

Monitoring Rangeland

What's the Big Deal?

What We Think is Important from a Checking or Monitoring Standpoint.



NRCS



NRCS

Water and Brush



4006

All Weather Rain Gauge

WARNING: FREEZING RAIN OR SUB-ZERO WEATHER CAN CAUSE THIS GAUGE TO CRACK.

Kendall Co 2004

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Remarks - Severe Weather - Storm Damage
1					1.20		
2				4.75			
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14				4.05			
15				0.79			
16							
17							
18		0.47					
19							
20							
21		0.10	0.30				
22		2.00					
23	0.51	3.50		2.90			
24				0.05			
25	0.49						
26			0.10				
27							
28				0.10			
29							
30	0.20						
31				0.58			
Total	1.20	6.17	0.40	13.63	6.04		17.44 + 26.76 = 44.20 yearly Total

Additional Daily Precipitation Logs covering an entire year (.50 each) and additional All-Weather Rain Gauges are available directly from:

PRODUCTIVE ALTERNATIVES, INC.
 Route 2, Box 329-A Dept. B
 Fergus Falls, MN 56537

Livestock



Wildlife



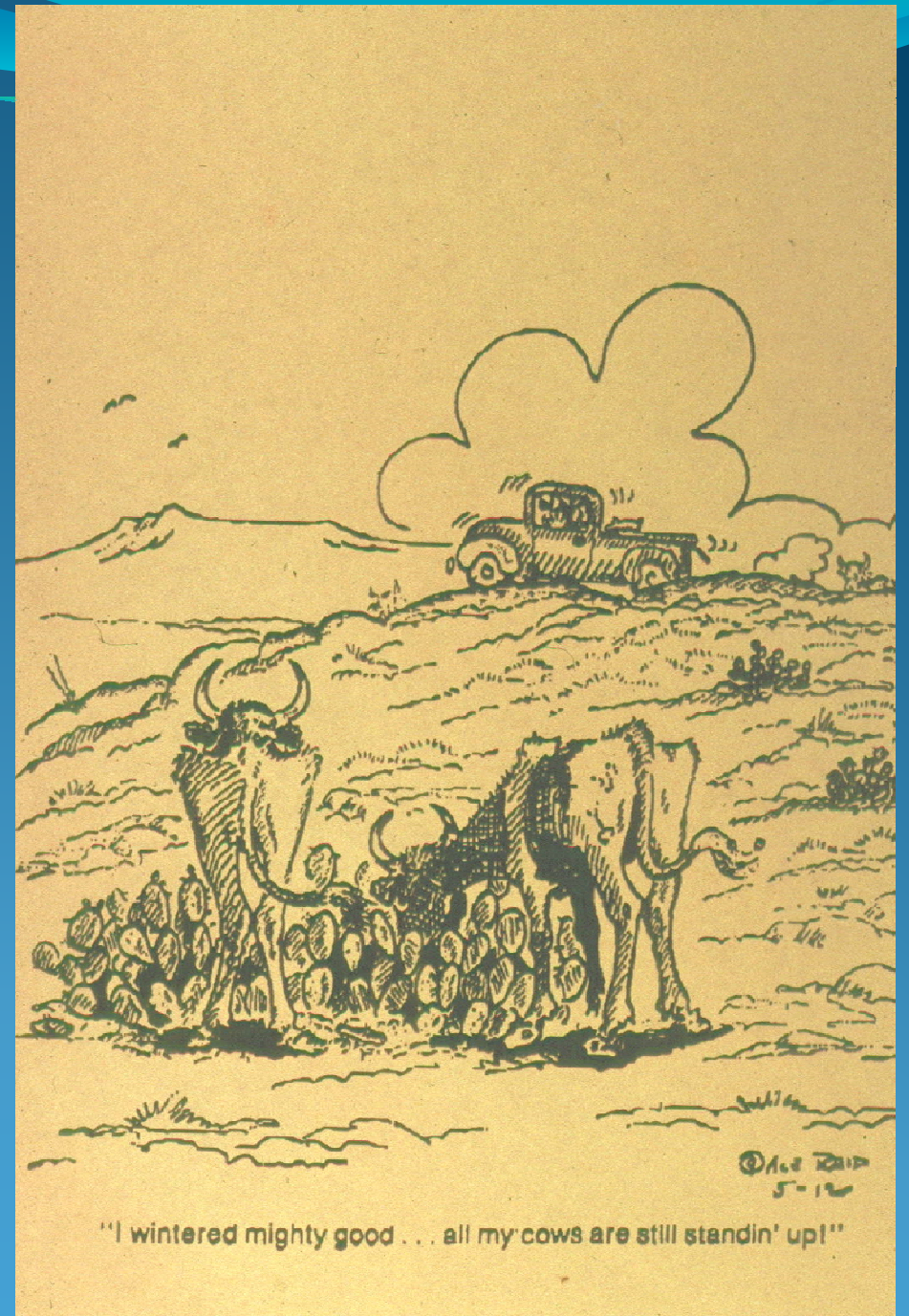
Body Conditions



Other



Maybe this is
the only
vegetative
monitoring
ever done on a
ranch.



"I wintered mighty good . . . all my cows are still standin' up!"

Why Should You Monitor Rangeland?

- **The rangeland resource is the most important resource we have on which most others are dependent.**
- **Increases the manager's ability to make proper decisions.**
- **Allows manager to make sure past decisions they made are producing desirable results.**
- **Assists the manager in measuring land health and productivity.**
- **Assists the manager in making accurate grazing management decisions.**

So why don't we monitor rangeland?

- Don't know how or what to do
- Don't think it's very important
- It's not a very exciting job
- It will take too much time
- Don't know my plants
- Don't really care about it
- I don't have anyone to do it for me
- I'm a cattle rancher not a grass farmer

A monitoring program can be fairly simple to complex depending on rancher's interests and ability.



Simple Monitoring Using Photo Points

- Periodic photos of specific sites on a ranch.
- Annual photos – take at the end of the growing season.
- Seasonal photos – taken at the end of the growing season, spring green up, before and after a pasture is grazed, before and after brush management or prescribed burning.
- Takes a minimal amount of time.

Locating Photo Points

- Not too close to water.
- Away from salt and mineral access areas.
- Not too close to the back of a pasture.
- On a major ecological site or key grazing area.
- Accessible – for you and livestock.
- May want to take photo points of problem or potential problem areas.
- NRCS can help you locate these as part of our conservation planning process.

