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The attached Range Technical Note is from the "Grazier" edited by Dr. Michael Borman, Range Extension Specialist at Oregon State University.

The article was published in two issues of the Grazier, No. 302, December 1999 and No. 303, February 2000. The article is a brief that was filed in the U.S. Supreme Court and authored by W. Alan Schroeder with Lamar Smith, Bill Laycock and Jack Alexander.

The article gives a good overview of western rangelands and some of the effects of rangeland use that have occurred since settlement of the west. The information provided gives a better understanding of current resource conditions on western rangelands.

THE GRAZIER-Historical Grazing on Public Lands in the Western U.S. and Range Condition

No. 302 December 1999

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Editor's Note: The following discussion is part of an *Amicus* brief filed in the Supreme Court of the United States, case number 98-1991, Public Lands Council, *et al., Petitioners,* v. Bruce Babbitt, United States Department of the Interior, Secretary, *et al., Respondents*. W. Alan Schroeder prepared the brief in association with Lamar Smith, Bill Laycock, and Jack Alexander on behalf of the Association of Rangeland Consultants "in support of neither party but in support of reversal." I am including this discussion in *The Grazier* because it provides a very good, and brief, discussion of historical grazing on public lands in the western U.S. and of range condition. Subsequent edition(s) of *The Grazier* will include the balance of the brief with discussion on riparian area and a discussion of 'pristine' range condition.

I. HISTORICAL PERSPECTIVE OF LIVESTOCK GRAZING UPON THE PUBLIC LAND WITHIN THE WESTERN UNITED STATES.

Livestock was introduced to the western rangelands in the 1860s, although in some areas like Texas, New Mexico, Arizona, and California, livestock grazing began much earlier. Prior to the introduction of livestock, rangelands were grazed by bison, antelope, elk, deer, and other wildlife. Wildlife grazing pressure ranged from fairly heavy (e.g. bison in the Great Plains) to light in some of the Intermountain areas where lack of water and frequent drought constrained populations of large grazing animals. When livestock were first introduced to the western rangelands land was open to anyone who wished to use it. As land was homesteaded and passed into private ownership, control over use of the rangeland was gradually established, especially east of the Rocky Mountains. In the "public land states" of the Western United States, most of the land was not suited for homesteading because it was impossible to farm it or make a living from livestock from the small acreage available under the various Homestead Acts. Therefore, only small amounts of land, usually where water was available, passed into private hands. The rest was grazed as "open range" by anyone who could control it. This situation, plus a general lack of understanding of the productivity of western rangelands, led to widespread overstocking by cattle and sheep in the last few decades of the nineteenth century continuing into the twentieth century. In addition, there were large bands of wild horses and burros grazing public rangelands. This "tragedy of the commons" led to decreased cover of desirable vegetation, increased cover of undesirable vegetation, and accelerated soil erosion. All of which was compounded by the effects of severe droughts and floods occurring around the turn of the century, as well as the

1930s drought and "dust bowl." Wildlife populations also declined during this same period due to market hunting and lack of any control of hunting seasons or bag limits.

The situation over the next few decades improved slowly. The adoption by the United States Forest Service (USFS) of a grazing permit system at the turn of the century, and the passage of the Taylor Grazing Act in 1934, established grazing entitlements of individual livestock operators dependant on public land use. These actions reduced competition among livestock operators, eliminated the need to stock rangeland heavily to maintain rights of occupancy, and banned transient or speculative livestock operators from public land. In addition, research and experience were accumulated that laid the groundwork for development of range management as a college major and a profession. The formation of the Cooperative Extension Service in the Universities and the creation of the Soil Conservation Service (SCS) (now Natural Resource Conservation Service) made technical information on rangeland management available to ranchers. All of these efforts resulted in some decrease of stocking rates and implementation of improved management in the 1920s through the 1940s, although emphasis on expanded livestock production as Federal Government policy during both World Wars retarded these efforts to some extent.

