Western National Rangeland Career Development Event

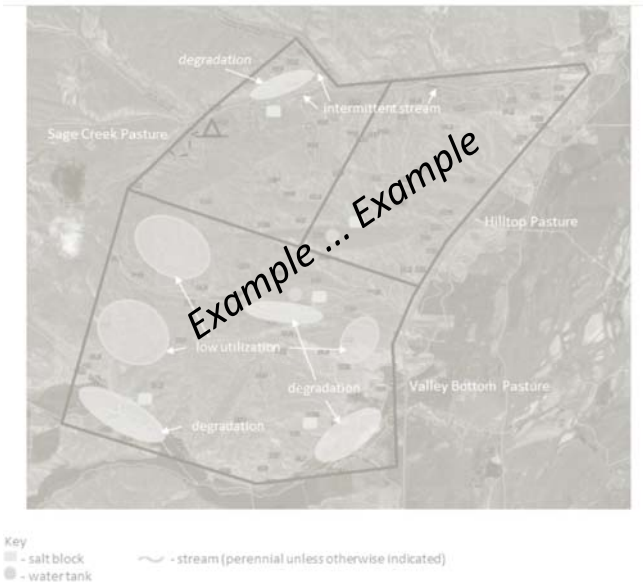
2019

Please email any comments and/or concerns with the updated scorecards to April Hulet (aprilh@uidaho.edu)

CHAPTER NAME: _____ STUDENT ID #: _____

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

Map included with description of scenario:



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		Yes	No	
❑	❑	Defer from spring grazing	❑	❑	Control brush, trees and/or noxious weeds
❑	❑	Rest from grazing for a growing season	❑	❑	Seed or interseed with adapted species
❑	❑	Install a rotation grazing system	❑	❑	Reduce human recreation activities on site
❑	❑	Add or revise fencing	❑	❑	Manage for endangered species
❑	❑	Develop additional water sites	❑	❑	Change salt location

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Part 1B – Current Rangeland Issue *(40 pts)*

Range management is a dynamic science and constantly evolving. Answer the 5 multiple choice questions about the current rangeland issues that was identified by the host state *(20 points, 4 points each).*

1.

2.

3.

4.

5.

A scenario on options to address the current rangeland issue can be found in the testing materials. 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:

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Part 2 – Plant Identification (150 points). *Identify the plants from a list of 76 plants + the 5 additional plants important in the local ecosystem.*

	Growth Form			Life Span		Origin		Forage Value: For Grazers		Forage Value: For Browsers		Toxic
Plant Name *(write name from list below)*	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.												

Antelope Bitterbrush
Arrowleaf Balsamroot
Baltic Rush
Basin Wildrye
Big Sagebrush
Bluebunch Wheatgrass
Broom Snakeweed
Canada Thistle
Cheatgrass (or Downy Brome)
Chokecherry
Columbia Needlegrass
Common Snowberry
Coyote Willow
Creeping Bentgrass (or Redtop)
Crested Wheatgrass
Curl-leaf Mountain Mahogany
Curlycup Gumweed
Dyer's Woad
Elk Sedge
Fourwing Saltbush
Foxtail Barley
Gambel Oak
Greasewood
Halogeton
Hoary Cress (or Whitetop)
Idaho Fescue
Indian Paintbrush
Indian Ricegrass
Intermediate Wheatgrass
Juniper (Utah, Rocky Mountain, or Western)
Kentucky Bluegrass
Leafy Spurge
Locoweed
Louisiana sage (or Cudweed Sagewort)
Lupine
Medusahead Rye
Mormon Tea
Mountain Brome
Mule-ears
Nebraska Sedge
Needle-and-Thread
Orchardgrass
Penstemon (or Beardtongue)
Phlox
Pinyon Pine
Poison Hemlock
Prairie Junegrass
Pricklypear
Purple Threeawn
Quaking Aspen
Rabbitbrush (Green or Rubber)
Redosier Dogwood
Rhizomatous Wheatgrass (Thickspike or Western)
Rush Skeletonweed
Russian Thistle (or Tumbleweed)
Salt Cedar
Saltgrass
Sandberg Bluegrass
Saskatoon Serviceberry
Scarlet Globemallow
Shadscale
Shrubby Cinquefoil
Skunkbrush Sumac
Smooth Brome
Spotted Knapweed
Squirreltail
Tall Larkspur
Tansymustard
Tapertip Hawksbeard
Timothy
Tufted Hairgrass
Ventenata
Western Yarrow
Wild Geranium
Winterfat
Woods' Rose

