

Practice Stocking Rate Problems

1. (25 pts) In class, Colter presented a grazing system called "Seasonal Suitability". In Idaho, it is very common for sheep ranchers to practice seasonal suitability grazing. Let's suppose I wanted to create a sheep ranch by buying enough land & grazing permits for **2,000 sheep** (2 bands). In my "dream ranch", I would buy the following 3 types of land so I could do seasonal suitability grazing:

Season of Use	Vegetation Type	Forage Production	Proportion of forage that can be grazed without degradation
Winter Range	Salt-Desert Shrubland	400 kg/ha	35% = 140
Spring & Fall Range	Sagebrush Grassland	750 kg/ha	40% = 300
Summer Range	Mountain Meadows	2200 kg/ha	40% = 880

I would graze the winter range from December through February (3 months) then I would move to my sagebrush grasslands and have lambs in March through May (3 months). I would then take my ewes with lambs up to the mountain meadows so the lambs could grow until the end of September (4 months). The first of October, I would wean lambs and truck them to market. I would keep the ewes on the mountain meadows for 1 more month. I would finish the year by trailing the sheep off the mountain and spending the month of November on my sagebrush range before going back to the winter range.

My ewes would weigh about 85 kg. Assume lambs do not eat a noticeable amount of forage until they go to the summer range. Also assume that lambs weigh about 5 kg when I send them to summer range and I sell lambs off the mountain weighing 45 kg, on average. My flock weans 1.3 lambs per ewe.

How much forage will each ewes/lamb unit require in each grazing period?

Forage required per average ewe in winter (Dec. through Feb.)? 191 kg

Forage required per average ewe in spring (March through May)? 191 kg

Forage required per average ewe/lamb unit in Summer (June through Sept.)? 360 kg

$25 \text{ kg} \times 1.3 = 32.5 \text{ kg}$

Forage required per average ewe in fall (October & Nov.)? 128 kg

$85 \times 0.025 = 21.25 \times 60 \text{ days} = 127.5 \text{ kg}$

$x = 25 \text{ kg}$

$5 \rightarrow 45 \text{ kg}$
 $x = 25 \text{ kg}$

How many hectare of range would I need to buy to satisfy the needs of my whole flock in each season?

Hectares required of Winter range (Dec. through Feb.)? 2,732 ha
 $191 \text{ kg} \times 2000 = 382,000 \text{ kg} \div 140 =$

Hectares required of Spring range (March through May)? 1,275 ha
 $191 \text{ kg} \times 2000 = 382,000 \text{ kg} \div 300 =$

Hectares required of Summer range (June through Sept.)? 818 ha
 $360 \times 2000 = 720,000 \text{ kg} \div 880 =$

Hectares required of Summer range for dry ewes (October)? 145 ha
 $64 \times 2000 = 128,000 \text{ kg} \div 880$

Hectares required of Fall range for dry ewes (November)? 427 ha
 $64 \times 2000 = 128,000 \text{ kg} \div 300$

2. (10 points) Another stocking rate problem... show your work. A 2,000-acre pasture has a recommended stocking rate of 4 acres/AUM. It currently has 40 pronghorn antelope on it (.12 AUE), 170 cows (1 AUE) that graze for 3 months per year, and 12 horses (1.4 AUE) that graze about 6 months per year. How many AUM's of forage are currently being grazing on the land? 669
Is the current stocking rate greater than or less than the recommended rate?

2000

$$\begin{aligned} \text{Pronghorn } 40 \times .12 \text{ AUE} &= 4.8 \text{ AU} \times 12 = 57.6 \text{ AUM's} \\ \text{Cows } 170 \times 1 \text{ AUE} &= 170 \text{ AU} \times 3 = 510 \text{ AUM's} \\ \text{Horses } 12 \times 1.4 \text{ AUE} &= 16.8 \text{ AU} \times 6 = 100.8 \text{ AUM} \end{aligned}$$

669 AUM ← Demand

$$2000 \text{ ac} \div 669 \text{ AUM} = 3 \text{ ac/AUM}$$

500 AUM's ← Supply

3. This situation involves a summer range in the mountains of northeastern Oregon grazed by yearling steers. How many steers should be stocked on a pasture with the following characteristics? (Show your work)

- Range condition = fair
- Average annual precipitation = 18 inches
- Key forage = Idaho fescue
- Average annual production of key forage species 900 pounds per acre
- Recommended level of utilization = 35%
- Total area of pasture = 3,000 acres
- Physical characteristics:

Rugged terrain: 40% of area = 0-10% < 60% $\times 1,200 = 1,200 \text{ ac}$
 20% of area = 11-30% < 30% $= 600 \text{ ac} \times .7 = 420 \text{ ac}$
 30% of area = 31-60% < 60% $= 900 \text{ ac} \times .4 = 360$
 10% of area = > 60% < 100% $= 300 \text{ ac} \times 0 = 0 \text{ ac}$

- No part of pasture is greater than 1 mile from water $= 300 \text{ ac} \times 0 = 0 \text{ ac}$
- Season of use = 120 days (01 June to 30 September)
- Type of livestock = yearling steers
- Weight of animals = 650 lbs initially gaining 2 pounds per day

$$650 + 240 = 890 = \text{Average} = 770 \text{ lbs}$$

$$\text{Supply} = 900 \text{ lbs/ac} \times 35\% = 315 \text{ lbs/ac} \times 1980 \text{ ac} = 623,700 \text{ lbs}$$

$$\text{Demand} = \frac{\text{Begin}}{650 \text{ lbs}} + 240 = \frac{\text{End}}{890} = 770 \text{ lbs average}$$

$$770 \times 0.025 = 19.25 \text{ lbs/day} \times 120 = 2,310 \text{ lbs}$$

$$\# \text{ of Steers} = 270$$