After World War II, major strides were made in improving management on both public and private rangelands. Millions of acres were treated to reduce undesirable shrubs, control soil erosion, and reseed deteriorated rangelands and abandoned croplands. Major efforts in fence construction and water developments made possible, for the first time in many areas, to improve distribution of livestock grazing and to adopt grazing management systems that provided rest to plants during critical growing periods. Livestock numbers were generally reduced on the public rangelands as a result of improved methods of range assessment and the development of better understanding of grazing effects. The profession of range management was fully developed in the Universities and research on the ecology and management of rangelands was well supported. The science and practice of wildlife management also flourished in this period, and this knowledge, along with improving habitat resulting from improved range management, resulted in increases of wildlife.

In the 1970s, Federal, State, and private land managers began to focus more on riparian areas as the importance of these areas for wildlife and water quality considerations became more apparent. Prior to that time, riparian areas were often considered as "sacrifice areas" where livestock would concentrate in spite of reduced numbers. The emphasis in range management was oriented more to protecting the upland watersheds than the streams themselves. Since the 1970s, riparian areas have received increased interest in both management and research, and much has been learned about grazing management to achieve riparian objectives.

II. RANGE CONDITION UPON THE PUBLIC LAND WITHIN THE WESTERN UNITED STATES HAS IMPROVED OVER TIME IN THE FACE OF LIVESTOCK GRAZING.

Range management professionals almost unanimously agree that there has been general improvement in the level of management applied to rangelands and that the general range condition of rangelands has improved greatly since the early days of this century, and particularly since 1950. If that is the case, why does there remain so much controversy regarding the range condition and trend of public land? The following discussion will answer that question and draw conclusions about present range condition and trend.

A. Early Assessments of the Public Land did Not Involve Range Condition but Intended to Determine the Grazing Capacity of the Public Land.

The USFS began to develop a method for assessing the grazing capacity of rangelands in about 1908. This was called the Ocular Reconnaissance Method. This method was not a range condition assessment procedure. Instead, it was intended to determine the number of livestock that could be sustainably grazed on a given area based on the cover and species of vegetation existing on the ground at the time the inventory was made.

The Ocular Reconnaissance Method was initially employed to assess rangelands on all lands in the Western United States as the Interagency Range Survey process began in the 1930s. Results of this method formed the basis for Senate Document 199 that described the status of the western rangelands in 1935 (U.S. Congress 1936). In this document, rangelands were assigned to "depletion" classes that corresponded to estimated reductions in grazing capacity for livestock. However, this method did not truly assess range condition.

B. The Federal Land Management Agencies Subsequently Developed the Concept of Range Condition but Applied Different Methods to Determine Condition Which Made it Difficult to Assess Overall Condition and Trend of Condition Upon the Public Land.

In the late 1940s and early 1950s, the USFS and SCS began to classify and map range condition based on the concept of similarity of current vegetation to the potential or climax condition. The basic ecological concept was that rangelands with similar site potential (soils, climate, landform) would produce a predictable kind and amount of native vegetation in the absence of human-caused disturbances such as grazing or fire. Evaluating the kind and amount of present vegetation on a particular type of rangeland compared to the "undisturbed" situation could be used as an indicator of rangeland "condition" and the changes in vegetation toward or away from the reference condition could measure "trend" in condition.

The methods used by the USFS and SCS, as well as the methods later used by the Bureau of

Land Management (BLM), to determine range condition were not the same, although they were based on similar ecological concepts. Because of these differences, precise comparison of range condition information across land ownerships was difficult.

Attempts to produce summaries of range condition and trend for all rangelands faced certain difficulties, including other difficulties associated with Federally administered rangelands. Most of the range condition data were collected for purposes of on-the-ground management plans. The assessments were thereby concentrated on those grazing allotments, and those portions of grazing allotments, which were considered most in need of livestock reductions, range improvements, or management changes. Large areas of rangeland, especially in rugged mountain country, were excluded from these surveys because of the time required and the fact that they were minimally impacted by livestock grazing due to lack of water, steep terrain, or other natural barriers. Therefore, the data available on range condition do not include all lands included within grazing allotments, but tend to focus on the upland portions mainly used by livestock. Likewise, range condition surveys have not been done on Federally administered rangelands not used by livestock, such as certain USFS and BLM administered lands, as well as those administered by the National Park Service, the Fish and Wildlife Service, the Department of Defense, and others.

