

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Land-cover and Vegetation Mapping in Pinnacles National Monument,
Continuation of UMT 57&75

Type of Project: Research

Funding Agency: National Park Service

Other Partners/Cooperators: University of Montana

Effective Dates: 9/1/2004 - 12/15/2005

Funding Amount: \$11,172

Investigators and Agency Representative:

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Project Abstract:

The Wildlife Spatial Analysis Lab at the University of Montana (UM) will produce a digital database of the land cover and existing vegetation for the Pinnacles National Monument and adjacent environs from high resolution IKONOS imagery. This is the third year of project funding, part of the NPS Inventory and Monitoring Program.

A mosaic of the park will be generated using IKONOS satellite images, ortho-rectified, and reprojected, if necessary. An unsupervised classification will then be performed with ERDAS Image Software (SOKATA routine), followed by a segmentation of the full image using eCognition software. The latter step will create relatively homogeneous patches or raster polygons from the pixel data that are at least 9.5 ha in size. All available ground-reference data will be organized and compared with the target list of cover types to be mapped. It is anticipated that this step will involve an image analyst traveling to Pinnacles for up to five days to work with scientists there. Any vegetation community types not adequately represented in the sample of reference data will be identified, and a decision will have to be made about whether to obtain additional data for these types, or drop them from the list. Once the reference data are complete, they will be incorporated into a training data file for supervised classifications of the raster polygons. Preliminary results of both the cover type and canopy closure classifications will be sent in digital form (either Arc/Info grids or ArcView shape files) to Pinnacles NM, for review. Based on the nature of the feedback, a second site visit may be required to obtain additional information prior to carrying out the final supervised classifications of cover type and canopy closure. The accuracy of both classifications will be assessed initially by cross-validation; the final results will also be mapped based on the posterior probabilities from the supervised classifications. If an independent set of ground-reference data become available before the end of the project, they will be used for post-classification assessments of thematic accuracy.

Outcomes with Completion Dates:

1. Detailed, spatially explicit land cover database of PINN and environs (ArcInfo Grid)
2. Final report describing the database, how it was created and the accuracy (due December 15, 2004)
3. FGDC compliant metadata about the database
4. Training provided to PINN staff on the structure and use of the map and database

Keywords: land cover, spatial analysis, Pinnacles National Monument, University of Montana, IKONOS, vegetation mapping, Inventory and Monitoring.

For Administrative Use Only:

Date Annual Report Received:

Date Final Report Received:

Publications, etc. on file: