**OVERVIEW**

 There are a number of factors that go into crafting a SUSTAINABLE grazing plan… is more of an art than a science. Historically plans were largely simply a function of calculating stocking rate, but today land managers take much more of an ecosystem perspective. Since this is an introductory course and the intent of this assignment is to underlying tasks that go into determining a grazing plan you will focus on four parts:

Part 1.) Determining how much forage is likely available

Part 2.) Determining who is eating what when and how much of it

Part 3.) Calculate how long livestock can graze the parcel

Part 4) Select a grazing method

**Part 1) How Much Forage is Available?**

 You are a BLM Range Technician assigned to design a sustainable livestock-grazing plan for a 1000-acre parcel that ensures adequate forage and browse resources for the wild ungulate populations (pronghorn, elk, deer & horse). The fFirst step will be determining what vegetation is available and on average how much of it there might be. To do this you will use the “forage production data” provided with the assignment that lists species and their annual forage production for the site. To do thisUsing the information from this data you will:

1. Create a table of the 1000-acre parcel’s vegetation composition and production over the last 10 years from hand-written field data collection sheets. rs. Remember, the data given is for annual forage production. **You should submit a well-formatted table of this data and calculations.**
2. Answer the following questions:
3. What is the average TOTAL forage production **per acre** AND **for the entire 1000-acres** in total over the 10-year period? By species? By species group (grasses, forbs, shrubs). This will help inform how much is available in total to and by plant species group to plug into livestock stocking rate and gauge wildlife forage and browse availability.
4. Given the variability in forage production, how do you make a decision about how much forage is available for livestock and wildlife? Do you base it on average annual production, maximum production, minimum production or some intermediate level derived from the probability of having a specific amount?

**You should submit clear full sentence written answers to these questions.**

**Part 2) Who is Eating What, When and How Much of It?**

 This grazing plan will be for 75 cows and as stated above, there pronghorn, elk, deer and horses are also grazing in the area of this 1000 acre parcel. Therefore, in addition to figuring out how much the livestock need to eat you need to figure out how much the wildlife need and when they will be eating what.

At some point a wildlife inventory was conducted… you gather that data and it tells you:

*Pronghorn antelope* inhabit the site from March through end of May. Their diet consist of primarily of winterfat and antelope bitterbrush, but they will also graze emerging western wheatgrass in the early spring, and wild buckwheat early spring through mid-summer.

*Population size is estimated at: 40*

*Elk* inhabit the site October through end of March. Their preferred forage is bluebunch wheatgrass, and preferred browse is antelope bitterbrush. Needle-and-Thread and Thurber’s needle grass are also preferred by elk in the early spring. Sandberg’s bluegrass is also palatable.

*Population size is estimated at: 35*

*Black-tail Deer* inhabit the site April through October. Their preferred forage is Sandberg’s bluegrass in early spring, then Idaho Fescue and bluebunch wheatgrass the remainder of the grazing season. *Population size is estimated at: 45*

*Feral Horse* inhabit the site year round. Their preferred forage is little bluestem in the spring; and needle-and-thread and western wheat grass are palatable year round.

*Population size is estimated at: 15*

*Cattle* are permitted to graze the site April through September. Primary preferred forages include little bluestem April through June; Winterfat leaves April through August; Idaho fescue April through August, and again in October. September and October preference is antelope bitterbrush. Species will also forage on western wheatgrass and bluebunch wheatgrass.