C. The Academic Community, Other Organizations, and the Federal Land Management Agencies Compiled the Available Range Condition Information and Found an Improving Trend Upon the Public Land.

Although certain factors made it difficult to compile precise quantitative information on range condition and trend, a number of efforts have been made to do so.

One of the first efforts to summarize range condition by someone other than the Federal Land Management Agencies was done by Drs. Thad Box, Don Dwyer, and Fred Wagner (all of Utah State University) in 1976 (Box et al. 1976). This study was the basis for the oft-quoted statement by Dr. Box that "rangelands are in the best condition they have been in this century"; a view that is supported by the vast majority of range professionals.

The report "Grazing on Public Land" issued by the Council for Agricultural Science and Technology (1996) agreed with Dr. Box, and stated that, with some exceptions, rangelands are in the best condition of this century. The exceptions cited were irrelevant to livestock grazing and related to changes over the last decade due to a lack of juniper and sagebrush control. In other words, unless controlled with management practices such as fire, mechanical removal, or herbicides; juniper and/or sagebrush normally thickens and results in lower range condition ratings on both grazed and ungrazed areas.

The Society of Range Management (SRM) (1989) published its own study of range condition and trend of condition that summarized the then current information available from the USFS, BLM and SCS. Members of these Federal Land Management Agencies worked with other range professionals associated with SRM to interpret the existing data and to present them in terms as nearly similar as possible in light of the differences in methodology used. The results are summarized in Tables 1 and 2.

Table 1 demonstrates that the current percentages of rangeland in Potential Natural Community (PNC), high seral, mid seral, and low seral are remarkably similar among the three categories of

rangeland. Likewise, **Table 2** shows that estimated trends in seral stage are similar. Some of the differences in both seral stage and trend among the three categories of land may reflect differences in predominant type of land, differences in assessment procedures, differences in duration and/or intensity of management applied, and differences in effects of factors other than livestock grazing, e.g. increase in tree cover that reduces understory vegetation.

The BLM issued its own report in 1990 about the range condition and trend of rangelands upon the public land it administers (Bureau of Land Management 1990). The results are summarized in Table 3.

Table 3 demonstrates a general improvement in the range condition of the rangelands compared to the earliest data available. In particular, there has been a decrease in early seral condition and an increase in late seral condition.

Not everyone agrees with the information in Tables 1-3. An opinion poll of USFS and BLM field personnel by the General Accounting Office (GAO) (1988) indicated that they believed range condition has declined or failed to improve because of livestock grazing. However, this GAO report was based only on opinions expressed in a questionnaire and was contrary to the quantitative information disclosed in Table 3 (McLain 1992). Furthermore, in a survey of SRM members sponsored by SRM, the Range Education Institute, and the University of Nevada, the majority agreed with the statement that "In general, rangelands within my SRM section have improved since the 1970s." They also agreed that the "extent of overgrazing on federal rangelands has decreased markedly over the past 50 years."

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Table 1. Range Condition in the Western United States by Land Administration

(% of Land by Condition Class).

Land Owner (Reporting Agency)	PNC[1]	High Seral	Mid Seral	LowSeral	Not Classed
National Forest (USFS)	15	31	39	15	<1
Public Domain (BLM)	4	30	41	18	7
Private/State/Indian (SCS)	4	30	45	16	5

[1] *Potential Natural Community*

Table 2. Estimated Trend in Range Condition in Western United States by land administration (% of area).

Land Owner (Reporting Agency)	Up	Stable	Down	Undetermined
National Forest (USFS)	43	43	14	-
Public Domain (BLM)	15	64	14	6
Private/State/Indian (SCS)	16	70	14	-

Table 3. Historical Trend of Range Condition on Public Land Administered by the BLM.

