

**Project Summary**  
**Rocky Mountains Cooperative Ecosystem Studies Unit**

<b>Project Title:</b> Interactions between Heartland National Parks and Surrounding Land Use Change: Development of Conceptual Models and Indicators for Monitoring
<b>Type of Project:</b> Research
<b>Funding Agency:</b> National Park Service
<b>Effective Dates:</b> 1 August 2001- 31 July 2003
<b>Funding Amount:</b> \$47,159
<b>Investigators and Agency Representative:</b>  P.I.: Andrew Hansen, Ecology Department, Montana State Univ, Bozeman, MT 59717, 406 994-6046, hansen@montana.edu.  NPS Contact: Brent Frakes; 417 732-6438 x 273; brent_frakes@nps.gov
<b>Project Abstract:</b>  One of the goals of the National Park Service's Inventory and Monitoring program is to initiate long-term monitoring in national parks with significant natural resources. Steps for achieving this goal include: developing conceptual models of park ecosystem function with surrounding lands; identifying indicators of adequate ecosystem function; evaluating methods of monitoring and evaluating indicators; and implementing appropriate monitoring schemes. These steps are being initiated for the Heartland Network of national parks. The network includes 15 parks of which 11 are included this segment of the monitoring activities. The goals of this proposal are to 1) develop conceptual models of linkages between the ecological functioning of the parks and surrounding lands; and 2) recommend indicators of landscape change that impact park ecosystems potential drivers of the issues of concern to the 11 parks. The conceptual models will be done in the context of the general ecological mechanisms linking nature reserves with surrounding land uses. After evaluation of the specific ecosystem models now under development for each park and regional land use patterns, the parks will be grouped into subsets that share similar linkages with land use change. One conceptual model will be done for each group of parks. Indicator variables will be selected according to specified criteria.
<b>Outcomes with completion dates:</b> At the end of February 2003, the Heartland Network will receive written documentation that will include: <ul style="list-style-type: none"><li>• Conceptual models and discussion of importance of landscape change to the park ecosystems and natural resources</li><li>• List of recommended indicators to measure landscape change</li><li>• Characterization of the landscape setting for each park</li><li>• Justification of the recommended indicators and explanation as to why they had been recommended. Justification should include a discussion of the relationships between the landscape change indicators and effects on the park's ecosystems and resources. Any spatial and/or temporal constraints of the indicators should be specified. This</li></ul>

justification might include a diagram.

At the end of July 2003, the HN will receive protocols for the recommended indicators.

**Keywords:** National Parks, Nature Reserves, Ecosystem Functioning, Regional Context, Land Use Change

***For Administrative use only:***

*Date Annual Report Received:*

*Date Final Report Received:*

*Publications, etc. on file:*