

producing a statewide map of native and non-native plant alliances using digital Landsat imagery. As part of this process, field data on existing vegetation types have been collected statewide over the last three years. These data function as training sets in the supervised classification of multitemporal Thematic Mapper imagery, and provide preliminary accuracy assessments of the vegetation map. Together, the classification and digital map represent a detailed, synoptic view of the existing vegetation of Kansas that is useful for natural resource management and conservation efforts at the state and regional levels.

A Comparison of Water Table Dynamics and Soil Textures under Three Riparian Communities. *Darin J. Law and Clayton B. Marlow*, Montana State University, Bozeman, Animal & Range Sciences, MT 59717.

Riparian ecosystems comprise 2 percent of the Western United States (Kovalchik and Elmore 1995) and are extensively used for: wildlife (Thomas 1979), fish (Duff 1979), maintaining water quality and quantity (Horton and Campbell 1974), and livestock forage (Reid and Pickford 1946). Thus, managers need to predict how water table change, influences riparian vegetation (Fenner et. al. 1985), and how soil texture influences riparian vegetation (Hansen et. al. 1995) and water tables (Friedman et. al. 1997). The predictions will aid managers in effectively restoring degraded riparian community types. We are comparing water table change, soil texture, and slope under beaked sedge, geyer and drummonds willow, and black cottonwood recent alluvial bar communities. Six sites of each community contain 3 wells to measure water table change. Also, soil texture, slope and species composition is being analyzed on each site. Preliminary results show water table change beneath willow and cottonwood communities to be statistically the same while sedge communities differ. Cottonwood communities inhabit sandier sites than willow and sedge communities. Cottonwood soils also contain less clay and silt. All sites measured between 0 and 1.5° slope. These results show that physical characteristics differ among these community types and, knowing this, managers can better understand their ecological amplitude for restoration and management.

Vegetation Species Diversity Inside and Outside Exclosures in Sagebrush, Salt Desert Shrub, and Aspen Communities. *W. A. Laycock*, University of Wyoming, Laramie, WY, and *Dale Bartos*, Rocky Mountain Experiment Station, Logan, UT 84321.

Vegetation was sampled inside and outside eight exclosures in salt desert shrub and sagebrush vegetation types in Southwestern Wyoming and eight exclosures in aspen vegetation in southern Utah. Only species richness has been examined thus far. Five of the eight Wyoming exclosures had an average of 11% more plant species present outside the exclosure than inside. One exclosure had 7% more species inside than outside and two exclosures had the same number of species present inside and outside. Only the aggregate species list for the eight aspen exclosures has been examined thus far. Both the aspen areas open to all grazing and the areas where cattle were excluded but wildlife were allowed had an average of 20% more species than the exclosures where all herbivores were excluded. Other diversity indices and overlap of species inside and outside the exclosures will be analyzed and presented.

Use of Forest Habitats by Beef Cattle in Central B.C. *Lavona Liggins*, Wildlife Group, Faculty of Agricultural Sciences, The University of British Columbia, V6T 1Z4.

Many beef producers in B.C. rely on crown range as a key forage source and are responsible for its protection, however, there is little known about free-range cattle usage of forested crown land. This study was designed to determine relative habitat use by cattle in forest areas and if this use reflected habitat availability. A herd of 200 beef cattle was observed between May and October during 1996 and 1997. Animals were located between dawn and dusk by overland transects and tracking (DAY) as well as in early morning by aerial surveys which coincided with feeding bouts (AM). Habitat types available to cattle in the 200 km² unit included meadows and grasslands (MDW), clearcuts (CUT), wet edges (WE), dry edges (DE), forests (F), and other (O). Percent availability of these areas was determined by grid dot counts using 1:15,000 aerial photos. A total of 592 observations of habitat use was obtained (476 DAY and 116 AM). Mean percent use was ranked as follows: DAY: DE > MDW > WE = CUT > O > F and AM: MDW = WE > DE > CUT = O > F. Greater than 90% of observations were made in the first 4 habitat types which represented only 23% of the area. When relative use of these 4 habitat types was compared to relative availability, it was found that use of DE was significantly higher than availability ($p < 0.05$) for DAY observations while use of DE was in proportion to its availability for AM observations. In both cases, use of CUT was significantly lower than availability ($p < 0.05$) and findings for MDW and WE were inconclusive. Cattle primarily used non-timbered areas on forest range.