Youth Forum

Rangeland Trend: Quality vs Quantity

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How healthy is your rangeland? Do you know how to measure rangeland health? Are you using species composition, the Similarity Index, as the sole method of determining range health?

Range trend is a qualitative method of determining range health.

What is *rangeland trend*? It is defined as the direction of change in a rangeland compared with its historic potential. Instead of evaluating the *quantity*, you are evaluating the *quality* of the rangeland by using proven methods so that once the trend is determined, action can be taken to improve the rangeland (Photo 1). Range trend is useful only if it is used as a long-term, moment-in-time monitoring technique. Without repetition it is not reliable; if only 1 measurement is taken, it is not a trend. We estimate or measure trend because we want to monitor rangeland health: it gives valuable information on how current or past management practices are affecting the plant community; it gives you an idea of whether or not you are meeting your goals; and it can be a warning sign if serious, negative changes are occurring.[1]

For a farmer or rancher, the benefits of monitoring the trend of the land resources are great. The rancher who monitors the trend will know "on average" what species he or she has and in what quantity. Also, knowing what improvements need to be made and where to make them is vital to a successful landowner.

This approach was developed as a tool for conducting a moment-in-time, qualitative assessment of rangeland condition and as a communication and training tool for helping land managers and other interested people to better understand rangeland ecological processes and their relationship to indicators. Every land manager must consider ranch-specific goals. What are the overall objectives of the ranch operation? Is there a management plan or a set of goals? Has a "problem" been identified on the ranch? Having a goal or a common agreement on what needs to be accomplished is a crucial step to successful range management. Goals should be realistic and achievable, and once they are developed, range trend can be used to monitor and make sure you are meeting those goals.[2]

Rating Range Trend

Rangeland trend is determined by evaluating an ecological site and rating it with 5 major factors on a scale of 1 to 5. A rating of 1 means the site is in very poor condition in that specific category; 3 is average; and 5 means that the site is performing as it should. The 5 major factors are 1) plant composition changes, 2) abundance of seedlings and young plants, 3) plant litter and residue, 4) plant vigor, and 5) condition of soil surface.[3]

Photo 1.

Plant Composition Changes

When measuring plant composition change, the ideal is for all major plant species in the Historic Climax Plant Community to be present and in proper balance. Too many invader species, undesirable plants, or weeds produce problems.

Abundance of Seedlings and Young Plants

The native plants on the rangeland must be reproducing at a suitable rate. Many weeds or undesirable seedlings and young plants; no new growth in native, desirable plants; or no new growth at all is the worst scenario for this factor. Reproduction of main grasses and forbs is vital in keeping rangelands healthy.

Plant Litter and Residue

Plant litter present on the soil surface is very important. Plant litter provides shade on the soil, keeping plants cooler and conserving moisture.

Plant Vigor

Having the right kinds of plants is important, but if those plants are not in good health, it is detrimental. Plant vigor is an essential part of determining range trend.

Condition of the Soil

The condition of the soil leads to the condition of the plants. The consequences of poor soil condition or soil erosion are harmful to plants, and therefore produce an unhealthy rangeland. If soil loss is occurring and many plant pedestals are evident, soil treatment and erosion control are necessary.

Determining Range Trend

In determining range trend, one must take into account all these factors. Leaving out any one of them could result in a wrong interpretation of range condition, and because of that the rangeland could deteriorate quickly.

After each factor of trend has been determined, it must be rated. Using a 1–5 scale method, as described by Montana State University, the evaluator adds the numbers together to find an average score. Range trend is then decided by the category that the number and rangeland fit:

- **Away From** is range trend moving away from historic or desirable plant community
- **Not Apparent** is range trend not in movement. In other words, range condition has not moved over time.
- **Toward** is range trend moving closer to climax historic levels or desirable plant community.[3]

The trend in rangeland condition can remain about the same, go down, or go up. In the Northern Great Plains, trend movement can be slow but gradual, with changes occurring over time. These changes can be from weather or management practices with each factor affected differently.

Monitoring range resources should be done annually; however, not all factors need to be monitored each year. Plant species composition changes occur more slowly; thus monitoring every 3 to 5 years is sufficient. However, abundance of seedlings/young plants and plant litter/residue can change more rapidly, requiring more frequent monitoring. Management alternatives can be changed to prevent undesirable trend developments in overall range health.

Attempting to monitor every inch of a given rangeland is not physically possible. Instead, representative study sites are chosen based on their ability to interpret range conditions over much larger areas. Unfortunately, there is no "cookbook" procedure that can determine the best location and monitoring system for any given ranch. An area, or several areas, must be chosen that represent as much of the land as possible. Observations and recommendations are then made based on those areas.[4]

Some research methods used to determine range trend are line-transect methods using points and frames, visual estimates, and photo points. The line transect methods are most commonly used by scientists and public and private agencies. They are more detailed but are time-consuming, labor-intensive, and more expensive. A visual estimate is just what it says—a visual estimate of the representative site. It is important to walk around to get a good idea of what the plant community and soil surface look like and then rate the factors accordingly. This method requires learning key plants and soil features. An observer or range evaluator will become more proficient with time, and practice is relatively inexpensive. Photo points are where you take a picture of the rangeland and evaluate changes over time from repeated years of picture taking to create a permanent record (Photo 2). It is important to identify the date and location in the picture, to take the pictures during the same stage of growth, and to include the same skyline, and even an object on the skyline, for easy relocation. Repeated photographs taken at permanent locations are an effective and efficient method for long-

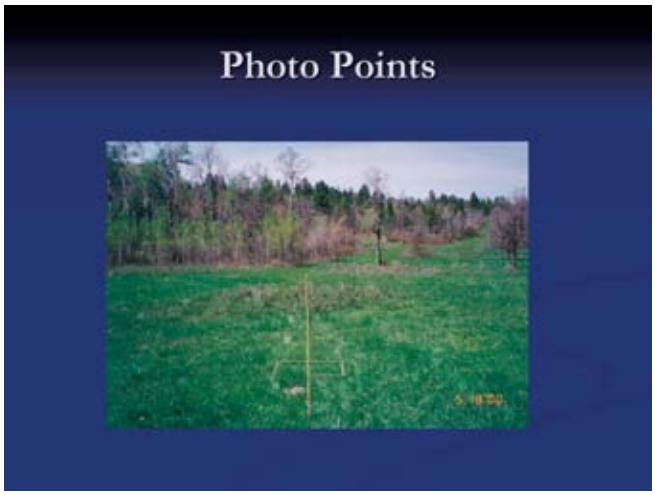

Photo 2.

term monitoring. Select a monitoring program that fits your objectives, resources, labor, and time. [5]

Locating key monitoring areas is the most significant step in beginning the rangeland monitoring program. Once chosen, monitoring methods range from simple photo-point plots to advanced quantitative measurements. Most rangeland monitoring programs do not need grazing exclosures or elegant statistical processes. Remember, determining rangeland trend requires that repeated measurements be made over time.[4]

Range trend can be used to determine best management practices that simulate natural, biological processes to ensure an improvement in the rangeland resource.

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