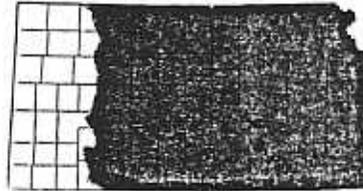


SHALLOW LIMY
KANSAS RANGE SITE DESCRIPTION

1. Location of Site:

Land Resource Areas 72 and 77
Central High Table Land and
Southern High Plains



2. Climate:

See climate for LRA's 72 and 77
(Filed in the front of Section II-E)

3. Topography:

This site occurs on nearly level to steeply sloping uplands

4. Soils and Hydrological Characteristics:

a. The soils on this site are 4 to 20 inches deep over caliche or limestone. These soils have a loamy surface layer and subsoil. They are calcareous throughout their profile and have a low available water capacity.

b. The major soils that characterize this site are:

Canlon	Potter
Canyon	Travessilla
Penrose	

c. These soils are highly susceptible to wind and water erosion when unprotected. The rough broken topography with vertical ledges and steep slopes makes it difficult for livestock to traverse.

5. Climax Vegetation:

a. The natural potential vegetation of this site is a mixed grass prairie. Little bluestem and sideoats grama are the dominant species in this condition. Combined they will make up about 60 percent of the total annual yield. This site supports a diverse forbs population which makes up about 10 percent of the total production.

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

b. Guidelines For Determining Range Condition:

(Percentage of total production by weight)

<u>Grasses and Grasslike - 85 Percent</u>		<u>Forbs - 10 Percent</u>	<u>Shrubs and Cacti - 5 Percent</u>	
65	10 big bluestem	5	5	
	40 little bluestem			black samson
	30 sideoats grama			catclaw sensitive briar
	5 switchgrass			dotted gayfeather
20	10 blue grama	5	leadplant	
			5 buffalograss	pricklypear
			5 hairy grama	yucca
	5 plains muhly		engelmann daisy	
	Canada wildrye		Illinois bundleflower	
sand dropseed	5	penstemons		
		western wheatgrass	slimflower scurfpea	
		T		
			broom snakeweed	
			heath aster	
			scarlet globemallow	
		T	western ragweed	
			western yarrow	
			hymenopappus	
			rush skeletonplant	
			stiff goldenrod	
			upright prairieconeflower	
			yellowspine thistle	

c. Invaders common to this site include Japanese brome, common sunflower, little barley, sixweeks fescue, and threeawns.

6. Management Implications:

This site is generally on the breaks of the hills between the uplands and valleys. Much of the site is steep and associated with rock ledges forming vertical drops.

The more level portions, usually just above the break of the hills, are generally grazed rather heavily. However, the rougher portions of the site are less preferred for grazing and often provide a haven for many of the better forage plants.

Where excessive grazing does occur, big bluestem is rapidly replaced by little bluestem and sideoats grama. As excessive grazing continues, little bluestem and sideoats grama give way to blue grama, hairy grama, buffalograss, threeawns, and a wide variety of perennial and annual forbs.

Aids such as water, salt placement, minerals, etc., help distribute livestock uniformly over the site for better grazing distribution. The construction of livestock trails to permit access across portions of this site may be necessary for optimum grazing distribution.

Because of the protection of the better forage plants afforded by the rough topography and rocks, improved grazing management can rapidly return this site to near its potential in most cases.

7. Wildlife Considerations:

Pockets of deep soils or small protected areas on this site are preferred sites for coyotes, foxes, and other predator species. Numerous small rodents and lizards utilize this and adjacent sites as their home providing food for the predators associated with this site.

The rough topography of this site provides protection for a wide variety of animals during winter storms and other inclement weather. The abundance of forbs also provides good amounts of food for birds and small mammals.

Severa species of snakes may be found on this site.

8. Other Uses and Values:

The shallow soils and rough topography limit the uses of this site to the less intensive land uses such as rangeland and wildlifeland. Home building on this site is generally expensive and impractical. Rock for road surfacing is sometimes excavated from this site.

