# Showdown on the Prairie: Use of bison and cattle to restore native grasslands

## Lecture Outline

- **Introduction**
  - Current perspectives of grazing
  - Grazing effects
- Differences between bison and cattle
- Patch-burn grazing as a management technique
- Future directions of ungulate use in grassland restoration
Biodiversity benefits

Increases vegetation and wildlife diversity

Vegetative benefits

Reduces competition with less aggressive species. Exposes lower growing species to light.

When coupled with fire, fire-intolerant species are able to survive in grazed areas.
**Benefits to Grassland Birds**

Increase in species diversity

Effects of fire and grazing differed among species (Powell 2006)

Prairie Chickens would likely benefit from managed grazing techniques

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**Benefits to Insects**

Grasshopper species richness and diversity increased with grazing (Joern 2005).

Likely due increased heterogeneity of the landscape

Negatively responded to average vegetation height and total plant biomass

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**Soil fertility**

Nitrate in the urine increases the growth of plants, which led to increased grazing

[Graph showing soil fertility impact of urine concentration and grass cover]

Adapted from Knapp et al. 1999
Vegetation preference

Bison
Eat Mainly Grasses and sedges

Cattle
Eat grasses and forbs

Foraging differences

Bison tend to forage in recently burned areas forming a more heterogeneous landscape

Cattle tend to forage in a more homogenous pattern

Wallowing

Bison
• Create wallows—which creates a new group of vascular plants

Cattle
• Don’t wallow
Economic Feasibility

Bison
Hard to control and operate
Market is emerging and expanding for bison meat

Cattle
Easy to maintain and operate
Stable market

Patch-burn grazing

New concept for prairie management
Used to replicate the historic ecological process

Burning rotates grazing

Previous Year Burn
Current Year Burn

Fuhlendorf & Engel, 1997
**Patch-burn grazing benefits**

- Farmers benefit from decreased cost of fencing and watering tanks
- Creates a mosaic of vegetative structure beneficial to many wildlife species
- Little difference between cattle and bison behavior and diet using patch-burn grazing

**Future Directions**

- Research needs to be conducted in eastern grasslands from the forage standpoint
- Evaluation of management strategies for grazing
- Evaluation of grazing effects on wildlife species

**Questions?**