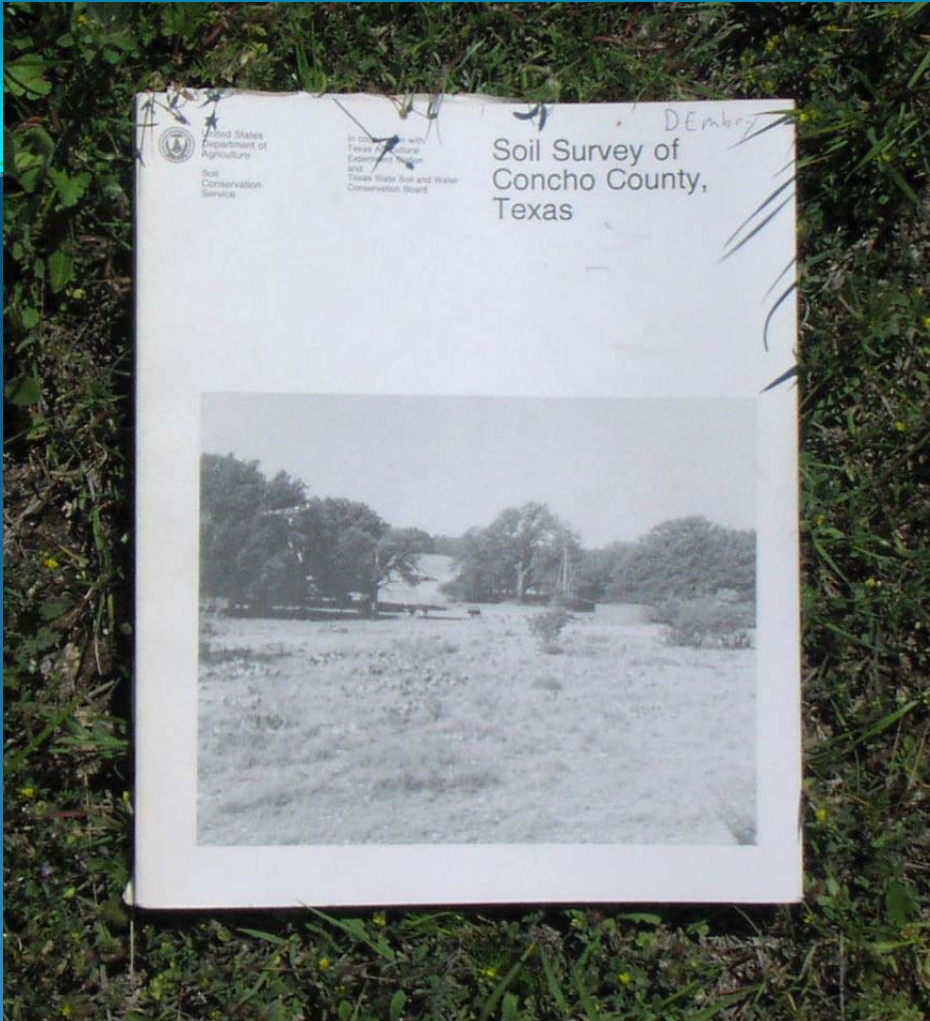
TOO CLOSE TO WATER



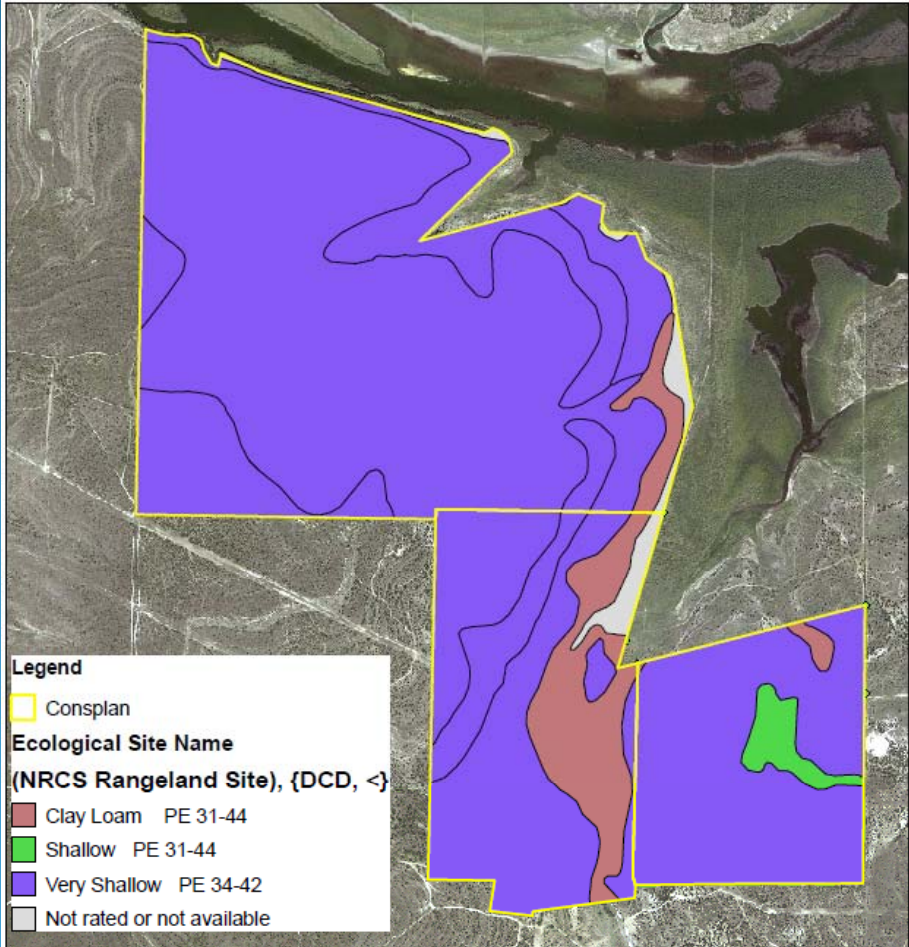
TOO CLOSE TO BACK OF PASTURE



Ecological Site Map



County Soil Survey



Setting Up a Photo Point

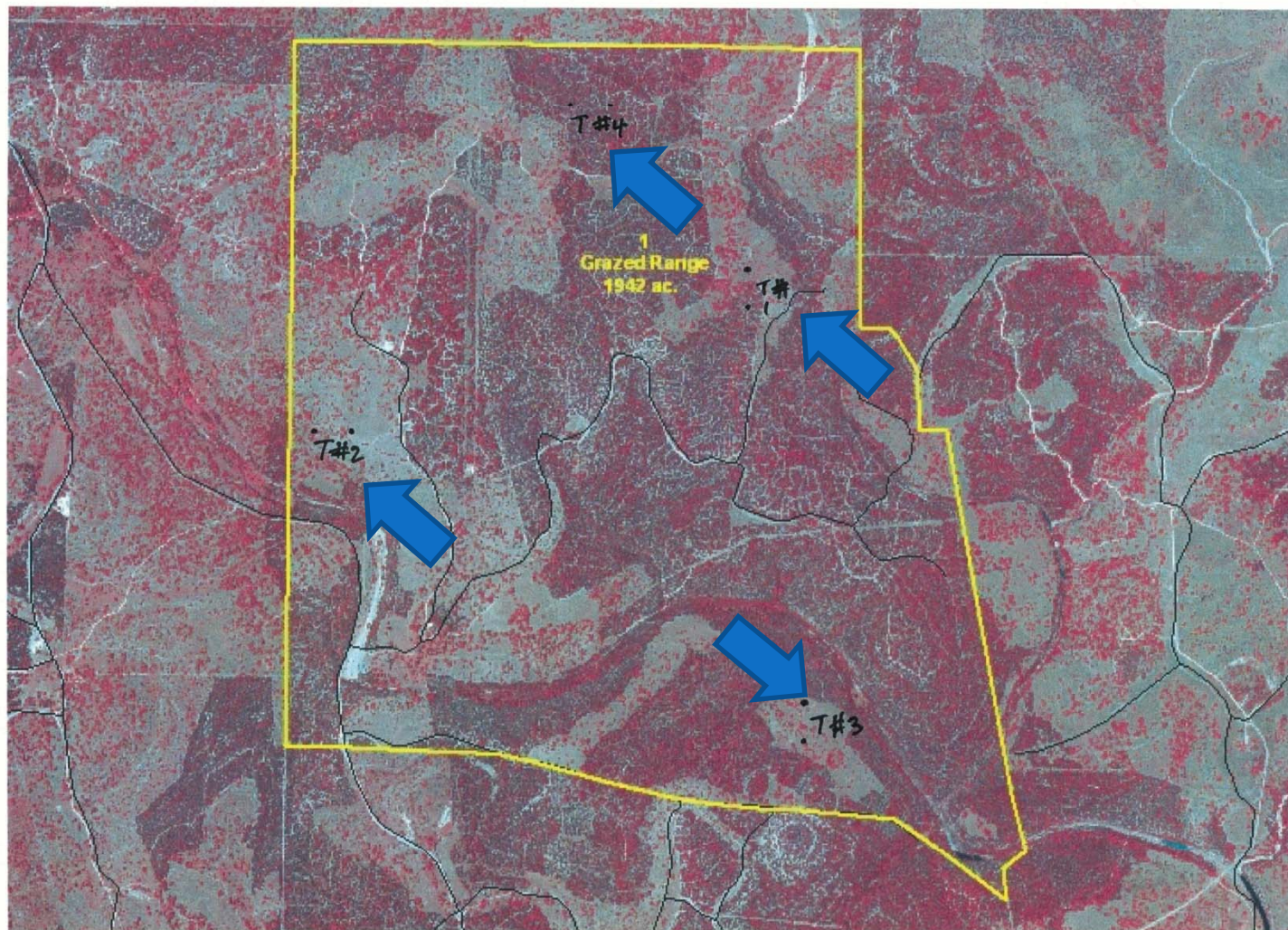
- Permanently mark with t-post or rebar.
- Identify their location on an aerial map.
- Mark point of location with GPS or a method that works for you.
- Identify site with photo showing pasture name, transect number and date.



Permanently Mark Transects



Identify Location on Aerial Map



Mark Point Location with GPS or Other Useful Method



Identify Site



Types of Photos



- Scene photo showing landscape, brush, grass, topography, soil, landmark, etc.



- Vertical photo showing plant cover, litter, bare ground, erosion.

Follow-up Photos

- Take previous photo with you to locate the exact scene or photo location.
- Reshoot the photo with proper plot identification.
- Record any noticeable changes on grazing, vegetative growth, rainfall, brush management, etc . on data record sheets.

Compare Photos

What to look for:

- Changes in cover and numbers of desirable or undesirable plants.
- Changes in litter amount.
- Changes in bare ground. Key Point- Bare Ground is BAD!
- Changes in erosion or deposition of soil.
- Recruit others to assist with evaluation of the photos.



Intensive Monitoring

- Builds on photo point monitoring.
- Uses vegetative transects and grazing exclosures.
- Three types of transects can be used – line, belt or step point.
- Tracks changes in vegetation over time for both woody and herbaceous plants.
- Require knowledge of plants.



Plant References



<http://plants.usda.gov>

www.noble.org/WebApps/PlantImageGallery/Index.aspx

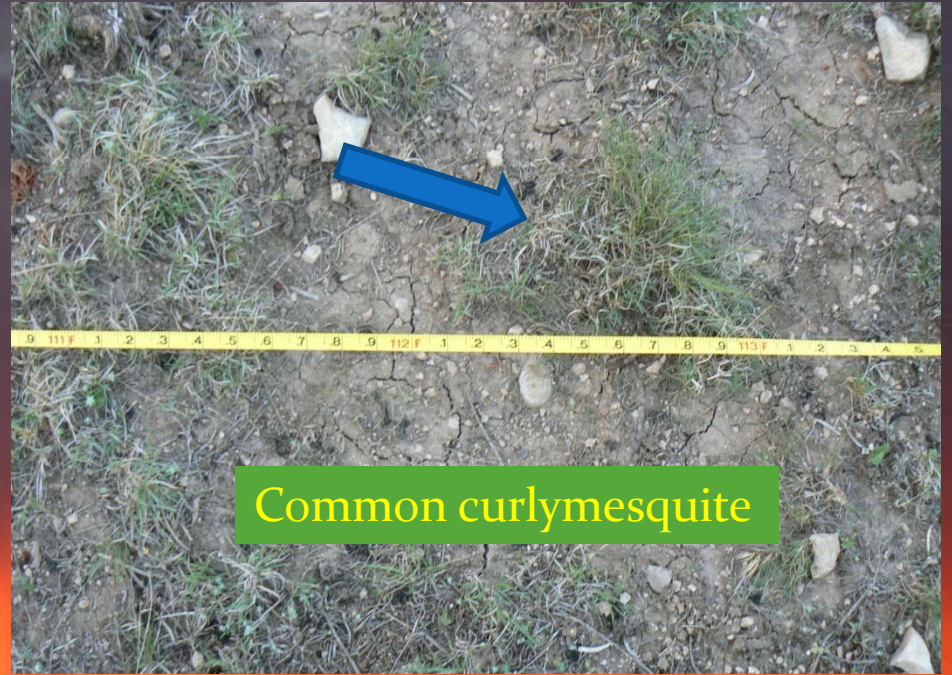
Vegetative Transects

Line Transect:

- Use at least a 100 ft tape.
- Set to any orientation.
- Permanently mark each end.