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	1,400-1,600	1,570-1,800
Normal	1,000-1,400	1,120-1,570
Unfavorable	600-1,000	675-1,120

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	25-35	.4	10-14	1.0
Good	51-75	35-50	.3	14-20	.75
Fair	26-50	50-80	.2	20-32	.50
Poor	0-25	80+	.1	32+	.25

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	Antelope	Deer	Pheasant
big bluestem	H	C	C	C,N
blue grama	H	---	---	---
buffalograss	H	---	---	---
catclaw sensitivebriar	H	F	F	F
dotted gayfeather	M	F	F	---
engelmann daisy	M	F	F	F
hairy grama	M	---	---	---
heath aster	H	F	F	F
leadplant	H	F	F	C,F
little bluestem	H	C	C	C,N
scarlet globemallow	L	F	F	F
sideoats grama	H	---	---	C
slimflower scurfpea	L	F	F	F
stiff goldenrod	L	F	F	F
switchgrass	H <u>1/</u>	C	C	C,F,N
western ragweed	M	F	F	F
western wheatgrass	H	F	F	C,N
yucca	L	---	---	C

1/ 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.

SHALLOW LIMY
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 occurs on nearly level to rough broken and steeply sloping uplands.

4. Soils and Hydrological Characteristics:

a. The soils on this site range from 4 to 20 inches deep over caliche or fractured limestone. These soils have loamy surface layers and subsoils. They are calcareous throughout and have low available water capacity.

b. The major soils that characterize this site are:

Canlon
Heizer

Potter

c. The soils on this site are highly susceptible to wind and water erosion when unprotected.

5. Climax Vegetation:

a. The natural potential vegetation of this site is a mixed grass prairie with dominant species of big bluestem, little bluestem, and sideoats grama. Combined these species will make up about 70 percent of the composition. This site supports a very diverse population of forbs which can comprise up to 15 percent of the total production.

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

b. Guidelines for Determining Range Condition:

(Percentage of total production by weight)

<u>Grasses and Grasslike - 85 Percent</u>		<u>Forbs - 15 Percent</u>	<u>Trees, Shrubs and Cacti - T</u>	
75	35 big bluestem	10	T	
	5 indiangrass			
	45 little bluestem			
	15 sideoats grama			
5 switchgrass	blacksamson echinacea			
10	5 blue grama			catclaw sensitivebriar
	5 buffalograss			dotted gayfeather
	5 hairy grama			Louisiana sagewort
	5 plains muhly			purple prairieclover
T	hairy dropseed			slimflower scurfpea
	tall dropseed	western ragweed	leadplant	
		white prairieclover	pricklypear	
		grooved flax	redcedar	
	fendler aster	smooth sumac		
	fremont clematis	western snowberry		
	james nailwort			
	nettleleaf noseburn			
	5 ovalleaf bladderpod			
	plains milkweed			
	resinous skullcap			
	rush skeletonplant			
	scarlet globemallow			
	stiff goldenrod			
	white polygala			

c. Invaders common to the site are Japanese brome, broom snakeweed, common sunflower, little barley, sixweeks fescue, and threeawns.

6. Management Implications:

This site is generally on the breaks of the hills between the uplands and valleys. Much of the site is steep and associated with rock ledges forming vertical drops.

The more level portions, usually just above the break of the hills, are generally grazed rather heavy. The steeper portions of the site, however, are less accessible for grazing and often provide a haven for many of the better forage plants.

Where excessive grazing does occur, big bluestem is rapidly replaced by little bluestem and sideoats grama. As excessive grazing continues, little bluestem and sideoats grama give way to blue grama, hairy grama, buffalograss, threeawns, and less palatable perennial and annual forbs.

Proper location of grazing distributional aids such as water, salt, minerals, etc., helps distribute livestock over the site for better grazing distribution. The construction of livestock trails to permit access across portions of this site and/or additional water locations may be necessary for optimum grazing distribution.

Because of the protection afforded the better forage species by the rough topography and rocks, grazing systems and improved management can rapidly return this site to near its potential in most cases.

7. Wildlife Considerations:

Where pockets of deep soils exist or where there are small protected areas, this is a preferred site for coyotes, foxes, and other predator species. Numerous small rodents and lizards utilize this and adjacent sites as their home and provide food for the predators.

The rough topography of this site provides protection for a wide variety of animals during winter storms and other bad weather. The abundance of forbs also insures adequate amounts of food for birds and small mammals.