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Part 3 - Site Description *(85 points)*

Precipitation Zone *(Select one)*

5 pts

- ❒ Desert
- ❒ Semi-Desert
- ❒ Upland
- ❒ Mountain
- ❒ High Mountain
- ❒ Alpine

Soil Depth & Rockiness *(Select one)*

10 pts

- ❒ Shallow
- ❒ Deep
- ❒ Deep Gravelly
- ❒ Deep Stony

Soil Texture *(Select one)*

10 pts

- ❒ Sand
- ❒ Loamy Sand
- ❒ Sandy Loam
- ❒ Silt Loam
- ❒ Loam
- ❒ Sandy Clay Loam
- ❒ Silty Clay Loam
- ❒ Clay Loam
- ❒ Sandy Clay
- ❒ Silty Clay
- ❒ Clay

Slope – Clinometers will be provided on site *(Select one)* – *NOTE: Measure the slope delineated between the flags.*

10 pts

- ❒ 0-5% (nearly level)
- ❒ 6-10% (slight slope)
- ❒ 11-15% (moderate slope)
- ❒ 16-20% (moderately steep)
- ❒ 21-45% (steep)
- ❒ >45% (very steep)

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

10 pts

- ❒ North *(338°–22°)*
- ❒ North West *(293°–337°)*
- ❒ West *(248°–292°)*
- ❒ South West *(203°–247°)*
- ❒ North East *(23°–67°)*
- ❒ East *(68°–112°*)
- ❒ South East *(113°–157°*)
- ❒ South *(158°–202°)*

Biomass Estimate – Based on averaging the dry weight in 3 designated 4.8 ft^2 plot. *40 pts*

(20 pts for each correct answer for herbaceous and shrubs; or 10 pts if category nearest to correct answer is selected).

Herbaceous *(select one):*

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

Current Season Shrubs *(select one):*

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

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Part 4 – Rangeland Assessment (95 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** *(Provided at Site)* (%)	**% Counted Toward Similarity**
Perennial Grass					*±5% ±10%*		
Annual Grass					*±5% ±10%*		
Forbs (*annual and perennial)*					*±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. Browse Age Diversity *(40 pts total)*– Determine the diversity of age classes for browse plants present in a belt transect delineated on the site. Examine flagged plants to determine age structure. Calculate the proportion of shrubs by age class for shrubs based on your observations *(Complete table and make calculations).*

Age Classes of Shrubs	**Tally of Plants (**field count)	**Total Tally Count**	**Relative Age Class Distribution (%)**	**Relative**
Young (All stems alive)				*±5%*
Mature (> 50% live stems < 50% dead stems)				*±5%*
Aged (< 50% live stems and > 50% dead stems)				*±5%*
Dead (No live stems; all stems appear dead)				*±5%*
Total			**100%**	

10 pts for each % relative age distribution within ±5% = ____ pts

4C. Browse and Ecosystem Change. *(5 pts total)* Based on your data for browse age diversity, which of the following statements best describes the ecosystem dynamics*:* *5 pts*

- □ The site is in a state of renewal or invasion with mostly young plants.
- □ The site is apparently stable with abundant young plants and a nearly equal mix of age classes.
- □ The site is apparently transition to a site with less shrubs as most woody plants are aged or dead.

4D. Identify state or phase in simplified State and Transition Model. *(10 pts total)* *10 pts*