Herbaceous Plant Data to Collect

- Record the nearest rooted forb or grass plant at every foot or two foot mark along transect tape.
- At least 100 plants should be identified.
- Determine percentage of each species.



Common curlymesquite



Sideoats grama



Record information along transect



Woody Plant Data to Collect

- Record canopy cover by individual species over the top of the tape.
- For example, if ashe juniper canopy covered 40 feet of a 200 foot tape, that would be 20 percent.





Belt Transect for Woody Plants



Belt Transects

- Lay out transect tape and get a known length of PVC pipe or lightweight rod.
- Walk down transect centering PVC over tape and count and record by name all woody plants rooted under the PVC either side of the transect line.
- If a 200 ft line is used and 12 ft is the total width being monitored, total square footage being monitored is 2400 sq ft.
- Determine the number of those transects that equal 1 acre. Divide 43,560 sq ft, number of square feet per acre, by the 2400. This will equal 18.2.
- It would take 18.2 of the 2400 sq ft transects to equal 1 acre.
- Finally, calculate the number of each species of woody plants. If you record 15 mesquite plants, multiply 15 by 18.2. This equals 273 mesquite trees per acre. Repeat for all species counted.

STEP POINT TRANSECT

- Easiest to use to collect plant diversity and frequency, woody canopy cover, bare ground and litter.
- Does not require tape measure or special equipment.
- Should be completed at close to same time each year for consistency.



Procedure

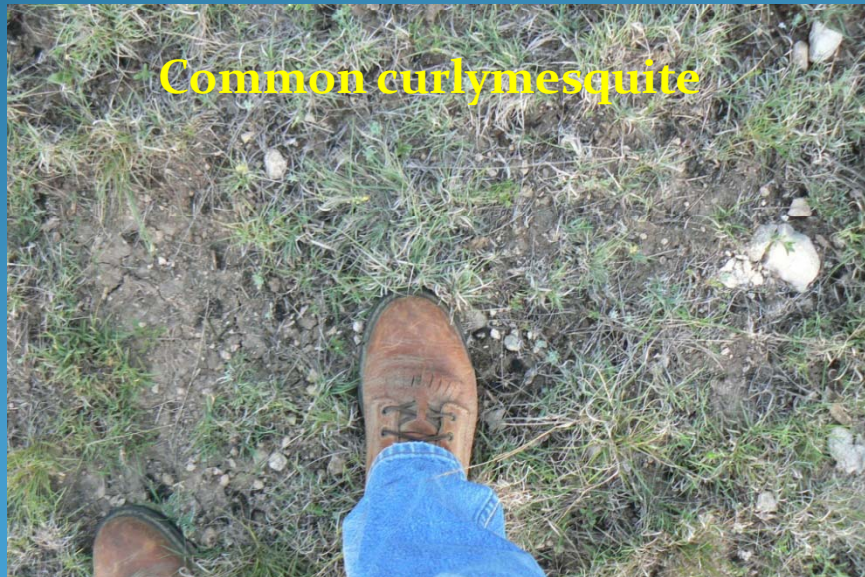
- Permanently mark transect with t-post or painted rebar
- Walk transect in a cardinal direction or use another t-post to mark direction to walk
- Begin walking transect and at every right boot tip record information such as plant species, bare ground, litter or rock
- Woody canopy, by species, can also be recorded for every instance where the canopy cover is over that boot tip from a bird's eye view
- Continue walking the straight line until 100 points have been recorded which will be 200 paces
- Each recording is 1 percent, so if you had 25 sideoats grama "hits", you had 25% sideoats grama on the site