8. Other Uses and Values:

The shallow soils and rough topography limit the uses of this site to the less intensive land uses such as rangeland and wildlife land. Housing and commercial development on this site are generally expensive and impractical. Rock for road surfacing is excavated from this site.

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	1,800-2,500	2,000-2,800
Normal	1,400-1,800	1,550-2,000
Unfavorable	900-1,400	1,000-1,550

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	22-30	.5	9-12	1.25
Fair	26-50	30-50	.3	12-20	.75
Poor	0-25	50+	.15	20+	.37

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	Deer	Pheasant
big bluestem	H	C	C,N
blue grama	H	F	---
buffalograss	H	---	---
catclaw sensitivebriar	H	F	F
dotted gayfeather	M	F	---
hairy grama	M	---	---
leadplant	H	F	C,F
little bluestem	H	C	C,N
Louisiana sagewort	L	---	---
plains muhly	H	F	---
purple prairieclover	L	F	F
scarlet globemallow	L	F	F
sideoats grama	H	---	C
slimflower scurfpea	L	F	F
stiff goldenrod	L	F	F
switchgrass	H <u>1/</u>	C	C,F,N
tall dropseed	M	C	C,N
western ragweed	M	F	F

1/ Preferred during first half of growing season.

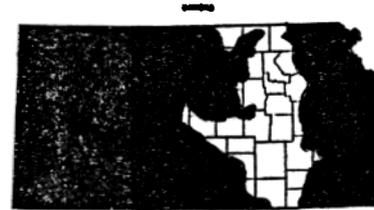
Reference:

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

SHALLOW LIMY
KANSAS RANGE SITE DESCRIPTION

1. Location of Site:

Land Resource Areas 75 and 76
Central Loess Plains and
Bluestem Hills (Flint Hills)



2. Climate:

See climate for LRA's 75 and 76
(Filed in the front of Section II-E)

3. Topography:

This site occurs primarily on level to sloping uplands above the steep slopes of the landscape and often occurs in a complex with other sites. In rolling topography the shallow areas appear as narrow, horizontal bands on the face of the landscape.

4. Soils and Hydrological Characteristics:

- a. These soils average less than 10 inches in depth over limestone beds. The limestone beds restrict the amount of water available for plant use and inhibit normal root development of the vegetation. Up to 10 percent of the area may consist of exposed flat rock.
- b. The soil that characterizes this site is Sogn
- c. The major hazard of this site is sheet erosion. The shallow depth limits plant production, exposing the limited soil during drought periods and overgrazed conditions.

5. Climax Vegetation:

- a. The potential vegetation is variable on this site due to the fluctuating soil depths that are encountered. The small portions of the deeper phases that occur support large populations of big bluestem, little bluestem, sideoats grama, and indiagrass. However, in the large majority of this site the soil depth is only from 5 to 10 inches. The above grasses combined with lesser amounts of switchgrass, hairy grama, tall dropseed, sedges, and other mid and short grasses make up about 80 percent of the potential vegetation. This creates a mosaic or banding effect between the tall grass, mid, and short grasses, and rock outcrop areas.

b. Guidelines for Determining Range Condition:
 (Percentage of total production by weight)

<u>Grasses and Grasslike - 80 Percent</u>		<u>Forbs - 15 Percent</u>	<u>Shrubs and Cacti - 5 Percent</u>		
70	30 big bluestem	10	5		
	15 indiagrass				
	25 little bluestem				
	20 sideoats grama				
	10 switchgrass				
10	blue grama			5	5
	buffalograss				
	hairy grama				
	purpletop				
	rock muhly				
	rosette panicums				
	sedges				
	tall dropseed				
		aromatic aster			
		heath aster			
	Leavenworth eryngo				
	Louisiana sagewort				
	Missouri eveningprimrose				
	nettleleaf noseburn				
	pitcher sage				
	pussytoes				
	slender mountainmint				
	stiff goldenrod				
	upright prairieconeflower				
	western ragweed				
	yarrow				

c. Common invaders to the site include annual broomweed, Japanese brome, prairie threeawn, silver bluestem, rough tridens, and windmillgrass.

6 Management Implications:

This site occurs on uplands just above the steep slopes of the landscape. This site along with the associated rock outcrops is a very conspicuous trademark of the landscape.

Rock outcrops associated with this site often impede livestock distribution. In some cases these outcrops present barriers which livestock cannot cross. Livestock trails and fencing to minimize the effects of such barriers help with livestock distribution. An additional consideration is a lack of sites to develop livestock water above the rock barriers.

This is a preferred grazing and loafing site for livestock, especially in the hot summer. Cattle prefer the shorter plant growth on this site as well as the cooling summer winds which generally cross these areas.

When overgrazed by cattle, big bluestem, little bluestem, and indian-grass decrease, or are reduced to a very low vigor condition. Sideoats grama, blue grama, buffalograss, and hairy grama tend to increase. With continued overgrazing hairy grama, annual grasses, unpalatable forbs, and aromatic sumac tend to dominate the site.

Late spring burns help to keep aromatic sumac and dogwood in a juvenile stage. However, fire tends to increase the number of basal stems. Selecting the proper grazing animals and/or use of approved herbicides is necessary to manage acceptable populations of these plants.

Sheep readily graze most of the forbs and shrubs on this site. Overgrazing with sheep will result in rapid reduction of the forbs and shrubs. Continued overgrazing finally results in prairie threeawn and remnants of buffalograss, hairy grama, and tall dropseed dominating the site.

Grazing management that provides periodic rest, especially late summer, combined with proper grazing use helps maintain this site in good to excellent condition.

7. Wildlife Considerations:

Game animals do not normally prefer this site for nesting or cover as it is somewhat open and droughty. Quail, deer, prairie chickens, and other wildlife species, however, do frequent this site for feeding. Prairie chickens occasionally utilize portions of this site for booming grounds.

Lizards, snakes, small rodents, songbirds, and other small animals prefer the rocky open areas of the site. Their presence, as well as updrafts created by the associated hills, attracts hawks and other birds of prey. The rock outcrop areas of this site are the favorite nesting area for the night hawk.

Maintaining tall grass vegetation on the more productive areas of the site creates a mosaic or banding effect with the rocky areas. The habitat edge that is created or maintained, attracts a variety of wildlife to the site.

8. Other Uses and Values:

The abundance of limestone rock normally found on this site contributes to these areas being maintained in their natural state. The stoniness discourages building on this site.

The location of this site in the topography makes it attractive for both public and private lookouts. From the rock outcrop edge of the site one can normally view the surrounding landscape.

An abundance of flowering plants along with the limestone outcrops makes this site attractive to photographers, hikers, and wildflower enthusiasts.

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	2500-3500	2800-3900
Normal	2000-2500	2250-2800
Unfavorable	1000-2000	1100-2250

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	12-18	.8	5-7	2.0
Good	51-75	18-25	.6	7-10	1.5
Fair	26-50	25-35	.4	10-14	1.0
Poor	0-25	35+	.3	14+	0.75

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	P. Chicken
aromatic sumac	L	L	C	C
big bluestem	H	M	C	C,N
blue grama	M	H	F	---
buffalograss	H	H	---	---
catclaw sensitivebriar	H	H	F	F
ceanothus	H	H	F	C,F
compassplant	H	H	F	F
dotted gayfeather	M	M	---	---
hairy grama	M	M	---	---
indiangrass	H	M	C	C,N
Japanese brome	M <u>1/</u>	H	F	---
leadplant	H	H	F	C,F
little bluestem	H	M	C	C,N
pussytoes	M	H	F	---
sideoats grama	H	M	---	C
silver bluestem	L	L	---	C
switchgrass	H <u>2/</u>	L	C	C,F,N
western ragweed	M	M	F	C,F

1/ Has a high preference during lush growth periods.

2/ Preferred during first half of growing season.

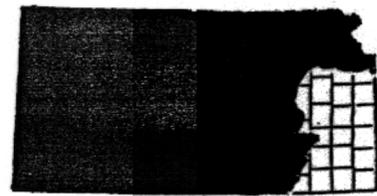
Reference:

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

SHALLOW LIMY
KANSAS RANGE SITE DESCRIPTION

1. Location of Site:

Land Resource Areas 84A and 112
Cross Timbers and Cherokee Prairie



2. Climate:

See climate for LRA's 84A and 112
(Filed in the front of Section II-E)

3. Topography:

This site occurs primarily on level to sloping uplands above the steep slopes of the landscape and often occurs in a complex with other sites. In rolling topography, the shallow areas appear as narrow, horizontal bands on the face of the landscape.

4. Soils and Hydrological Characteristics:

- a. These soils average less than 10 inches in depth over limestone beds. The limestone beds restrict the amount of water available for plant use and inhibit normal root development of the vegetation. Up to 10 percent of the area may consist of exposed rock outcrops.
- b. The soils that characterize this site are Shidler and Sogn
- c. The major hazard of this site is sheet erosion. The shallow depth limits plant production, exposing the limited soil during drought periods and overgrazed conditions.

5. Climax Vegetation:

- a. The natural potential vegetation is somewhat variable due to the fluctuating soil depths that are encountered. The small portions of the deeper phases that occur support large populations of big bluestem, switchgrass, and indiagrass. However, the soil depth in the majority of this site is from 5 to 10 inches thick. Sideoats grama and little bluestem combine with the tall grasses and lesser amounts of short grasses to make up 80 percent of the potential vegetation.

b. Guidelines for Determining Range Condition:

(Percentage of total production by weight)

<u>Grasses and Grasslike - 80 Percent</u>		<u>Forbs - 15 Percent</u>	<u>Shrubs and Cacti - 5 Percent</u>
70	30 big bluestem	American licorice	aromatic sumac
	20 little bluestem	blacksamson echinacea	buckbrush
	15 indiangrass	catclaw sensitivebriar	5 ceanothus
	25 sideoats grama	compassplant	leadplant
	10 switchgrass	dotted gayfeather	pricklypear
10		10 maximilian sunflower	
	buffalograss	pale echinacea	
	Canada wildrye	purple prairieclover	
	hairy grama	rose verbena	
	purple lovegrass	white prairieclover	
	rock muhly	willowleaf sunflower	
	rosette panicums		
	sedges	5 aromatic aster	
	silver bluestem	heath aster	
	tall dropseed	Leavenworth eryngo	
	Virginia wildrye	Louisiana sagewort	
		Missouri eveningprimrose	
		nettleleaf noseburn	
		pitcher sage	
		pussytoes	
	slender mountainmint		
	stiff goldenrod		
	western ragweed		
	upright prairieconeflower		
	yarrow		

c. Common invaders to the site include annual broomweed, Japanese brome, lanceleaf ragweed, prairie threeawn, puffsheath dropseed, roughleaf dogwood, rough tridens, smooth sumac, white tridens, and windmillgrass.

6 Management Implications:

This site normally occurs on uplands just above gentle to steep slopes. The site along with associated rock outcrops is very conspicuous when occurring in the landscape.

Rock outcrops associated with this site occasionally impede livestock distribution. In rare cases these outcrops present barriers which livestock cannot cross. Livestock trails and fencing to minimize the effects of such obstructions help with livestock distribution. An additional consideration is a lack of sites to develop livestock water above the rock outcrops.

This is a preferred site of livestock, especially in the hot summer. Cattle prefer the shorter growing plants on this site as well as the cooling summer winds which generally funnel across these areas.

When overgrazed by cattle, big bluestem, little bluestem, and indiagrass decrease or are reduced to a very low vigor condition. Sideoats grama, buffalograss, and hairy grama tend to increase. With continued overgrazing hairy grama, annual grasses, unpalatable forbs, and aromatic sumac tend to dominate the site.

Late spring burns help to keep aromatic sumac and roughleaf dogwood in a juvenile stage. However, fire tends to increase the number of basal stems. Selecting the proper grazing animals and/or use of approved herbicides is necessary to maintain acceptable populations of these plants.

Sheep readily graze most of the forbs and shrubs on this site. Overgrazing with sheep will result in rapid reduction of the forbs and shrubs. Continued overgrazing finally results in prairie threewm and remnants of buffalograss, hairy grama, and tall dropseed dominating the site.

Grazing management that provides periodic rest, especially late summer, combined with proper grazing use helps maintain this site in good to excellent condition.

7 Wildlife Considerations

Game animals do not normally prefer this site for nesting or cover as it is somewhat open and droughty. Quail, deer, prairie chickens, and other wildlife species, however, do frequent this site for feeding. Prairie chickens occasionally utilize portions of this site for booming grounds.

Lizards, snakes, small rodents, songbirds, and other small animals prefer the rocky open areas of the site. Their presence, as well as updrafts created by the associated hills, attracts hawks and other birds of prey. The rock outcrop areas of this site are the favorite nesting area for the night hawk.

Maintaining tall grass vegetation on the more productive areas of the site creates a mosaic or banding effect with the rocky areas. The habitat edge that is created or maintained, attracts a variety of wildlife to the site.

8. Other Uses and Values:

The abundance of limestone rock normally found on this site contributes to these areas being maintained in their natural state. The stoniness discourages development on this site.

The location of this site in the topography makes it attractive for both public and private lookouts. From the rock outcrop edge of the site one can normally view the entire landscape.

An abundance of flowering plants along with the limestone outcrops makes this site attractive to photographers, hikers, and wildflower enthusiasts.

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	3000-4000	3400-4500
Normal	2000-3000	2250-3400
Unfavorable	1500-2000	1700-2250

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	14-18	.8	5.7-7.3	2
Good	51-75	18-25	.6	7.3-10.1	1.5
Fair	26-50	25-45	.4	10.1-18.2	1.0
Poor	0-25	45+	.2	18.2+	0.5

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
aromatic sumac	L	L	C
big bluestem	H	M	C
buffalograss	M	H	--
Canada wildrye	H	M	F
catclaw sensitivebriar	H	H	F
ceanothus	H	H	C,F
compassplant	H	H	F
dotted gayfeather	M	M	--
indiangrass	H	M	C
Japanese brome	M <u>1/</u>	H <u>1/</u>	F
leadplant	H	H	C,F
little bluestem	H	M	C
pussytoes	M	M	F
sedges	M	M	F
sideoats grama	H	M	
silver bluestem	L	L	--
switchgrass	H <u>2/</u>	L	C
western ragweed	M	M	

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.

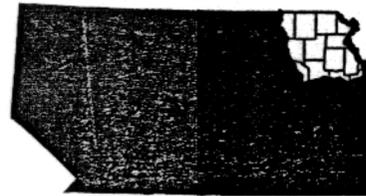
SHALLOW LIMY
KANSAS RANGE SITE DESCRIPTION

1. Location of Site:

Land Resource Area 106
Nebraska and Kansas Loess-Drift Hills

2. Climate:

See climate for LRA 106
(Filed in the front of Section II-E)



3. Topography:

Occurs primarily as sloping uplands. Often occurs in a complex with other sites.

4. Soils and Hydrological Characteristics:

- a. These soils are less than 20 inches deep over limestone. In rolling topography the shallow areas appear as narrow horizontal bands on the face of the landscape. The limestone beds restrict the amount of water available for plant use and inhibit normal root development of the vegetation. Up to 20 percent of the area may consist of exposed rock outcrops.
- b. The soil that characterizes this site is Sogn.
- c. The major hazard of this site is sheet erosion. The shallow soil depth limits plant production, exposing the soil during drought periods and overgrazed conditions.

5. Climax Vegetation:

- a. The natural potential vegetation is somewhat variable due to the fluctuating soil depths that are encountered. The perennial plants often grow over the cracks between the rocks with their roots taking advantage of the extra soil depth. The small portions of the deeper phases that occur support large populations of big bluestem, little bluestem, and indiagrass. However, the soil depth in the majority of this site is from 5 to 10 inches thick. Sideoats grama and little bluestem combine with lesser amounts of tall and short grasses to make up 80 percent of the potential vegetation.

b. Guidelines for Determining Range Condition:

(Percentage of total production by weight)