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

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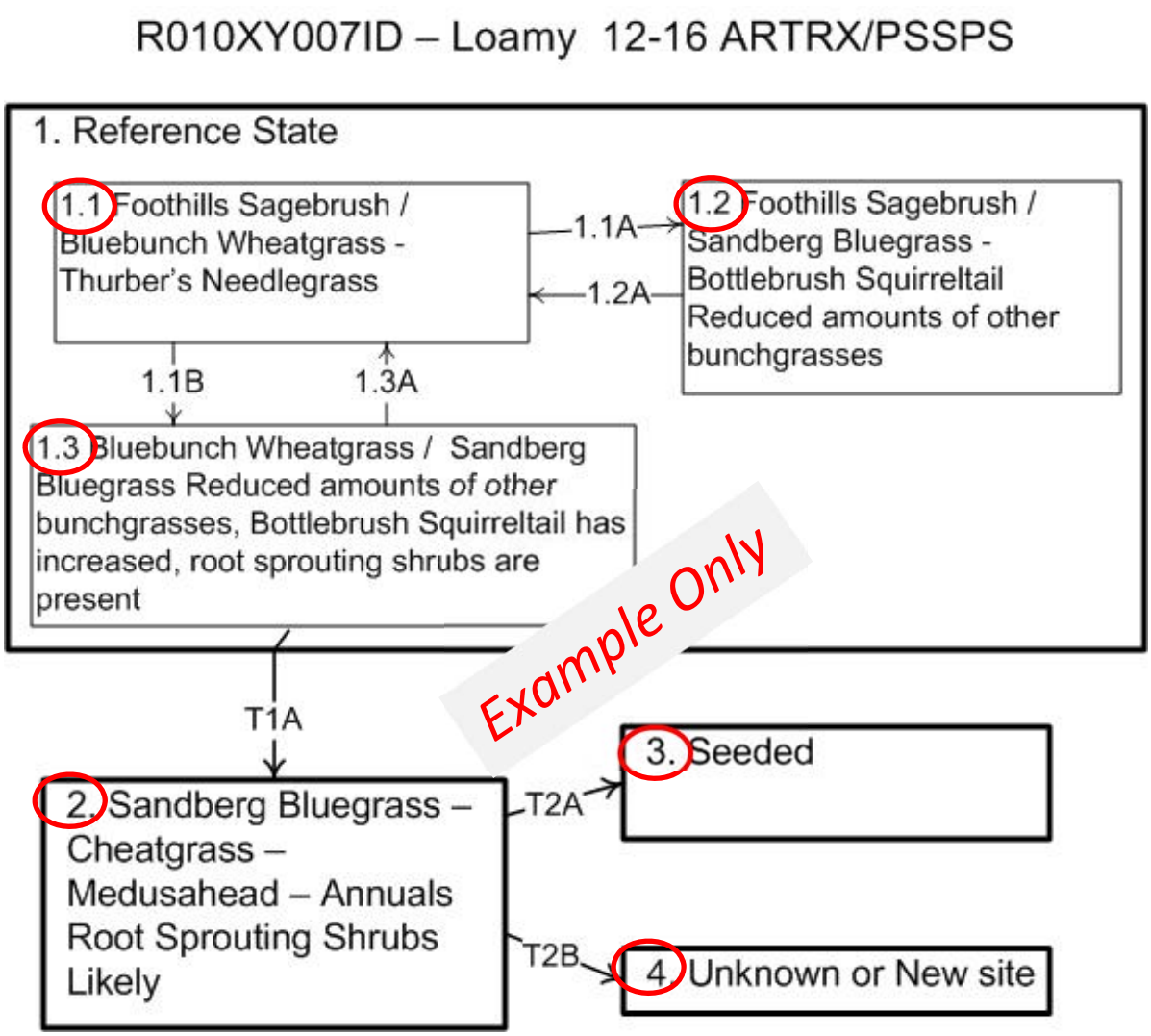
Example State and Transition Model:



Plant Community and Sequence: Transition pathways between common vegetation states and phases:

- State 1.
  - Phase 1.1 to 1.2. Develops with improper grazing management and no fire.
  - Phase 1.1 to 1.3. Develops with fire.
  - Phase 1.2 to 1.1. Develops with prescribed grazing.
  - Phase 1.3 to 1.1. Develops with prescribed grazing and no fire.
- State 1 Phase 1.3 to State 2. Develops through frequent fire or continued improper grazing management. This state has crossed the threshold. It's not economically feasible to move this state back towards the reference state with accelerating practices.
- State 2 to State 3. Develops through range seeding.
- State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to cross a threshold and retrogress to a new site with reduced potential. It is not economically feasible to move this state back towards the HCPC with accelerating practices.

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Part 5 -Rangeland Ecosystem Measurements (70 pts)

5A. 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			

Average Utilization = _____ (Total M x C) ÷ _____ (Total C) = _____ Average Utilization

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

5B. Shrub Cover Estimates *(35 pts)*

Shrub cover by line intercept.

Examine the transect line placed on the site, record segments of shrub canopy that intercept the transect, and calculate percent cover. *(30 pts total; yard sticks will be provided)*

Shrub Cover 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 =		

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