5. RECOMMENDATIONS/SUMMARY

The following section details recommendation proposed by ERG as a result of the evaluation of existing literature, interpretation and analyses of the data, identification of trends, and a thorough evaluation of the existing information. Recommendations for elk management are presented first, followed by a discussion of range condition and trend. Next, vegetation monitoring recommendations are discussed, followed by allotment management recommendations.

Readers need to keep in mind that this section is based only on the initial literature review and data collection phase of the project. Interim follow up recommendations will be prepared after the fieldwork portion of the project is completed in 2004, and a final report with complete recommendations will be submitted after the 2005 season. ERG believes that data collection and field analysis will allow for more clear-cut management recommendations.

5.1 ELK MANAGEMENT RECOMMENDATIONS

Based on the past history of winter range counts and trend count information for the Elkhorns, our recommendation would be to continue the population survey method already in use. In doing so, the EWG must recognize this is only a trend count and not a census, and the probable degree of error is influenced by snow cover at the time of the flights. Population trend counts provide an index, while census counts provide a total population.

In the event the working group would require a population census rather than a yearly population trend, the best option appears to be the development of a sightability model for the Elkhorns. Such a model, however, will vastly increase the cost of the information obtained. Unsworth et al. (1994) will provide guidance in determining the number of animals that must be marked and the amount of helicopter time required.

Historically, relationships between elk and cattle have been viewed in terms of direct competition for a limited forage resource. Nelson (1982) mentions strong diet similarities between cattle and elk, and Lyon and Ward (1982) tabulated 37 studies conducted between 1911 and 1979 on rangeland interactions between cattle and elk. There is no lack of data concerning food habits and/or speculation about direct competition for space on the landscape (Mackie, 1970; Lonner, 1975; Nelson and Burnell, 1976). For years, because of the way these data were interpreted, managers made the relatively obvious decision that conflict resolution required some method of dividing the available resources or of reducing the numbers of grazing animals.

In 1975, in what appeared at the time to be a major deviation into heresy, Anderson and Schertzinger (1975) proposed that appropriate management of cattle could benefit elk on winter ranges. They found that prior grazing of areas by cattle stimulated regrowth of grasses in a way that improved winter range for elk. In the years since, more and more authors have weighed in with observations that may eventually be considered confirmation. Scotter (1980) wrote, “Available evidence supports the generalization that dual use by livestock and wild ungulates, when properly planned, can benefit both classes of animals…”; and Miller (2002) observed that “Multiple species utilization of a common resource generally results in more efficient use of the forage resource.” Frisina and Keigley (2004), report that grazing management with cattle has improved the vegetation on Mount Haggin Wildlife Management Area; the “vegetation in uplands, riparian and meadow habitats is responding favorably in the face of livestock grazing that has occurred under rest-rotation grazing system since 1984".

In addition to the recognition that dual use can be beneficial to grazing animals, there has been “…an increasing understanding of the role herbivory plays in ecosystem function. Possibly, it should not have been a revelation to wildland managers that grazing, at some nondestructive level, is virtually essential to the continued health and maintenance of grasslands in North America” (Lyon and Christensen, 2002). These and similar observations were certainly instrumental in the conclusion by Frisina and Mariani (1995) that “management strategies should move away from attempts to resolve immediate species-specific (cattle vs. wildlife) land use conflicts and begin to develop long-term approaches designed to sustain grassland systems.”

Development of sustaining management strategies is not easy or always successful, but it can work. In 1991, the Nevada Cattlemen’s Association, in conjunction with several federal and state land management agencies and the Rocky Mountain Elk Foundation, sponsored the first of two symposia. “Seeking Common Ground” (NCA, 1991) intended to explore cooperative management of cattle and elk. Five years later, the participants gathered for “Sharing Common Ground” (Evans, 1996) to describe on-the-ground demonstration projects throughout the West. Each of these projects was unique in the people and the land areas involved, yet there is a continuity of purpose and similarity of activities that provides a broad range of ideas and suggestions potentially applicable in the Elkhorns or in any other situation where multiple competing objectives meet on the land base.

In the listing that follows, we have attempted to summarize some of the ideas, suggestions, and projects that appear in the “Common Ground” reports, and elsewhere, as a series of broad general recommendations.

5.1.1 Develop a Cooperative Approach

Supplee (1996) summarized her article about Steering Committees with the statement, "Understanding and supporting the human dimension is ultimately the key to successful land and wildlife stewardship." While this observation appears generic and all encompassing, it nevertheless represents a continuing and powerful message. Mitchell and Lauckhart (1948) wrote, "…describe a cooperative approach by bringing all interested parties together for a thorough analysis of the problem and agreement on methods of solution." Knight (1996) observed that advisory groups succeed when "…individuals making up the groups are oriented toward solutions rather than toward perpetuating controversy." In summarizing the "Common Ground" projects, Lyon and Christensen (2002) noted, "The common denominator of most of the successful projects has been collaboration to enhance the range resource, rather than competition to control the grazing." Initiating a functional advisory group may require the use of public meetings, newspaper articles, and repeated open discussions to develop trust between local stakeholders and all levels of government (Porter, 1996).

