

Follow-Up on Range Sites and Condition Classes as Based on Quantitative Ecology

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After reading preliminary drafts of the 1984 Ecological Society Symposium on "Secondary Succession in Evaluation of Range Condition" and the Proceedings of the 1985 SRM annual meeting, as well as earlier material from the SRM Range Inventory Standardization Committee, it seemed timely to offer this brief follow-up and update.

As might be expected, during the course of decades some misunderstandings may develop when dealing with subjects such as the title and the author cannot well assume "no fault" on his part.

"Condition and Management of Rangeland Based on Quantitative Ecology" appeared in the *JRM* Vol. 2 in 1949. The original manuscript had to be cut one third to meet the page limitation at the time. Explanation was reduced. Moreover, the author erred by not labeling the basic diagram as schematic. In consequence, a range management textbook appeared that took ranges of percentages of Decreasers, Increasers, and Invaders in each condition class *literally*, as read from the diagram as though they applied everywhere.

A longer 1958 technical paper on the same general subject titled "Ecological Principles in Range Evaluation" was requested by the Ecological Society for a 45-minute address at the American Association for the Advancement of Science meeting in New York City. Immediately following the presentation it was requested for *The Botanical Review*, by its editor, and appeared there, but it may not have reached many range people. It includes the statement that since 1949 there had "... been amplifications and some modifications among acceptable postulates resulting from ... advances in ecology, especially those dealing with theory by Cain, Curtis, Odum, and Whittaker." This is mentioned because some current range authors evidently believe that the method is almost wholly Clementsian ecology and not modern knowledge. Clements is properly given much credit, but a reading of the 1958 paper will make clear that even in the 1949 paper the monoclimate theory of Clements was displaced by polyclimax or edaphic climax theory, referred to as *site climax* by Meeker and Merkel in the Sept. 1984 issue of the *Journal of Range Management*. Clements ecotones were displaced by continuum principles in both climatic and edaphic gradients as these related to gradation of volunteer vegetation. His "stages" in succession (described for primary succession, and also shortly after by Sampson for secondary succession in some specific local instances) are intentionally avoided.

Instead, the position of vegetation in secondary succession is presented as an infinite number of points in a continuous gradation. This can take *many* and *various* routes, even

on the same type of site, depending upon climatic fluctuations and fires, as well as on both kinds and amounts of grazing by seasons, both during brief or long-term departures from climax or secondary successions toward climax. A practical measure of position was found to be percentages of Decreasers, Increasers, and Invaders. Hence, Range Condition *Classes*, not steps or stages in secondary succession.

The 1958 technical paper was supplemented in the same year by a shorter non-technical article entitled "Range Conservation as Based on Sites and Condition Classes," but it was in the *Journal of Soil & Water Conservation*. It continues to provide an adequate introduction to the subject and is much used by undergraduate range students as well as technicians in several natural resource fields.

Following are five additional items on the method that, judged from some recent writings, require explanation.

1) The climax is not the goal of range management. Instead it is the type of vegetation from which range condition class is measured. Early attempts to use bare soil, as the point from which to measure, failed because it is rarely reached outside corrals; and, it provides no basis for *prediction* of potential volunteer vegetation. A 25 percent departure from climax is included in the Excellent Condition Class; and, it has been specifically stated from the outset that in some instances the Good Class might be an appropriate goal for management.

2) The method cannot be applied on natural forestland, even though it is currently supplying forage from volunteer plants (range). This was intentional. Firstly, because range inventory should supply data on acreages of rangeland used as range, and of forestland used as range. Secondly, because a decision on primary land use—based on land capability—must necessarily precede consideration of treatments to be applied. Thirdly, because secondary succession on forestland leads ultimately to better forest, not better range.

3) The method was purposely designed to avoid short-term trend factors in determining range condition class. This is because they are too much under the influence of temporary extremes in weather, degrees of grazing use, etc. Soil erosion in a drought year under close use can be followed by soil stabilization in a wet year with light grazing use. The subject was given special emphasis in "Determining the Condition and Trend of Ranges," in Proceedings of the VIth International Grassland Congress, 1952.

4) The method did not intend that species composition be expressed in percentages for either the climax or any condition class for a type of site. This was introduced by others with the thought, no doubt, of refining or improving the method. It is believed that there should be a return to considering only the three *groups* of species, with the total of

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Decreasers, Increaseers, and Invaders equaling 100 percent. To do otherwise fails to recognize differences in percentages by individual species that occur in the climax or during degeneration and subseres in types of sites that are mappable in rangeland inventory.

