

# R<sub>ange</sub>

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policy range aquatics soil forestry wildlife

# Home on the Rangeland

## **Did you Know that:**

Rangeland is a type of land that supports different, uncultivated vegetation types that can provide the necessities of life for both native and domestic herbivores in a sustainable fashion. Range management is a synthesis discipline tht draws from many different areas such as wildlife, soils, botany, ecology, aquatic biology, physiology, entomology, forestry, systematics, hydrology, GIS/RS, animal science, and others. It is not as it is often times portrayed, just for cows!

--Rangeland occupies approximately 51% (16.6 Billion acres) of the earth's surface.

--One billion acres of rangelands, pastures, and woodlands exist within the United States.

--Within Nebraska, rangelands account for 48% or 23.9 million acres of the state's land area.

**That is why you need to understand the  
importance of rangeland ecology  
and management.**

# Range

## Objective # 1: The Range Resource

### Principles

- Understand the important uses and needs of rangeland in Nebraska.
- Understand major range ecosystems and plant associations in Nebraska.
- Know some of the legislation affecting maintenance and use.
- Keep up with current range issues

### Try out these activities

1. Determine how much of the US and Nebraska is considered to be rangeland. Also, look for information on the health of these rangelands, what makes them unique and their uses.
2. Look at vegetation and soils maps of Nebraska and determine what plants and plant groups occur within the state. Determine if there is a relationship to the soils, and to land uses past and present.
3. Read your local and state newspapers, magazines, and newsletters to learn about current rangeland issues. Look at the Nebraska Legislature's home page to learn about any pending legislation that affects rangeland uses.

### Sample Questions

1. On abandoned fields in Nebraska, a manager would expect to find which of these types of vegetation growing? annual forbs, annual grasses, shrubs, or perennial grasses?
2. Range site classification is based on? soils, climate, topography, or combinations of all?
3. On shortgrass prairie heavy grazing will result in? warm season or cool season grasses?
4. How many square feet are in an acre?

### Reference Material

Stubbendieck, J. and P.E. Reece. 1992. Nebraska Handbook of Range Management. Nebraska Coop. Ext. Serv. Circular EC 92-124-E.

Nichols, J.T., and P.N. Jensen. 1998. Range Judging Handbook.. Nebraska Coop. Ext. Serv. EC 98-150-F.

Barbour, M.G., and W.D. Billings. 1988. North American Terrestrial Vegetation. Cambridge University Press. New York.

<http://csd.unl.edu/csd/pubcatalog/framepub.htm> (Conservation and Survey Division, UNL)

Natural Resources Conservation Service at your local Farm Service Center, Native Vegetation Map of Nebraska: Kaul, R.B., and Rolfsmeier, S.B.-Conservation and Survey Division, UNL.

Local newspapers, Omaha World Herald, and the Lincoln Journal Star are on the **Web**.

<http://www.unicam.state.ne.us/index.htm> (Nebraska Legislature)

<http://www.nol.org/> (State of Nebraska's Official website)

## **Objective # 2: Range Plants**

### **Principles**

- Classification, description, and distribution
- Plant morphology
- Value as feed/habitat for livestock and wildlife
- Poisonous plants (recognition)
- Identification of range plants.

### **Try out these activities**

1. Find out how plants are classified and described both for their names and for grouping. What influences the distributions of these plants? Climate, soil, topography etc.
2. Plants all have specific ways in which they grow and reproduce. Learn how this happens and how plants are influenced by herbivory.
3. Determine the suitability of plants for their value or detriment as forage and habitat for both livestock and wildlife. How does their use influence their value?

### **Sample questions**

1. A vegetation type that extends over a large area, is termed a? physiognomy, physiography, life form or biome?
2. Which of the organelles below are most commonly associated with the exchange of genetic material? golgi bodies, nucleus, mitochondria, or vacuole?
3. In a rangeland condition, which plant below would be considered an invader? annual sunflower, smooth brome, little bluestem, or blowout grass?

## Reference Material

Barbour, M.G., and W.D. Billings. 1988. North American Terrestrial Vegetation. Cambridge University Press. New York.

Stubbendieck, J., S. L. Hatch, and C.H. Butterfield. 1995. North American Range Plants. University of Nebraska Press, Lincoln.

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Stubbendieck, J., J.T. Nichols, and C.H. Butterfield. 1989. Nebraska Range and Pasture Forbs and Shrubs. University of Nebraska Cooperative Extension Service Circular EC 89-118.

Kingsbury, J.M. 1964. Poisonous Plants of the United States and Canada. Prentice-Hall Inc. Englewood Cliff, NJ.

Heath, M.E., D.S. Metcalf, and R.F. Barnes. 1973. Forages. Iowa State University Press, Ames.

Society for Range Management. 1996. Wildland plants: physiological ecology and developmental morphology. Society for Range Management, Denver, Co.

## Objective # 3: Range Ecology

### Principles

- Plant succession, climax, ecological thresholds
- Role of livestock and wildlife in the ecosystem
- Water, mineral, energy flow
- Role and effects of fire in range ecosystems
- Range sites (recognition and description)
- Vegetation measurements
  - Definitions, how to measure, and calculations
  - Frequency
  - Density
  - Ground Cover
  - Yield

### Try out these activities

1. Develop a sound knowledge of both the biotic and abiotic portions of the ecosystem and understand their interconnectedness. Fire and man are all part of this system and are often left out of the concept of an ecosystem that interact. To be a good land steward, a manager must understand these interactions and the consequences of an ecosystem's mismanagement.

