

WASHINGTON
FFA ASSOCIATION



Rangeland Career Development Event Handbook

Revised 2023



Purpose & Objectives

Purpose

The Rangeland CDE is a premier range judging event that is uniquely designed to be relevant to issues faced by land managers on western rangelands. Rangeland landscapes dominate Western North America and yet most people who live near or even on rangelands know little about the resources they provide or principles of their management.

Event Rules

*****If there are any questions or issues, the State FFA Advisor will make the final decision.*****

1. Teams will consist of up to five members.
2. The top four individual scores combined will determine overall team score and placing.
3. No talking or comparing of cards.
4. The scorecards will be the Western National Range CDE Scorecard.
5. The top 5 FFA teams from Washington State are eligible to compete at the Western National Range CDE.

Event Format

- This hands-on event has a contemporary field component with five individual categories:
 - Stocking Rate and Management/Current Rangeland Issue
 - Plant Identification
 - Site Description
 - Rangeland Assessment
 - Rangeland Ecosystem Measurements
- Western National Rangeland CDE scorecards will be utilized (found in the reference section of the handbook)

Equipment

Participants must provide:

- Writing utensils
- Clean, preferably clear plastic clipboards

Chapters may be asked to provide additional equipment as necessary

Team Activities

There is no team activity portion to this event.

Individual Activities

STOCKING RATE AND MANAGEMENT RECOMMENDATIONS

Students will complete three land judging cards for three separate site at the event. Each site will consist of two parts-Land Class Factors and Recommended Land Treatments

Stocking Rate (90 Points)

On the score card, a scenario will be described, and participants will calculate the usable forage “supply” and the forage “demand” and record these values. Participants will then use their knowledge of stocking rates to recommend management options. Components of the Stocking Rate section will include:

Supply of Usable Forage (30 Points) – The grazing scenario will describe the forage supply in acres per AUM or pounds per acre with a recommended utilization level. Calculate forage supply in the management unit (pasture or ranch) in AUMs and pounds.

Forage Demand (30 Points)-Students will assess the stocking rate to determine how many pounds of forage the current animals are consuming. The number of animals and the amount of time they are on the management unit will be listed in the scenario description.

Stocking Rate Determination (10 Points) – Students will compare the current forage supply with the current forage demand. If supply is very close to the demand (within 5%) then the stocking rate should be kept the same. If the supply is less than the demand, the stocking rate should be decreased. If the supply is greater than demand, the stocking rate can be increased.

Management Recommendations (20 Points)- One of the greatest challenges of grazing management is getting animals to graze pastures relatively evenly. Even if the stocking rate is set properly, some parts of a pasture are often grazed too heavily while others may only be lightly used. Several practices can be implemented to try and improve animal distribution. It is impossible to look on a map and decide, what specific range improvement practices should be implemented. A decision cannot be made until soil characteristics and management issues are considered. However, recommendations regarding practices that should be considered can be made. There are 10 recommendation options, each worth 2 points.

Part 1B: Current Rangeland Issues (40 Points)

The Rangeland Issues will be released by September 15th of the contest year. Participants will be asked to read and review the current issue Students will then answer 5 multiple-choice questions to test their knowledge of the current issue. Addressing any management challenge usually involves a cost.

A scenario of options will also be given to improve habitat. This may include installing a fence, planting species to improve forage or cover value, installing or improving a water source, etc. Total cost of the improvement can be accomplished based on inputs and requirements. This will require a calculation for total cost of implementation of the plan based on inputs and requirements. You must show your work to receive full credit. Partial credit will be given for problem set up and correct calculations.

PLANT IDENTIFICATION (200 POINTS)

Participants will be asked the common name, growth form, life span, origin, forage value (for grazing and browsing animals), and toxicity of 20 rangeland plants. Correct name is worth 5 points and each additional category (growth form, life span, origin, forage value (grazers and browsers) is worth one point each. If a toxic plant is correctly identify students receive one bonus point but if a non-toxic plant is marked toxic students will lose one point. The contest specimens will be selected from a list of 60 major western rangeland plants as published by the Western National Rangeland CDE. Each year an additional 5 species will be added by the host state to total 65 plants. Each

specimen will be clearly numbered and could be a dried and mounted specimen, potted plant, or flagged plant growing on the site.

SITE DESCRIPTION (85 POINTS)

A small uniform area of rangeland will be roped off or flagged for evaluation of site characteristics. Near the evaluation area, a soil pit at least 30 inches (64 cm) deep will be dug. Participants will view the evaluation area and determine the precipitation zone, soil depth and rockiness, soil texture, slope, and aspect. In addition, participants will make a Biomass Estimate based on three marked 4.8 ft² circular plots.

RANGELAND ASSESSMENT (50 POINTS)

An important part of rangeland management is to examine how the land looks today compared to what is desired by the landowner. The method rangeland managers use to accomplish this task is to first describe the desired state, next determine the current state, and then calculate the similarity between the desired and current state. For this Rangeland Assessment Event, a reference area (about 15 by 30 feet) will be marked and participants will focus on estimating the current plant community. This will include determining similarity between the desired and current state. Members will also be provided a state and transition model at the site and study and determine which stage best identifies the current state. They will make that determination by examining the landscape and use the plant community as reference. Participants will write the number that best describes the site on their scorecard.

RANGELAND ECOSYSTEM MEASUREMENTS (70 POINTS)

For this event, participants will determine which class most adequately describes the use on the site. To accomplish this, participants will examine a series of small circular plots (2.4 ft²) and enter observe utilization on the scorecard. During this section, participants will determine if the plant is grazed or ungrazed, measure and record max height of grazed and ungrazed plants in the appropriate column, calculate the average height of ungrazed plants, use a utilization gauge to determine percent utilization of grazed plants, and calculate average utilization.

Scoring

Activities	Individual Points	Team Points
Stocking Rate	90	360
Current Rangeland Issue	40	160
Plant Identification	200	800
Site Description	85	340
Rangeland Assessment	50	200
Rangeland Ecosystem Measurements	70	280
Maximum Points	535	2140

TIEBREAKERS

If ties occur, the following sections of the event will be used to determine award recipients:

INDIVIDUAL

1. Plant ID Score
2. Stocking Rate

TEAM

1. In the case of a tie with the top four scores, using the score of the fifth member will break the tie.
2. Plant ID Score for the top four scores

References

Western National Rangeland CDE: <https://wnrcde.org/>

Manual- https://wnrcde.files.wordpress.com/2022/09/wnrcde_manual_2022-updated.pdf

Scorecards- https://wnrcde.files.wordpress.com/2022/10/wnrcde_scorecard2022-1.pdf

Part 1A - Stocking Rate and Management Recommendations (90 points)

Supply of usable forage = _____ pounds **AND** _____ AUMs 30 pts

Forage demand = _____ pounds **AND** _____ AUMs 30 pts

Determine if the stocking rate is appropriate for the site. You must show your work in order to receive full credit. (Check appropriate box) 10 pts

- Decrease Stocking Rate Increase Stocking Rate Keep Rate the Same

Space for Calculations:

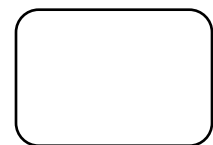
Choose the correct management activities that apply to improve this site (Select "Yes" for all that apply and select "No" for all that do not; 2pts each) 20 pts

Yes | No

- Defer from spring grazing
- Rest from grazing for a growing season
- Install a rotation grazing system
- Add or revise fencing
- Develop additional water sites

Yes | No

- Control brush, trees and/or noxious weeds
- Seed or interseed with adapted species
- Reduce human recreation activities on site
- Manage for endangered species
- Change or add salt location



CHAPTER NAME: _____ STUDENT ID #: _____

Part 1B – Current Rangeland Issues (40 pts)

The host state event team will identify an issue relevant to the CDE location. Information about the selected rangeland issue will be made available by August 1st on the Western National Website.

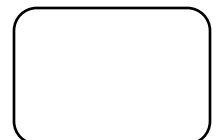
Participants will be asked 5 multiple choice questions based on issue (20 points, 4 points each).

- 1.
- 2.
- 3.
- 4.
- 5.

A scenario on options to address the issue will be presented. This may include fencing installment, forage planting, water improvement, etc. This will require a calculation for total cost of implementation of the plan based on inputs and requirements. You must show your work to receive full credit. (20 pts; partial credit may be given)

Show Calculations:

Total Cost of Implementing Project: _____



CHAPTER NAME: _____

STUDENT ID #: _____

Part 2 – Plant Identification (200 points)

Forage Value

Plant Name <i>(write name from list below)</i>	Growth Form			Life Span		Origin		For Grazers		For Browsers		Toxic
	G	F	W	A	P	N	I	D	U	D	U	T
1.												
2.												
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												
13.												
14.												
15.												
16.												
17.												
18.												
19.												
20.												

Antelope Bitterbrush
 Arrowleaf Balsamroot
 Baltic Rush
 Basin Wildrye
 Big Sagebrush
 Bluebunch Wheatgrass
 Canada Thistle
 Cheatgrass (Downy Brome)
 Chokecherry
 Coyote Willow
 Crested Wheatgrass
 Curl-leaf Mountain
 Mahogany
 Curlycup Gumweed
 Elk Sedge
 Fourwing Saltbush
 Foxtail Barley

Gambel Oak
 Greasewood
 Halogeton
 Hoary Cress (Whitetop)
 Idaho Fescue
 Indian Ricegrass
 Intermediate Wheatgrass
 Leafy Spurge
 Locoweed
 Louisiana Sage (Cudweed
 Sagewort)
 Lupine
 Medusahead Rye
 Mormon Tea
 Mule-ears
 Nebraska Sedge
 Needle-and-Thread

Orchardgrass
 Penstemon (Beardtongue)
 Pinyon Pine
 Poison Hemlock
 Prairie Junegrass
 Purple Threeawn
 Quaking Aspen
 Rabbitbrush
 Redosier Dogwood
 Russian Thistle (Tumbleweed)
 Salt Cedar
 Saltgrass
 Sandberg Bluegrass
 Saskatoon Serviceberry
 Scarlet Globemallow
 Shadscale Saltbush
 Skunkbrush Sumac

Smooth Brome
 Spotted Knapweed
 Squirreltail
 Tall Larkspur
 Tansymustard
 Tapertip Hawksbeard
 Timothy
 Ventenata
 Western Yarrow
 Winterfat
 Woods' Rose
 Host State Species #1
 Host State Species #2
 Host State Species #3
 Host State Species #4
 Host State Species #5

Part 3 - Site Description (85 points)

Precipitation Zone (Select one)

- | | |
|--------------------------------------|--|
| <input type="checkbox"/> Desert | <input type="checkbox"/> Mountain |
| <input type="checkbox"/> Semi-Desert | <input type="checkbox"/> High Mountain |
| <input type="checkbox"/> Upland | <input type="checkbox"/> Alpine |

5 pts

Soil Depth & Rockiness (Select one)

- | | |
|----------------------------------|--|
| <input type="checkbox"/> Shallow | <input type="checkbox"/> Deep Gravelly |
| <input type="checkbox"/> Deep | <input type="checkbox"/> Deep Stony |

10 pts

Soil Texture (Select one) – 10 pts for the correct soil texture; 5 pts for texture adjacent to the correct texture on the soil triangle

- | | |
|--|--|
| <input type="checkbox"/> Sand | <input type="checkbox"/> Silty Clay Loam |
| <input type="checkbox"/> Loamy Sand | <input type="checkbox"/> Clay Loam |
| <input type="checkbox"/> Sandy Loam | <input type="checkbox"/> Sandy Clay |
| <input type="checkbox"/> Silt Loam | <input type="checkbox"/> Silty Clay |
| <input type="checkbox"/> Loam | <input type="checkbox"/> Clay |
| <input type="checkbox"/> Sandy Clay Loam | |

10 pts

Slope – Clinometers will be provided on site (Select one)

- | | |
|--|--|
| <input type="checkbox"/> 0-5% (nearly level) | <input type="checkbox"/> 16-20% (moderately steep) |
| <input type="checkbox"/> 6-10% (slight slope) | <input type="checkbox"/> 21-45% (steep) |
| <input type="checkbox"/> 11-15% (moderate slope) | <input type="checkbox"/> >45% (very steep) |

10 pts

Aspect – Compasses will be provided on site (Select one)

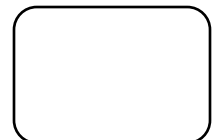
- | | |
|---|---|
| <input type="checkbox"/> North (338°–22°) | <input type="checkbox"/> North East (23°–67°) |
| <input type="checkbox"/> North West (293°–337°) | <input type="checkbox"/> East (68°–112°) |
| <input type="checkbox"/> West (248°–292°) | <input type="checkbox"/> South East (113°–157°) |
| <input type="checkbox"/> South West (203°–247°) | <input type="checkbox"/> South (158°–202°) |

10 pts

Biomass Estimate – Based on average dry weight in 3 designated 4.8 ft² plot. (20 pts for each correct answer for herbaceous and shrubs; or 10 pts if category nearest to correct answer is selected). 40 pts

Herbaceous (select one):

- 0-400 pounds/acre
- 400-800 pounds/acre
- 800-1200 pounds/acre
- 1200-1600 pounds/acre
- >1600 pounds/acre



Part 4 – Rangeland Assessment (50 points)

4A. Similarity to Desired State (40 points) Calculate the similarity between observed and desired composition based the expected annual biomass production on a dry weight basis. “Observed Composition” will be estimated in the field (in Plots 1, 2, and 3) and “Desired Composition” will be provided. The evaluation area will consist of 3 marked, square plots (50 by 50 cm) within a larger marked area.

Plant Class	Plot 1 Proportion of Biomass (%)	Plot 2 Proportion of Biomass (%)	Plot 3 Proportion of Biomass (%)	Average Observed Composition (%)	Scoring	Desired Composition (<i>Provided at Site</i>) (%)	% Counted Toward Similarity
Perennial Grass					±5% ±10%		
Annual Grass					±5% ±10%		
Forbs (<i>annual and perennial</i>)					±5% ±10%		
Shrubs					±5% ±10%		
	100%	100%	100%	Calculated Similarity			

Average Observed Composition % (28 pts) | 7 pts for each plant class if answer is within ±5 % 3 pts if answer is within ±10% = _____ pts

% Counted Toward Similarity (12 pts) | 3 pts for each plant class with correct composition category counted toward similarity = _____ pts

4B. Identify state or phase in simplified State and Transition Model.

10 pts

Enter correct state/phase of site as depicted in State and Transition provided: _____



Part 5 -Rangeland Ecosystem Measurements (70 pts)

5B. Landscape Appearance Utilization Estimate *(Based on observations recorded in 20-25 flagged sections on a transect; (35 pts)*

Class Intervals	Interval Midpoint (M)	"Hits" Tally	Count (C)	Midpoint x Count (M x C)	Herbaceous Utilization Classes Based on Landscape Appearance
0-5 %	2.5				Desirable forage plants show no evidence of grazing or negligible use.
6-20%	13				Desirable forage plants have the appearance of very light grazing. The herbaceous forage plants may be topped or slightly used. Current seedstalks and young plants are little disturbed.
21-40%	30				Desirable forage plants may be topped, skimmed, or grazed in patches. The low value herbaceous plants are ungrazed. Most young plants are undamaged.
41-60%	50				Half of the available desirable forage plants appear to have been utilized. No more than 10% of the undesirable herbaceous forage plants are utilized.
61-80%	70				More than half of the available desirable forage plants are almost completely utilized. More than 10% of the undesirable herbaceous forage plants have been utilized.
81-94%	88				The rangeland has a mown appearance. Desirable forage plants appear to be heavily utilized and there is no evidence of reproduction or current seedstalks.
95-100%	97.5				The rangeland appears to be completely utilized. More than 50% of the undesirable herbaceous plants appear to have been completely utilized. The remaining stubble is grazed to the soil surface.
		Totals			

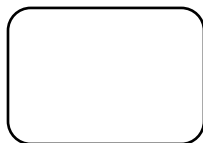
$$\text{Average Utilization} = \frac{\text{Total M x C}}{\text{Total C}} = \text{Average Utilization}$$

*Correct Calculation Process = 20 pts
 Appropriate Estimate (within ±5% = 15 pts;
 within ±10% = 10 pts) = _____*

5B. Shrub Cover Estimates (35pts)

Shrub cover by line intercept.

Examine the transect line placed on the site, record segments of sagebrush canopy that intercept the transect, and calculate percent cover. *(35 pts total; yard sticks will be provided)*
Calculation Process = 20 pts | Appropriate Estimate (within ±5% = 15 pts; within ±10% = 10 pts)



Sagebrush Intercept Transect Length = _____ ft					
Plant Intercept	Intercept (inches)	Plant Intercept	Intercept (inches)	Plant Intercept	Intercept (inches)
1		7		13	
2		8		14	
3		9		15	
4		10		16	
5		11		17	
6		12		18	
Subtotal =		Subtotal =		Subtotal =	
Total Intercept =					
% Cover =					

