

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

<b>Project Title:</b> Whitetail prescribed fire and watershed conifer demonstration project
<b>Type of Project):</b> Research
<b>Project Discipline:</b> Natural
<b>Funding Agency:</b> BLM
<b>Other Partners/Cooperators:</b>
<b>Effective Dates:</b> May 12, 2003 – September 30, 2007
<b>Funding Amount:</b> \$50,000.00: \$39,00.00 (2003) and 11,000.00 (2006)
<p><b>Investigators and Agency Representative:</b></p> <p>PI: Clayton Marlow, Animal and Range Sciences, Montana State University, Phone: (406) 994-2486; <a href="mailto:cmarlow@montana.edu">cmarlow@montana.edu</a></p> <p>Agency: David Pacioretty, Butte, Mont., 406-533-7600, <a href="mailto:dpaciore@blm.gov">dpaciore@blm.gov</a>,</p>
<p><b>Project Abstract:</b></p> <p>Describe the effects of prescribed fire on plant community composition, avian habitat structure and riparian processes in low elevation mixed forest/shrubland communities. This information will be coupled with results from an ongoing study in the Missouri River Breaks to develop watershed level management strategies for rehabilitating and protecting riparian ecosystems</p> <p>General Approach: This study uses a paired watershed approach to assess the effects of prescribed fire on existing plant community composition, habitat structure and shallow groundwater levels. A series of streams with similar landform and basin size are inventoried for plant community compositions, forest composition, tree/shrub density, overstory canopy, tree age (fire history) and channel cross-sectional area. This information is polled and drainages exhibiting similar characteristics are paired. The treatment plan is to burn one drainage of each pair, leaving the second as the unburned control.</p> <p>Five permanent sampling stations are located systemically from the downstream boundary upstream. At each station 3 shallow monitoring wells are sunk to a depth of 1.5 m in the riparian area, the outer well on each side of the channel becomes the endpoint for a 50 m permanent vegetation/forest monitoring transect that runs perpendicular to the riparian zone. Groundwater level is measured in each well monthly in 2003 and 2004 while vegetation community data was collected in 2003 to represent pre-burn conditions. The permanent transects will be remeasured in 2005 and 2007 to describe fire effects on the various riparian and vegetation communities.</p> <p>Avian habitat structure prior to the fires has been measured along the 50 m vegetation transects and then extended an addition 50 m upslope. Shrub density as well as height of herbaceous vegetation, shrubs, and trees was measured along each 100 m transect in 2003.</p> <p>Channel cross-section morphology is monitored at each sampling station in late June of each year and after cattle have left the study area. This provides the opportunity to separate fire-induced erosional patterns form changes cause by grazing.</p> <p>Follow-up data will be collected at 1, 3, 5 year intervals.</p>
<p><b>Outcomes with completion dates (reports, publications, workshops, videos, etc.):</b></p> <p>Annual reports to the BLM, 1-2 Master's level theses and at least 1 scientific journal article.</p>
<p><b>Keywords:</b> riparian processes and function, groundwater, prescribed fire.</p>