2. To successfully manage an area, the manager must know what plants occur within an area and how many there are. Learn about all of the different sampling methods and tools that exist and how they are used to make management decisions.

### Sample Questions

1. Which of the following are biotic factors of an ecosystem?
  - a) climate
  - b) microflora and microfauna
  - c) plants
  - d) humans
  
2. The fire triangle for prescribed fire on rangelands include:
  - a) fuel, oxygen, slope
  - b) ignition source, fuel, oxygen
  - c) plants, animals, fire
  - d) oxygen, fuel, heat
  
3. In an ecological context, which plant listed below would be considered an invader?
  - a) annual sunflower
  - b) leafy spurge
  - c) western wheatgrass
  - d) blowout grass
  
4. Which form of competition is usually more intense?
  - a) interspecific
  - b) intraspecific

### Reference Materials

Barbour, M.G., J.H. Burk, and W.D. Pitt. 1980. *Terrestrial Plant Ecology*. Benjamin/Cummings Publishing Co., Menlo Park, CA.

Society for Range Management. *Assessment of Rangelands and the Trend of the United States*. Denver, CO.

Bonham, C.D. 1989. *Measurements for Terrestrial Vegetation*. John Wiley & Sons. New York.

Society for Range Management. *Glossary of Terms Used in Range Management*, 2nd Edition. Denver, CO.

## **Objective # 4: Rangeland and the Livestock Industry**

### **Principles**

- Relationship of livestock and rangeland
- Grazing effect on plants
- Range condition or threshold (estimation and calculations)
- Determining stocking rates (calculations)
- Monitoring and adjusting stocking rates.
- Grazing systems and management
- Livestock distribution
- Range improvements (seedling,prescribed burning, weed and brush management, etc.)

### **Try out these Activities**

1. Determine the relationship that has existed between grazing lands and herbivores and the effect of these relationships on vegetation.
2. Rangeland health can be determined in many ways, what are some of the theories that exist, how is rangeland health determined.
3. Grazing systems and management seek to solve the problem of animal distribution while maximizing animal production. Learn about all of the different systems and practices that have been employed over the years and the successes and failures.
4. Often, people try to “improve” an area for livestock production and wildlife habitat. What are the differing methods employed and how successful are they on the many differing rangeland ecosystems.
5. Grazing of public lands by cattle, beef production, and the consumption of red meat are often controversial topics, become familiar with both sides of the argument.

### **Sample Questions**

1. The portions of a grass plant that are considered to be available for a grazing animal are?
  - a) forage
  - b) herbage
  - c) standing crop
  - d) browse
2. Grass tetany usually occurs in the \_\_\_when \_\_\_ livestock are turned onto rapidly growing, lush pastures.
  - a) spring; hungry
  - b) spring; lactating
  - c) summer; young
  - d) fall; young

3. Stocking rate is expressed in which of the following units:

- a) au/kg or au/lb
- b) aum/ha or aum/ac
- c) au/ha or au/ac
- d) kg/ha or lb.ac

## **Reference Material**

Stubbendieck, J. and P.E. Reece. 1992. Nebraska Handbook of Range Management. Nebraska Coop. Ext. Serv. Circular EC 92-124-E.

Heitschmidt, R.K. and J.W. Stuth. 1991. Grazing Management: An Ecological Perspective. Timber Press, Portland, OR.

Holechek, J.L., R.D. Piper, and C.H. Herbel. 1995. Range Management Principles and Practices. Prentice Hall.

## **Objective # 5: Rangeland and the Environment**

### **Principles**

- Species inhabiting rangeland areas.
- Role as habitat and as food
- Management benefiting wildlife, including improvements
- Wildlife/livestock interactions
- Multiple use concept of managing rangeland
- Role of rangeland in environmental protection
  - soil
  - water
  - wildlife
  - streams
  - wetlands
- Effects of human use

### **Try out these activities**

1. Make a list of the many multiple uses of rangeland and include the concept of coordinated (or integrated) resources management.
2. Determine how our uses and perceptions of the uses of rangelands influence management decisions. What are the roles of politics in rangeland management?

3. What are some of the rangeland improvement techniques used for the benefit of livestock and wildlife?

4. Do livestock and wildlife really compete for resources? If so how? Can one be used to improve an area for the other?

### Sample Questions

1. Many foresters believe that a large portion of the grasslands that currently comprise over 97 percent of Nebraska should be forests and is a dis-climax situation created by:

- a) bison
- b) use of fire by “Native Americans”
- c) wood gathered by early settlers
- d) cattle grazing

2. The Pine Ridge Region of northwestern Nebraska is considered by some to be a degraded ecosystem due to?

- a) increases in the number of pine trees
- b) suppression of fire
- c) overgrazing
- d) all of the above

### Reference material

Vallentine, J.F. 1971. Range Development and Improvement. Brigham Young, University Press. Provo, UT.

Heitschmidt, R.K. and J.W. Stuth. 1991. Grazing Management: An Ecological Perspective. Timber Press, Portland, OR.

Society for Range Management. Grazing land Hydrology Issues: Perspectives for the 21st Century. Denver Colorado.

Society for Range Management. Rangeland Wildlife. Denver Colorado.

Society for Range Management. Coordinated Resource Management Guidelines. Denver, Colorado.

Answers: 1.1) annual forbs, 1.2) combinations, 1.3) warm-season grasses, 1.4) 43,560  
2.1) biome, 2.2) nucleus, 2.3) annual sunflower  
3.1)b,c,&d, 3.2)d, 3.3)d, 3.4)b  
4.1)a, 4.2)b, 4.3)b  
5.1)b, 5.2)d