yellowstone National Park, this project will allow the initial Phase to be conducted and completed. We will: (1) collect field validation data at sites across the NR, and (2) utilize current remote sensing data sets (ASTER, SRTM, and Star3i SAR) to create the correct classification model. The field validation data will guide us and allow us to test preliminary data modeling (analysis) approaches to arrive at a road map of possibilities that fully utilizes the existing multi-sensor data. As part of the final report we will propose the correct data model that will be utilized in the future to create the final classification maps. These two maps will be created utilizing novel remote sensing data and techniques to aid managers and researchers with a wide variety of needs including: (1) co-registration of all plot data from a variety of previous and ongoing research efforts, (2) a base map for future change detection, and (3) provide a basis for developing a Northern Range wide sampling and long-term monitoring strategy. The mapping effort represents a logical extension of previous and ongoing work conducted by YERC and it's collaborators including the University of Montana and NASA.

Outcomes with completion dates (reports, publications, workshops, videos, etc.):

(1) a final report reviewing all accomplishments, methods, and findings with respect to the utility of multispectral, remotely-sensed imagery in mapping potential and existing willow-dominated riparian communities on Yellowstone's northern ungulate winter range;

(2) a complete listing and description of willow (and riparian) field validation sites, including UTM coordinate points in the NAD83 projection for incorporation into the park's GIS database;

(3) a road map to alternate remote sensing data models with the appropriate model for developing a willow/riparian classification map with multi-sensor data sets.

Keywords: willows, Yellowstone National Park, Northern Range, remote-sensing, riparian systems, GIS

For Administrative use only:

Date Annual Report Received:

Date Final Report Received:

Publications, etc. on file: