

RANGELAND INVENTORY WORKSHEET-MT-ECS-2 INSTRUCTIONS

INSTRUCTIONS FOR DETERMINING SIMILARITY INDEX

- A. **SPECIES NAME:** Enter the common or scientific name of the plant species.
- B. **PERCENT COMPOSITION BY WEIGHT:** (Optional column to use if estimating.) Estimate the PERCENT COMPOSITION of each species in the plant community. Leave blank if weight is measured in Column C.
- C. **GREEN WEIGHT POUNDS:** Enter the fresh clipped weight of each species. (Or, if estimating, calculate C by multiplying the total production of the site by the PERCENT COMPOSITION of each species in Column B).
- D. **PERCENT DRY WEIGHT:** Enter the percent air-dry weight or oven dry weight as a decimal value.
- E. **PERCENT CURRENT GROWTH UNGRAZED:** Enter the estimated percent (as a decimal value) of the current growth that has not been removed by grazing or harvest.
- F. **PERCENT GROWTH CURVE COMPLETED:** Enter the percent (as a decimal value) of the current year's growth for each species that should normally have occurred by the date of this determination.
- G. **PERCENT OF NORMAL PRODUCTION:** Enter an estimation of the current year's forage growth in comparison to normal, expressed as a percent of normal (as a decimal value). EXAMPLE: .9 means the year's production is 90% of normal or 10% below normal. 1.1 is 110% of normal or 10% above normal.
- H. **RECONSTRUCTION FACTOR:** This factor is calculated by dividing (D) PERCENT DRY WEIGHT by the product obtained by multiplying (E) PERCENT CURRENT GROWTH UNGRAZED times (F) PERCENT GROWTH CURVE COMPLETED times (G) PERCENT OF NORMAL PRODUCTION. $(D / E \times F \times G = H)$
- I. **RECONSTRUCTED PRESENT WEIGHT:** This value is calculated by multiplying (C) GREEN WEIGHT POUNDS by (H) the RECONSTRUCTION FACTOR. $(C \times H = I)$
- J. **POUNDS IN REFERENCE VEGETATION STATE:** Enter the maximum allowable pounds for each plant species as shown in the appropriate reference vegetation state in the ecological site description.
- K. **POUNDS ALLOWABLE:** Enter the lesser of (I) RECONSTRUCTED PRESENT WEIGHT or (J) POUNDS IN REFERENCE VEGETATION STATE. No more than the POUNDS IN THE REFERENCE VEGETATION STATE plant community may be counted in determining similarity index.
- L. **TOTAL NORMAL ANNUAL PRODUCTION IN REFERENCE VEGETATION STATE:** This is the total normal product of all plants shown in the appropriate reference vegetation state plant community description of the ecological site description.
- M. **TOTAL POUNDS OF ALLOWABLE PRESENT:** This is the total of all weight shown in Column (K). It is all the weight that is allowed to count toward determining similarity index.
- N. **SIMILARITY INDEX:** This is calculated by dividing (M) TOTAL POUNDS OF ALLOWABLE PRESENT by (L) TOTAL NORMAL ANNUAL PRODUCTION and multiplying by 100 to express it as a percent. $N = (M / L) \times 100$.

RANGELAND INVENTORY WORKSHEET-MT-ECS-2 INSTRUCTIONS**INSTRUCTIONS FOR STOCKING RATE CALCULATIONS**

1. Stocking Rate Calculations: The stocking rate for an individual rangeland unit can be calculated using the following formula and instructions:

$$[\text{Total Available Forage (lbs./acre)} \times \text{Harvest Efficiency (HE)}] \div 915 \text{ lbs./Animal Unit Month}$$

- a) Determine the total pounds per acre of available forage by summing the total pounds (dry weight) of preferred and desirable forage for the kind of livestock you are planning for, from the range inventory worksheet (Total of Column I) .
- b) Determine the appropriate Harvest Efficiency (HE) for the range unit, based on forage quality, uniformity, and type of grazing system. The average HE for rangeland under a moderate management level is 25%. Units in high similarity index with uniform grazing and a high level of grazing management may use a HE of 35%. Units in extremely low condition with poor forage quality should use a HE of 20%.
- c) Multiply the results from (a) above by the results in (b) above to determine the total pounds of forage that is available to be allocated.
EXAMPLE: 1,390 lbs./acre x 25% HE = 348 lbs./acre
- d) Divide the answer in (c) by 915 pounds per animal unit month. (Remember to calculate an Animal Unit adjustment factor if planning for animals other than a 1,000-pound cow and calf under four months old.)
EXAMPLE: (348 lbs./acre) / (915 lbs./AUM) = 0.38 AUM/acre
- e) Make adjustments to this stocking rate number as needed to account for any forage that is inaccessible due to slope or other factors, or generally known by the rancher to be unused due to specific conditions, such as too far a distance from drinking water.
EXAMPLE: It is determined that 10% of a 100 acre range unit is inaccessible. The available AUMs for that unit would be 0.38 AUMs/acre x 100 acres x 90% = 34.2 AUMs.

This information is then calculated for each unit, and used to determine an appropriate grazing plan that will balance the forage resources with the livestock nutritional requirements.

INSTRUCTIONS FOR DETERMINING INITIAL RANGELAND TREND

1. Initial Trend Determination: Rangeland trend is the direction of change in an existing plant community relative to the Historic Climax Plant Community. *Apparent Trend* is a point in time determination of the direction of change that is estimated from evaluating the following factors:

- a) Vigor and health of desirable plants;
- b) Abundance of seedlings and young plants (reproductive capability) of desirable species;
- c) Plant litter and residue amount and accumulation;
- d) Species composition changes, including presence of undesirable plants and weeds;
- e) Condition of the soil surface, including surface erosion, crusting, compaction, and percent bare ground.

Ratings for trend are described as:

Toward: Moving towards the Historic Climax Plant Community

Away From: Moving away from the Historic Climax Plant Community

Not Apparent: No change detectable

Check or circle the appropriate rating for each factor, (e.g., good, fair, poor).

Use the preponderance of the ratings in each column, from good condition to poor condition, to make a final determination as to *Toward*, *Not Apparent*, or *Away From*.

It is helpful to make notes on the type and canopy cover of invading species, if present.

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INSTRUCTIONS FOR GRAZING UTILIZATION OBSERVED

Circle the appropriate level of livestock grazing presently observed on the site.

INSTRUCTIONS FOR ASSESSING RANGELAND HEALTH

1. Rangeland Health Assessment: *Rangeland Health* is the degree to which the integrity of the soil, vegetation, water, and ecological processes of the rangeland ecosystem are balanced and sustained. Rangeland Health is evaluated using baseline information from the *Ecological Site Description*. Information is used to assist the land manager understand what is happening on the ecological site relative to soil and site stability, watershed and hydrologic function, and plant community integrity.

REFERENCE: *Interpreting Indicators of Rangeland Health, Version 4*, NRCS, BLM, USGS, 2003. TR-1734-6.
ftp://ftp-fc.sc.egov.usda.gov/GLTI/technical/publications/IIRH_v4_8-15-05.pdf

- a. Seventeen ecological indicators are observed and evaluated, as listed on the worksheet. These attributes are rated according to how they agree or disagree with the appropriate *Ecological Site Description*. Check the column that most closely matches the degree of departure from the *Ecological Site Description*. Use the Ecological Site Descriptions and Ecological Reference Worksheets (Section II, FOTG) that have been developed for each ecological site to determine Rangeland Health for each indicator.
- b. The indicator ratings are grouped within the three ecological Attributes showing positive or negative effects on:
 - 1) Soil and Site Stability (S),
 - 2) Hydrologic Function (H),
 - 3) Biotic Integrity (B).Total the number of checks in each column, for either S, H, or B.
- c. Use the preponderance of evidence from the total of each grouping (extreme, moderate, etc.) to determine the overall rangeland health as it relates to each indicator.

ADDITIONAL INFORMATION

1. Canopy Cover: This is an optional rating that can be useful in pointing out plant cover and soil cover factors.
2. Livestock Water Information: This is optional information that may be useful in determining water availability and location for livestock and wildlife.
3. Notes: Make optional notes about other important observations on the management unit. Include wildlife observations and habitat quality, domestic and wildlife health, key areas that may be eroding or need special attention, conservation techniques already applied by the landowner (herbicide applications, fertilizer, seeded species, etc), key areas where monitoring sites may be established, etc.