

Some Tips About Range Site and Condition Classification

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The intent of this article is to encourage the development of standards for range site and range condition classification. The classification systems have been the subject of several articles in *Rangelands* and the *Journal of Range Management*. These articles are not cited to avoid inferred acceptance or rejection of their proposals. Those papers did not deal with the philosophical limitations of dividing a gradually changing population into separate recognizable groups. Such continua have no natural boundaries but only those created by the observer. If the observer is very knowledgeable, many boundaries are evident.

Range science seems to be in the same dilemma that soil classification was in during the 1940s. Soil units were defined around a central concept without a designation of boundaries that separated one class from another. Current Soil Taxonomy (1975) has defined limits for the categories.

Soil taxonomy was initially developed by the soil classification staff of the Bureau of Plant Industry (BPI). This staff later was merged with Soil Conservation Service soils scientists. Several BPI administrators headed the combined group and were strong enough to develop a soil classification scheme.

I became involved with the range site classification in the 1950s because some range site vegetation was better related, not to surface *texture*, but to *surface* structure (White and Lewis 1969). Other range site vegetation was related to subsoil structure and texture (White 1971). On a field trip with Dr. E.J. Dyksterhuis, he agreed that the vegetation did not correspond completely to the surface texture. In retrospect, the vegetation continuum would not likely have recognizable breaks at the same place as the arbitrary breaks between soil texture groups. The surprising aspect is that the range site classification system was usable for a wide variety of persons working on rangeland, including plant taxonomists, ecologists, foresters, animal nutritionists, biologists, range and soil scientists, and ranchers. Each group used aspects of their training to reach the same conclusion. However, differences in how range is evaluated can cause misunderstandings.

A story was generated in the 1960s by a range scientist's effort to educate soil scientists in the South Dakota Badlands. A small steep-sided, mesa-like area beside a badland wall was examined. Although the mesa was 10 to 15 feet higher than the moat-like gully surrounding it, the area was an "overflow" range site. The range scientist was using vegetation as the criteria while the amused soil scientists were using topographic position. Was either classification wrong? Probably not, because the vegetation likely was established when the area carried drainage water from

the badland wall. The area was separated from the wall and runoff water by rapid downcutting of gullies. Present vegetation was probably relict from previous conditions. Aren't soils and range vegetation always relict from past conditions? Any range site or condition classification that ignores this question is not likely to be useful.

Proceedings of a symposium (Amer. Soc. Agron. 1964) discussed the use of soil classification in range site classification and specific relationships between soils and vegetation. Both soils and vegetation are affected by microclimatic factors such as slope direction. Droughts and wet cycles alter vegetative composition over the short term, but effects on soil are minor.

Terms used in biogeographics may be useful to describe changes over time (chronocline) and from one geographic area to another (topocline). Could man's activities that alter range vegetation be considered a clinal variation? Depth of topsoil to estimate accelerated soil erosion is an example of this kind of variation. Could range condition classes be based on the long-term average climate and be adjusted for that climate and preceding seasons? Possibly soil association maps, such as the one Aandahl (1972) proposed for the Great Plains, could be used to identify areas with similar climate and soils.

Standards used to identify range sites and condition should be the same across a geographic area or a political boundary. Prior to the present soil classification scheme, soil series used in one state were often described in ways that prevented their use in other states with less knowledge about their soils. In these cases, progressively more diverse soils were frequently included until the original soil series definition became meaningless. Similar situations should be averted in range site and range condition classification.

Hopefully, the preceding discussion will encourage the development of meaningful and useful classifications of range sites and range condition. Decisions must be made arbitrarily by mutual consent of interested individuals. Continua can not be divided into meaningful categories with abstract logic.

Literature Cited

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