Start with calculating the annual forage demand for each of the wildlife species above and the 75 cows. **You need to submit the completed table as part of this assignment.**

*forage demand/year/species =*

*lbs forage required monthly/animal* X *number of animals* X *# months of use*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Animal** | **Forage Demand/Month/Animal (lbs)** | **#Animals** | **#Months Use** | **Forage Demand/Year/Species (lbs)** |
| pronghorn | 228 |  |  |  |
| elk | 650 |   |   |  |
| black-tailed deer | 228 |   |   |  |
| feral horse | 1140 |   |   |  |
| Wildlife Subtotal |  |
| cow | 912 |  |  |  |

 **Total:**

Now you have how much forage is available and how much forage is needed for livestock + wildlife listed. Let’s do some rough analysis with the following questions, submit answers to these two questions as part of the assignment:

1. Is there enough TOTAL vegetation production to meet the forage demand of all the wildlife and livestock on the site each year during the 10-year period? ***(This is a gross estimation*** *determining if the carrying capacity of the site can support the current population of wildlife and livestock grazing. In some cases management decisions are made on a gross estimation such as this***.) Your answer to this question should be clearly stated and include the available forage values as well as the forage demand values from the table.**
2. Given what each species eats as described above is there enough forage or browse for each species? This requires you to look at the table you created and the calculations for each species or species group and ask for the given species (e.g. pronghorn) is there enough winterfat and bitterbrush for them? Is any other species eating these plants? If so in general is there enough for both of them? Keep in mind the animals species may be there at different times of the year and also eating other plants. **Again this is a gross estimation** of dietary overlap and carrying capacity. **Your answer to this question should be whether this is enough forage and browse for each species and why or why not. Your answer should also state where there might be dietary overlap conflicts in terms of season of use or quantity of available forage.**

**Part 3) How Long Can Cattle Graze this 1000-acre Parcel?**

Now that we know how much forage is available and who is eating what and how much of it we can determine how long the 75 cows can graze this 1000 acre parcel. To make this calculation easy and straight-forward we are going to work with total forage available for the entire 1000-acres. In other words, we are not going to break it out by vegetation by species. Below are the steps that will guide you to determining grazing duration:

**Step 1 - Calculate Total Usable Forage Supply (taking harvest efficiency into account)**. Write that number here:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lbs/ac (note its lbs per acre… so what did you determine to be the average lb/ac under the section “How Much Forage is Available” above.)

Account for Range harvest efficiency (see assignment slides): Average annual production/acre (number from above) x .25 = \_\_\_\_\_\_\_\_\_\_\_\_\_lbs/ac (This number is your total Usable Forage Supply per acre)

**Step 2 - Calculate Gross Stocking Rate**

Total Usable Forage Supply per acre ÷ 912lbs (standard cow AUM) = AUM/AC (how many head cattle per acre). Write AUM/Ac here:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1 ÷ AUM/AC (number from above) = Ac/AUM(how many acres/AUM).

Write that number here:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step 3 – Calculate Forage Demand**

To calculate total AUs:

75 x 912lbs/cow = \_\_\_\_\_\_\_\_\_\_\_\_\_\_lbs

Since this is cattle, which 1 AU = 1000lbs, divided Total by 1000 to determine number of AUs.

Write that number here:\_\_\_\_\_\_\_\_\_\_\_\_ AUs

**Step 4 – Calculate Grazing Duration**

Number of Acres ÷ ac/AUM = total AUMs.

Write that number here: \_\_\_\_\_\_\_\_\_\_\_\_

Total AUMs ÷ AUs = Number of Months.

Write that number here:\_\_\_\_\_\_\_\_\_\_\_\_

Number of Months x 30.4 days/month = Number of Days.

Write that number here:\_\_\_\_\_\_\_\_\_\_\_\_

**Part 4) Grazing Method Selection**

This was meant to give you an idea of how grazing plans that account for wildlife and are generally sustainable are determined. There are a number of other factors taken into consideration such as topography, distance from water, climate, current functional and structural health of the landscape being grazed, economic factors, production management goals, watershed considerations, etc. **Given this, consider the grazing methods outlined in Week 5 slides and select one that you think might work for this 1000-acre parcel that provides livestock grazing and wildlife habitat. There is no right or wrong answer to this question, but you need to provide some rationale and thought behind your grazing method selection. The answer to this should be at least a paragraph.**