Percent by Condition Class

Year	PNC	High Seral	Mid Seral	Low Seral	Unclas
1936	1.5	14.3	47.9	36.3	
1966	2.2	16.7	51.6	29.5	
1975	2.0	15.0	50.0	33.0	
1984	5.0	31.0	42.0	18.0	4
1989	3.0	30.0	36.0	16.0	14

THE GRAZIER

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Editor's Note: The following discussion is a continuation (beginning with Part III) of an *Amicus* brief filed in the Supreme Court of the United States, case number 98-1991, Public Lands Council, *et al., Petitioners,* v. Bruce Babbitt, United States Department of the Interior, Secretary, *et al., Respondents*. W. Alan Schroeder prepared the brief in association with Lamar Smith, Bill Laycock, and Jack Alexander on behalf of the Association of Rangeland Consultants "in support of neither party but in support of reversal." Parts I and II, historical perspectives of livestock grazing and range condition on public lands, were included in the December 1999 issue of *The Grazier.*

III. RANGE CONDITION UPON RIPARIAN AREAS OF THE PUBLIC LAND WITHIN THE WESTERN UNITED STATES HAS ALSO IMPROVED OVER TIME IN THE FACE OF LIVESTOCK GRAZING.

Tables 1-3 (December 1999 issue of *The Grazier*) did not explicitly address range condition in riparian areas, i.e., the green area immediately adjacent to streams. Although floodplains along riparian areas would be included in most range condition assessments, the actual streambank vegetation likely would not be. Even if riparian condition were part of the reported information on range condition classes, the relative acreage of riparian areas compared to upland would obscure any indication of riparian condition. Further, there was no commonly accepted method of evaluating riparian condition until the "proper functioning condition" scorecard method was recently developed by the BLM (1993). Although this method is now widely used by various

Federal Land Management Agencies, it does not provide quantitative information. Therefore, probably the best way to infer the historical condition of riparian areas in the absence of more quantitative assessment techniques is to use photographs, including aerial photos, taken at different times.

A. Some Reports Suggest Inconclusive Answers Regarding Riparian Conditions Upon the Public Land.

A GAO (1988) report indicated that although some progress was being made, riparian condition was poor and would be slow to recover. However, this GAO report was not based on extensive surveys of riparian areas, but rather on anecdotal evidence from interviews (McLain 1992). Therefore, no data were presented to indicate the extent of riparian areas in different conditions, the cause of deteriorated conditions, or whether improvement was occurring.

A 1990 Environmental Protection Agency (EPA) report (Chaney et al. 1990) expressed similar results to that of the 1988 GAO report. It found that "extensive field observations in the late 1980's suggest that riparian areas throughout much of the West were in the worst condition in history", and implies this condition is due to livestock grazing. However, this EPA report presents no information to back up this statement and no published literature or reports are cited to substantiate this claim.

A BLM (1991) report expressed a more documented account of the riparian conditions, but its scope was limited. It found that 7% of public land riparian areas outside of Alaska were meeting objectives, 8% were not, and the condition of 85% was unknown.

B. A Report by BLM and Other Information Demonstrate an Improving Trend in Riparian Condition Upon the Public Land.

The Department of Interior reported in a Draft Environmental Impact Statement (EIS) (BLM and U.S. Forest Service 1994) that in 1993 only 20% of BLM riparian areas were "nonfunctioning" with the remainder "functioning" or "functioning at risk". This same report noted that 78% of USFS riparian areas were "meeting objectives" and only 22% were "not meeting objectives". These estimates were based on some available information and on professional opinion.

Other information demonstrates a more favorable trend than that revealed by the Department in its Draft EIS, as follows:

(1) Livestock Grazing Management and Range Improvement Practices Have Changed Over Time Resulting in Improved Riparian Condition.

Several facts indicate that the impact of livestock and feral grazing animals on riparian areas would generally be less now than at any time since the turn of the century. The numbers of livestock grazing on western rangelands have been reduced, especially the number of sheep. Numbers of wild horses and burros have also decreased dramatically since the early 1900s. These trends are countered somewhat by increases in deer, antelope, and especially in elk numbers. Furthermore, the grazing demand upon the riparian areas have generally decreased due to widespread construction of fences and off-stream water developments that have resulted in better control of livestock distribution and rotational grazing systems. These developments have lessened the dependency of livestock on riparian areas for water, have provided water sources

away from streams and springs, and have allowed the timing of grazing in riparian areas to improve. Therefore, these facts would indicate that the impacts of livestock and feral animals on riparian areas must certainly be less than it was in the early years of this century when few, if any, of these controls or developments existed.

(2) Causes for Riparian Decline are Often Unrelated to Livestock Grazing.

Many of the negative reports on effects of livestock grazing on riparian areas fail to separate effects of livestock grazing from other factors causing riparian damage. They also fail to distinguish between effects of former grazing practices and effects of present grazing management.

One of the major ways in which riparian systems degrade is by development of gullies or arroyos. Such gullying has occurred over wide areas of the western rangelands since the late 1800s. Development of these gullies entrenches the streams, lowers the water table, dries up the floodplains, and contributes large amounts of sediment downstream. The beginning of gully formation was roughly coincident with Anglo-American settlement, and thus has widely been blamed on overgrazing, logging, and other human activities. However, there is no agreement on the specific causes of this gully cutting.

Cooke and Reeves (1976) did an excellent analysis of the possible causes for arroyo formation in the Southwest. These possible causes included: "changes in the amount and kind of vegetation on both the watersheds and the floodplains as a result of heavy grazing, cutting of firewood and timber, fire frequency and climatic change;

changes in weather patterns and/or extreme weather events that changed runoff regimes; and, direct human intervention in the channels and floodplains, including cultivation, dams to impound or divert water, road and railroad embankments and bridges, sand and gravel operations, etc." Their conclusions were that heavy grazing may have had a role in formation of arroyos, but that the most likely main cause in the larger stream channels related to direct human intervention, particularly building of dams in the channels and embankments in the floodplains. There are also indications of extreme drought followed by exceptional runoff events during the main time of arroyo initiation.

The point is that once gullies are initiated, for whatever reason, the process may continue for many years. Headcuts of gullies will continue to move upstream or discontinuous gullies will coalesce in response to concentration of runoff, regardless of the condition of the watershed above them. Gullies will also tend to widen by eroding their banks to create new floodplains at a lower level than the previous one. Only when a new floodplain is wide enough to accommodate flood events and dissipate flood energy will it start to trap sediment and aggrade, perhaps eventually reaching the former floodplain level and establishing new riparian vegetation corridors. This process may take a long time. Thus, many gullies initiated in the late 1800s or early 1900s are still in the process of re-stabilizing.

Another way in which riparian systems degrade is grazing or human activities associated with bank stability, habitat for wildlife (vegetation), and water quality effects. Livestock grazing has historically had severe impacts on all three of these riparian attributes and these impacts still are

a major problem in certain areas. However, research and adaptive management experience over the past couple of decades have shown that these problems can be overcome by designing livestock grazing management systems to achieve these objectives. Riparian objectives can usually be met by modifying livestock grazing practices without complete removal of livestock.

(3) Experience of Range Professionals and Other Professional Resource Managers Demonstrate an Improving Trend in Riparian Condition Upon the Public Land.

Photographic evidence and the experience of professional resource managers indicates that there has been marked improvement in the condition of riparian areas since the 1950s, and especially in the past 20 years when more attention has been focused on managing riparian areas.

In southeastern Arizona, Hastings and Turner (1965) re-took photographs taken in the late 1800s and early 1900s. Of the 28 matched photographs of riparian locations, 25 showed obvious increases of riparian vegetation including cottonwoods and willows.

In Wyoming, in 1977-80 Kendall Johnson (Johnson 1987) re-took the photographs taken by William Henry Jackson throughout the state in 1869-70. Of 20 riparian areas re-photographed by Johnson, 13 showed marked increases in woody species, mainly cottonwoods and willows. Six riparian areas appeared to have about the same amount of woody species along the banks in both sets of photographs and one area, an area dredged for gold, had less woody vegetation in 1977-80.