Bare ground



Litter



Common curlymesquite



Sideoats grama

Sample Record Sheet

Ranch: BAR H

Point Intercept Determination

Date: 4/10/10

Pasture: HELL'S HALF ACRE

Data Collector: FRANKLIN

Plant, Litter, Bare or Rock	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Total Hits			
Sideoats Grama	✓							✓										✓	✓					✓																								✓	8					
Curly Mesquite	✓	✓																	✓		✓				✓																										✓	4		
Little Bluestem			✓		✓	✓	✓									✓									✓	✓																								✓	7			
Rough Tridens					✓																																														✓	2		
Redberry Juniper								✓								✓								✓																										✓	6			
Liveoak									✓													✓																												✓	4			
Rocks											✓	✓	✓		✓														✓	✓																					✓	7		
Bareground						✓																																													✓	2		
Threeawn																✓																																				✓	1	
Fall W. telgrass																							✓																												✓	1		
Shin oak																												✓	✓																							✓	3	
Algerita																																																				✓	1	
Hairy Tridens																																																				✓	1	
Texas Wintergrass																																																				✓	4	
Green Sprangletop																																																					✓	0

Plant, Litter, Bare or Rock	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Total Hits			
Sideoats GRAMA											✓								✓						✓																										✓	5+8=		
Curly Mesquite						✓									✓																																					✓	5+4=	
Little Bluestem				✓				✓																																												✓	4+7=	
Rough Tridens																																																					✓	1+2=
Redberry Juniper									✓							✓	✓																																		✓	5+6=		
Liveoak																																																				✓	3+4=	
Rocks		✓	✓																																																	✓	7+7=	
Bareground					✓																																															✓	2+2=	
Threeawn							✓																																													✓	3+1=	
Fall W. telgrass																																																				✓	1+1=	
Shin oak													✓																																							✓	2+3=	
Algerita																																																			✓	4+1=		
Hairy Tridens											✓																																									✓	4+1=	
Texas Wintergrass																																																				✓	0+4=	
Green Sprangletop	✓											✓																																							✓	3+0=		

13
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4
3

10x

Grazing Exclosures



- Allow for visual determination of vegetation changes over time excluding grazing.
- Also allows for grazing use comparisons within a grazing cycle.

Procedure:

- Locate representative area within an ecological site using same criteria as photo point and transect locations.
- Using 4 t-posts and welded cattle panels or net wire fencing, create a fenced off area at least 4' by 4' or larger in size and at least 4' in height.
- At least once per year and close to the same time each year, record amount of litter, bare ground and/or rock inside the enclosure.
- Take a photo to document the plants both inside and outside the enclosure.
- Comparisons between inside and outside observations help determine trends in the soil and plant community.
- Also use enclosure to monitor grazing use outside the enclosure to assist with stocking rate decisions. Key times to monitor is the end of March, early July and mid November.

Want more intensive monitoring ideas

Talk to an NRCS Range Specialist or Texas Agrilife Extension Range Specialist



In this September 1937 photo, a Soil Conservation Service range examiner inspects grass-covered range in San Benito County, California, to determine the effect of vegetation in controlling erosion.

CAL-4053

In Conclusion

Monitoring rangeland can:

- Be simple or as complex as you want to make it.
- Assist in the decision making process.
- Help you decide if what you are doing is working.
- Keep you from having to buy hay.
- Assist you in adjusting stocking rates.
- Assist you in making decisions that protect your soil and provide your livestock and wildlife with their needs.
- Assist you in sustaining and improving your most valuable resource – your Plant Community. That 's the **BIG DEAL!**



THE END

A photograph of a sunset over a field. The sun is low on the horizon, creating a bright orange and yellow glow that transitions into a darker orange and red as it moves towards the top of the frame. The sky is filled with wispy clouds. In the foreground, the silhouettes of trees and bushes are visible against the bright sky.

Thank you for your time!

Natural Resources Conservation Service

Zone II

3878 West Houston Harte Expressway

San Angelo, Texas 76901

325-944-0147