

BLUE SHALE  
KANSAS RANGE SITE DESCRIPTION

1. Location of Site:

Land Resource Areas 73 and 78  
Rolling Plains and Breaks and  
Central Rolling Red Plains



2. Climate:

See climate for LRA's 73 and 78  
(Filed in the front of Section II-E)

3. Topography:

This site is on gently sloping to moderately steep erosional shale uplands. The slopes are relatively smooth and convex with some areas dissected by drainage patterns.

4. Soils and Hydrological Characteristics:

- a. This site consists of shallow to moderately deep clayey soils over clayey shale parent material from the Carlisle and Kiowa shales. The shale is bluish gray to black in color and contains large concretions of calcium carbonate. The soils have very slow permeability and low to very low available water capacity.
- b. The major soils that characterize this site are
  - Bogue
  - Owens (Kiowa shale area only)
  - Timken
- c. Erosion of these rangelands by wind and water is a hazard if the vegetation is overgrazed or mismanaged. Livestock trailing often leads to the formation of gullies. During extended wet periods the soils on steeper slopes tend to shear and slide down the slope, leaving bare exposed slopes.

Ponds or pits constructed in these soils normally hold water very well. Excessive silting in the pond can be a problem, especially in areas of exposed shale material.

5. Climax Vegetation:

a. The natural potential vegetation of this site is a mixed grass prairie. Big bluestem, little bluestem, and sideoats grama are the dominant forage producers on this site. Combined they will make up 65 to 70 percent of the total annual production. Forbs of importance on this site are western ragweed, Illinois bundleflower, slimflower scurfpea, and dotted gayfeather. Leadplant generally makes up about 5 percent of the total vegetation on the north and east facing slopes. Pricklypear is more common on the drier south and west facing slopes.

In its development, the vegetation on this site was influenced by grazing and occasional wildfires. The grazing was predominantly by large transient herds of bison.

b. Guidelines for Determining Range Condition:

(Percentage of total production by weight)

<u>Grasses and Grasslike - 90 Percent</u>		<u>Forbs - 5 Percent</u>	<u>Shrubs and Cacti - 5 Percent</u>
40	40 big bluestem 10 indiagrass	5 dotted gayfeather Illinois bundleflower slimflower scurfpea	5 leadplant pricklypear yucca
20	little bluestem	upright prairieconeflower wavyleaf thistle	
15	sideoats grama		
	5 bluegrama 5 buffalograss		
15	5 switchgrass 5 tall dropseed 5 western wheatgrass		

c. Common invaders to this site include prairie threeawn, smooth sumac, buckbrush, hairy grama, perennial threeawns, tumblegrass, and windmillgrass.

6. Management Implications:

This site appears on the side slopes of the Carlisle and Kiowa shale areas. Due to the steepness of some of the slopes, this site is generally less intensively grazed than other associated sites. Where overgrazing does occur, a step pattern of livestock trails is generally apparent.

Initial overgrazing of this site generally reduces the production of big bluestem while little bluestem increases to become the dominant vegetation. With continued overgrazing western wheatgrass, then blue grama and buffalograss become the prominent species on the site.

Once denuded by overgrazing or slippage, this site is difficult to bring back into productivity. Reseeding is difficult because of the steeper slopes and the high clay content of the soil and its erosive nature.

To maintain this site in near potential condition, or to improve it from a lower condition, proper stocking for the entire pasture is essential. Lighter grazing on the slopes often permits this site to improve while more level sites are maintained or slightly overgrazed. A planned grazing system may be used to obtain optimum utilization while maintaining or improving the site.

7. Wildlife Considerations:

Game animals do not normally prefer this site for nesting or cover because of the slopes and numerous drains. However, when adjacent sites are overgrazed, it may become a preferred area.

Lizards, small rodents, songbirds, and other small animals utilize the site where areas of good vegetative cover and open areas are mixed. The presence of small animals, as well as updrafts created by the associated hills, attracts hawks and other birds of prey.

8. Other Uses and Values:

The shale parent materials of this site contribute to the site being maintained in its natural state. Potential slippage discourages development on this site. Local rock collectors and others seek the large serpentine concretions often exposed in these slippage areas.

The location of the site and its vegetation makes it an attractive part of the landscape.

9. Herbage Production Guidelines:

The following guidelines are based on available clipping data when this site is in excellent condition. Vigor of principal forage species, time of burning, if fire is used, as well as growing conditions, influence annual herbage production.

<u>Growing Conditions</u>	<u>Total Air Dry Herbage</u>	
	<u>Pounds/Acre</u>	<u>Kilograms/Hectare</u>
Favorable	2,500-3,500	2,800-3,920
Normal	1,500-2,500	1,680-2,800
Unfavorable	1,000-1,500	1,100-1,680

10. Guide to Initial Stocking Rates:

<u>Range Condition</u>	<u>Percent Climax Vegetation</u>	<u>Acres/AU Yearlong</u>	<u>AU Months Per Acre</u>	<u>Hectares/AU Yearlong</u>	<u>AUM's per Hectare</u>
Excellent	76-100	18-22	.6	7-9	1.5
Good	51-75	22-27	.5	9-11	1.25
Fair	26-50	27-40	.4	11-16	1.00
Poor	0-25	40+	.2	16+	.50

These guidelines are considered safe initial stocking rates from which a sound management program can be built. Grazing only during the dormant season or use of a specialized grazing program will usually allow a substantial increase in the stocking rates shown.

This site is not normally used for hay production

11. Relative Preference of Plant Species:

Preferences of plant species by classes of livestock and uses by wildlife will vary from year to year and season to season. The table below is what might be expected under average climatic conditions and good management.

Forage Preferences

H = High  
M = Medium  
L = Low

Wildlife Preferred Uses

C = Cover  
F = Food  
N = Nesting

Plant Species	Animal Species			
	Cattle	Sheep	Deer	Pheasant
big bluestem	H	M	C	C,N
blue grama	H	H	---	---
buffalograss	H	H	---	---
dotted gayfeather	M	M	F	---
Illinois bundleflower	H	H	F	F
indiangrass	H	M	C	C,N
Japanese brome	M <u>1/</u>	H <u>1/</u>	F <u>1/</u>	F <u>1/</u>
leadplant	H	H	F	C,F
little bluestem	H	M	C	C,N
pricklypear	L	L	---	---
sideoats grama	H	H	---	C
slimflower scurfpea	L	M	F	F
switchgrass	H <u>2/</u>	M	C	C,F,N
tall dropseed	M	L	C	C,N
upright prairieconeflower	L	M	F	F
wavyleaf thistle	L	L	F <u>1/</u>	F
western wheatgrass	H	M	F	C,N

1/ Has a high preference during lush growth periods.

2/ Preferred during first half of growing season.

Reference:

Anderson, Kling L. and Clenton E. Owensby. 1969 Common Names of a Selected List of Plants. Kansas State University Tech. Bul. 117.