In the Northern Great Plains in 1958-1960, Phillips (1963) re-took the vegetation photographs originally taken by Dr. Homer L. Schantz starting in 1908. Of the 11 photographs of riparian areas in Wyoming, Montana, South Dakota, North Dakota and Nebraska, 9 showed a definite increase in woody species along the stream bank and 2 showed little differences.

David E. Brown, one of the authors of the Map and Classification System for Arizona Vegetation (Brown and Lowe 1980), and a field biologist with over 30 years experience in the Southwest with Arizona Game and Fish Department, wrote: "My experience, from some 30 years as a field biologist in the Southwest, is that riparian vegetation has improved immensely since the 1960s and early 1970s. Entire forests of cottonwood and willows have sprung up where previously I saw only barren strands of gravel. ... Streams that formerly sank into cow-stomped sand now gurgle downward another 100 yards or more. Where earlier I saw the ravages of erosion and channel-cutting, I now see sediment rebuilding and healing banks. ... These observations are not some trick of memory. Recent photos of Southwestern streamsides commonly show a marked thickening of gallery forests when compared to earlier photographs. ... Why? Cattle, the bugaboo inhibiting reproduction by cottonwoods and willows, are fewer now at streamside as some ranchers try more enlightened management practices. Not a few streams have been acquired by conservation organizations that protect them from grazing. The change in some of these communities can only be termed remarkable, and attests more to riparian resilience than frailty. ... But the foremost factor has been climatic serendipity. Riparian forests are successional by evolutionary design and dynamic by nature. Comparatively short-lived and adapted to spring flooding, riparian trees were greatly handicapped by the dry winters that characterized the middle of the 20th century. Conversely, these relicts of the pre-Ice-Age world were uniquely positioned

to take advantage of the bountiful runoffs that came in the springs of 1968, 1979-81, 1983, and 1993. So great was the production of seedlings after these events that only the most intense cattle predation could negate the gains. Had it not been for the catastrophic summer floods that occurred in 1970, 1983, and locally in other years, our riparian forest would have attained even greater grandeur" (Brown 1995).

Mr. Brown's observations are quoted at length because his conclusions reflect those of most range professionals working in the same area and he certainly cannot be considered an apologist for livestock grazing. Neither the observations of Mr. Brown nor those of range professionals deny the extensive negative impacts of livestock grazing on riparian areas in the past nor do they deny that such impacts do continue today in places. However, as Mr. Brown points out, riparian degradation and recovery is highly influenced by weather, especially drought and floods, and that such influences can overshadow the effects of both good and poor management of livestock grazing.

IV. A CHANGE IN RANGE CONDITION UPON THE PUBLIC LAND WITHIN THE WESTERN UNITED STATES MAY BE UNRELATED TO LIVESTOCK GRAZING AND A LOWER RANGE CONDITION MAY BE MORE BENEFICIAL FOR OTHER USES.

Interpretation of the meaning of Tables 1-3 (December 1999 issue of *The Grazier*) as well as the riparian condition information herein, requires some understanding of how the condition ratings are made and why ratings may or may not improve over time. In general, range condition compares the similarity of current vegetation to the presumed climax or potential vegetation for the site. Vegetation is described by species composition and sometimes by cover. The potential vegetation is obviously influenced by site variables such as soil, precipitation, temperature, and topography. For example, one obviously does not expect the same type of vegetation or same level of productivity in the Arizona desert as in the Colorado Mountains. Similarly, substantial differences can even occur within one management unit due to differences in soil or topography. If these differences are not adequately accounted for, the vegetation on a particular area may be judged to be below potential because, in fact, it does not have the capability to be any better.

A. Livestock Grazing, Fire, and Other Factors May Influence the Range Condition Upon the Public Land.

The standards for different range sites (types of rangeland with similar soils and climate) are often developed by studying areas that have not been grazed or burned, at least for a long t
Since grazing and burning do affect the composition, the standard established may not
attainable under grazing or burning. In other cases, vegetation may have changed fr
"original" composition due to woody plants or annuals that were absent or less a
earlier times. Whether these changes were solely the result of heavy grazing
caused by interactions with other factors, the changes may be practically i
management alone. In other words, reducing grazing or even eliminating
of these rangelands perceptibly. Therefore, some areas may remain in co

seral, mid seral, or even early seral.