The similarity in species composition, on ranges in the Excellent Range Condition Class for a specific type of site, even though they returned to that Class from a great array of vegetation types in the lower condition classes, is indeed remarkable. Then too, as Clements said "All seres converge toward the climax." This undoubtedly explains why some have assigned percentages to individual climax dominants. But, as an Odum textbook put it, "... species are to some extent replaceable in time and space so that similar communities may have different species compositions."

5) The use of interpretive soil groups for range mapping units—instead of taxonomic or topographic mapping units—though a part of the method and now the standard for the USDA Soil Conservation Service in at least six states, has not

been mandated nationally for the SCS. None the less, such soil group names developed under SCS leadership were adopted as standard by the USDI, Bureau of Indian Affairs in 1958 for reservation rangelands in all western states and by the province of Alberta, Canada, for all of its rangelands in 1966 with reaffirmation in 1972. Moreover, mapping units of the method have been reported by the USDA, ARS as correlated both with water intake rates (Tech. Bull. 1390, 1968), and watershed runoff (Jour. Soil & Water Conservation, 1981).

They are also used elsewhere; but, in many Soil and Water Conservation Districts the older topographic site names have been retained and continue to be used. Therefore, it should be understood that these do not conform with the method under consideration because topographic sites such as Stony Ridge, Bottomland, North Exposure etc. can differ greatly in soil depths, textures, etc., with resulting differences in potential natural vegetation (climax)—the point from which Range Condition Class is measured. ●

Viewpoint: A Rare Look at "R.A.R.E"

Stu Bengson

What is "R.A.R.E."? R.A.R.E. is an acronym for "Roadless Area Review and Evaluation"! In other words a "study" or "inventory" of the "roadless" areas in the National Forest System that may have wilderness characteristics and evaluate the suitability of these areas for inclusion in the National Wilderness Preservation System. Sounds quite simple and straight forward. At least that's what the U.S. Forest Service thought back in February of 1971 when they first started the whole thing (RARE I). Now, almost 15 years later, the USFS and the public are still embroiled in a legal/political battle over what is or isn't wilderness." What's even worse is that, while all this bickering goes on, other resources of the National Forests are being neglected because the precious time of the overworked professionals of the Forest Service and critically short budget dollars are being spent trying to resolve the conflicts.

Why are we in this bitter turmoil? Basically I believe it's due to the jealous and selfish attitudes and perceptions of a small minority of users of the National Forest resources. Under the concepts of "Multiple-Use," the National Forests are used to derive the greatest benefits for the greatest number of people. No one user of the resources should monopolize the lands or resources for its own benefit. The National Forests were created to benefit the public as a whole and "Multiple-Use" doctrines were established to achieve these goals. What is happening is that extremely influential minority groups are demanding singular use of the National Forest lands for their own exclusive benefit. Some environmental extremist groups would have all N.F. lands "wilderness." On the other hand zealously ambitious resource developers

want absolutely no "wilderness" and all N.F. lands to be "developed." The majority of Americans want something in between. Some "wilderness" is good, but we also need the resources of the N.F. lands for our growing needs. Multiple-Use of the N.F. lands could supply both needs. The pious, self-serving, attitude of either extreme has no place in this critical issue. The question of "wilderness" should focus on the facts alone. Let's look at some "FACTS."

Back in 1964 when Congress first enacted the Wilderness Act some 9.1 million acres of National Forest Multiple-Use lands were permanently designated as Wilderness (approx. 5% of the National Forest System). An additional 5.5 million acres were classified as "primitive areas" until such time as the Forest Service could accurately determine if these areas were indeed suitable for "wilderness." Then in June 1970 the USFS decided to administratively expand these prospective "wilderness" areas and inventory all "roadless" areas in the NFS. In 1971 the first inventory of "roadless" areas became known as R.A.R.E. I and identified some 274 areas encompassing more than 12.4 million acres. By July of 1972 this inventory had grown to 1,448 areas totaling more than 56 million acres (30% of the NFS). When this information was publicized the environmental community immediately filed a lawsuit claiming that the inventory was inadequate. In June of 1977 the USFS began R.A.R.E. II, or the second study of "roadless" areas. R.A.R.E. II inventoried 2,919 areas totaling over 62 million acres. On January 4, 1979, the Forest Service issued its final recommendations for RARE II. More than 15 million acres (an additional 8% of the NFS Multiple-Use lands) should be designated "wilderness," bringing the total to more than 24 million acres or about 13% of the NFS. An additional 11 million acres would be held for "further study"