<u>Grasses and Grasslike - 80 Percent</u>		<u>Forbs - 15 Percent</u>	<u>Shrubs and Cacti - 5 Percent</u>
30	sideoats grama	blacksampson echinacea	aromatic sumac
25	big bluestem	catclaw sensitivebriar	buckbrush
	indiangrass	compassplant	ceanothus
	switchgrass	dotted gayfeather	leadplant
15	little bluestem	10	pricklypear
		purple prairieclover	
		rose verbena	
		white prairieclover	
10	buffalograss	willowleaf sunflower	
	Canada wildrye		
	purple lovegrass	5	aromatic aster
	sedges	Leavenworth eryngo	
	silver bluestem	Louisiana sagewort	
	Virginia wildrye	Missouri eveningprimrose	
		nettleleaf noseburn	
	pusseytoes		
	stiff goldenrod		
	western ragweed		
	upright prairieconeflower		
	yarrow		

c. Common invaders to the site include annual broomweed, Japanese brome, lanceleaf ragweed, prairie threeawn, puffsheath dropseed roughleaf dogwood, rough tridens, smooth sumac, white tridens, and windmillgrass.

6. Management Implications:

This site normally occurs on uplands just above gentle to steep slopes. The site along with associated rock outcrops is very conspicuous when occurring in the landscape. Slopes range from 5 to 20 percent.

Rock outcrops associated with this site occasionally impede livestock distribution. In rare cases these outcrops present barriers which livestock cannot cross. Livestock trails and fencing to minimize the effects of such obstructions help with livestock distribution. An additional consideration is a lack of sites to develop livestock water above the rock outcrops.

This is a preferred site of livestock, especially in the hot summer. Cattle prefer the shorter growing plants on this site as well as the cooling summer winds which generally funnel across these areas.

When overgrazed by cattle, big bluestem, little bluestem, and indiagrass decrease or are reduced to a very low vigor condition. Sideoats grama, buffalograss, and hairy grama tend to increase. With continued overgrazing hairy grama, annual grasses, unpalatable forbs, and aromatic sumac tend to dominate the site.

Sheep readily graze most of the forbs and shrubs on this site. Overgrazing with sheep will result in rapid reduction of the forbs and shrubs. Continued overgrazing finally results in prairie threeawn and remnants of buffalograss, hairy grama, and tall dropseed dominating the site.

Aromatic sumac and roughleaf dogwood often increase rapidly on this site. Late spring burns help maintain them in a juvenile stage. However, fire tends to increase the number of basal stems. Selecting the proper grazing animals and/or use of approved herbicides is necessary to maintain acceptable populations of these plants.

Grazing management that provides periodic rest, especially late summer, combined with proper grazing use helps maintain this site in good to excellent condition.

7. Wildlife Considerations:

Game animals do not normally prefer this site for nesting or cover as it is somewhat open and droughty. Quail, deer, prairie chickens, and other wildlife species, however, do frequent this site for feeding. Prairie chickens occasionally utilize portions of this site for booming grounds.

Lizards, snakes, small rodents, songbirds, and other small animals prefer the rocky open areas of the site. Their presence, as well as updrafts created by the associated hills, attracts hawks and other birds of prey. The rock outcrop areas of this site are the favorite nesting area for the night hawk.

Maintaining tall grass vegetation on the more productive areas of the site creates a mosaic or banding effect with the rocky areas. The habitat edge that is created or maintained, attracts a variety of wildlife to the site.

8. Other Uses and Values:

The abundance of limestone rock normally found on this site contributes to these areas being maintained in their natural state. The stoniness discourages development on this site.

The location of this site in the topography makes it attractive for both public and private lookouts. From the rock outcrop edge of the site one can normally view the entire landscape.

An abundance of flowering plants along with the limestone outcrops makes this site attractive to photographers, hikers, and wildflower enthusiasts.

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	3000-4000	3400-4500
Normal	2000-3000	2250-3400
Unfavorable	1500-2000	1700-2250

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>
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big bluestem	H	M	C
buffalograss	M	H	---
Canada wildrye	H	M	F
catclaw sensitivebriar	H	H	F
ceanothus	H	H	C,F
compassplant	H	H	F
dotted gayfeather	M	M	---
indiangrass	H	M	C
Japanese brome	M <u>1/</u>	H <u>1/</u>	F <u>1/</u>
leadplant	H	H	C,F
little bluestem	H	M	C
pussytoes	M	M	F
sedges	M	M	F
sideoats grama	H	M	---
silver bluestem	L	L	---
switchgrass	H <u>2/</u>	L	C
western ragweed	M	M	---

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