B. Pristine Range Condition is Not Always Preferred Upon the Public Land.

Potential Natural Community or late seral condition is not always the most desirable state for all uses of the public land. Rangelands classified at a level lower than "excellent" may be desirable from the standpoint of ecological function and sustainability. For example, some rangelands classified as mid seral condition may be ecologically satisfactory but may not produce the kinds of vegetation necessary to achieve Land Use Plan objectives. However, these rangelands may have stable soils as well as biological productivity and diversity equal to or exceeding that of rangelands in higher condition classes. Related thereto, many species of wildlife thrive best in mid seral or late seral condition because the plants characteristic of those classes may provide more cover or food for them. Examples include the following:

- Heavy sagebrush areas that are critical mule deer winter range.
- Abundant numbers of pronghorn antelope in Wyoming thrive on mid seral condition rangelands because that condition has an abundance of shrubs and forbs required by this species.
- Killdeer and other shore birds require bare areas within riparian areas for their breeding success.

Therefore, it is practically impossible to draw conclusions about desired uses and ecological goals simply from range condition information.

C. Pristine Range Condition Should Not be Expected on All the Public Land. Instead, the Achievement of Land Use Plan Objectives Within the Range Condition Potential of a Given Area of Public Land Should be Expected on All the Public Land.

There is no necessary reason to expect that all rangelands should be in pristine or late seral condition or that it is even possible. There is no basis for concluding that mid seral condition is unsatisfactory. The basic problem is that terms like satisfactory and unsatisfactory reflect value judgments, not ecological function or sustainability. The "Range Health" publication of the National Research Council (1994) recognized this and concluded that the "health" of the rangeland is not known. The SRM also recognized this problem and recommended that the value laden terms (satisfactory, unsatisfactory) be dropped and that the desired conditions be identified as the "Desired Plant Community" for a given land type (ecological site) (Task Group on Unity of Concepts and Terminology 1995). In this case, the desired vegetation is that which will accomplish Land Use Plan objectives within the ecological site potential of the area.

USION

Note: I have edited this section to remove reference to regulations proposed by the Dept of Interior that were the subject of this brief. Because of that, I have also removed

reference to the Association of Rangeland Consultants (ARC) which was responsible for preparation of the brief.)

The preponderance of evidence shows that the riparian and upland condition of the public land within the Western United States has improved over the past several years. This improvement is due to better livestock management, in some cases to exclusion of livestock, to elimination of roads or better road construction, to more favorable weather conditions, and to maturation of the process of gully entrenchment and healing. Therefore, great progress has been made on both the upland and riparian condition of the public land in the Western United States and there is nothing to suggest that it will not continue to be made in the future.

Recent publications (Belsky et al. 1999, Ohmart 1996) that paint negative pictures of livestock grazing effects on all rangelands and the situation of riparian areas do not provide an accurate view of the actual situation. Pieper (1994) summarized the general effects of herbivory on rangelands as follows:

> *"Herbivory is a natural ecosystem process universal to rangelands worldwide. Although livestock are not native to western rangelands, these herbivores function similarly to native herbivores: livestock harvest plants, defecate, urinate and are involved in nutrient cycles; livestock compete with and complement other herbivores in rangeland ecosystems; livestock may stimulate primary production or depress it; livestock may serve as prey for several kinds of predators ... All of these processes operate within rangeland ecosystems, and often result in some type of equilibrium, however temporary, among the different components."*

In this context, livestock grazing on public land of the Western United States is not only a natural process, but one which contributes to the proper functioning of rangeland ecosystems when done in accordance with scientifically based principles. The credible evidence available and extensive professional experience indicates that condition of both upland and riparian rangelands has improved over the past several decades and is continuing to improve as a result of improved livestock grazing management

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