As a prelude to the other recommendations that follow, it is worthwhile to point out some of the major hurdles that have to be overcome in Steering Committee considerations. Cooperative management of a geographic area that supports livestock and wildlife has benefits beyond increased resource utilization. Steering Committee meetings virtually always result in cordial relationships, or even friendships, between people who might otherwise never meet. At the same time, Steering Committees always have two bottom lines with potential for creating deteriorating relationships. One of these, as noted by Grover and Thompson (1986), is that "Cattle grazing is the most easily manipulated variable." It is important that committee members recognize cattle are not the only variable that can be manipulated, and, further, that manipulation of cattle should not necessarily be the first choice among management options. The second, as stated by Metzger (1996) at the second "Common Ground" symposium, is the general failure to "admit that wildlife costs landowners and lessors something – either lost production or higher production costs, or both." In the degree possible, every management project should consider potential economic effects.

The first step in developing a cooperative approach could be formal training and inclusion of private landowner elk counts. Currently, many landowners keep their own elk sighting diaries. By standardizing sampling protocol and providing training seminars, MTFWP would have the means to supplement data. Furthermore, by including landowner information on seasonal distribution, numbers, and habits of elk, MTFWP could increase their knowledge of the elk herd in the WMU. Elk observations on private land could be included in the MTFWP database. Development of a Web site to document and map these locations could also be useful.

5.1.2 Managing Cattle on Elk Winter Range

Anderson and Scherzinger (1975) published the original paper suggesting managers could properly graze cattle and leave enough forage for elk. They found that prior grazing of areas by cattle stimulated regrowth of forage for elk on the winter range. They also recommended the same technique to produce high quality autumn and winter forage for cattle by preventing formation of "wolf" plants and manipulating plant physiology to improve nutritive values. Baumeister et al. (1996) confirmed that season-specific cattle grazing improves availability and quality of forage for elk, but Dragt's (1985) research in the Elkhorns indicated the primary winter forage consideration was the amount of available forage because the summer grazing treatment did not substantially improve winter forage quality.

5.1.3 Managing Cattle on Elk Spring Range

Elk coming off winter range are very often entering the most critical period of the year. Spring grazing in some areas provides the quality forage needed to restore health after a hard winter, and for pregnant cows the final nutritional boost required to deliver a healthy calf. For this reason, Roberts and Becker (1982) have suggested deferred grazing on calving areas. Miller and Vavra (1982) thought managers should pay attention to spring greenup on south slopes as possibly the best management opportunity. In the Elkhorns, DeSimone et al. (1984) noted positive response of elk spring grazing to previous cattle grazing, and a year later concluded that livestock grazing can be used to improve foraging conditions for elk during the spring season (DeSimone et al., 1986). Grover and Thompson (1986) confirmed that elk appeared to react favorably to previous cattle use in their selection of spring feeding sites. They concluded this was "… due to removal of residual vegetation by cattle [and that] … moderate cattle grazing may be a tool the land manager can use to improve spring elk foraging … ." Miller (2002) also noted that "those portions of the range used by elk during spring migration are used by cattle as part of their summer range … . Although prior use by elk has potential for negative impact on subsequent cattle use, the continued growth of the vegetation through early summer most likely offsets any impact." Nevertheless, management care is needed. As Hobbs et al. (1996) mentioned, "Heavy winter and spring foraging of grazing allotments by elk can create an adverse situation for cattle." The underlying management recommendation in all these studies is that positive results for elk are possible if conservative management practices are followed.

5.1.4 Managing Cattle and Elk within a Grazing System

Progressing beyond seasonal management modifications, a number of different authors have developed recommendations for rest-rotation systems. ERG determined that there are three standardized rotational grazing systems in the Elkhorns. DeSimone, et al. (1984) found the primary variables influencing elk feeding distribution in the Elkhorns were cattle use, distance from visible road, density of bunchgrass, and distance to cover. Later, DeSimone et al. (1986) reported that "… elk movements from calving ranges to summer range did not appear to be disrupted by introductions of cattle." He concluded that "The lack of detectable elk response to cattle introductions was likely a function of high overall elk population density, light cattle stocking levels, and high availability of forest cover." These are important observations because they complement and suggest local modification of observations made by other land managers in the West. Werner and Urness (1996) reported changing elk distribution with a rest-rotation grazing system, while Roberts and Becker (1982) and Knowles and Campbell (1982) have both reported elk selecting for the rest pasture. As a first step, ERG recommends reviewing the USFS decision making process which led to discontinuing rotational grazing systems in many allotments, and the adoption of the upland and riparian utilization tables, laid out in the most recent AMPs. Based on the work by Frisina and others, modified rotational grazing systems would better fit the unique conditions of the Elkhorn WMU. Ultimately, once the field work is completed, ERG will prescribe a grazing system.

5.1.5 Habitat Improvement for Elk

Direct habitat improvement for elk has included many activities on western rangelands. Whether all such activities have been successful, or even remotely useful, is a question that has not always been answered. In the context of this report, it is an extremely important question. A recent report from the RMEF (2003) credits the Elkhorn WMU with 14 projects in which 8,274 acres of habitat have been conserved or enhanced. Among these projects were four prescribed fires, some road rehabilitation, five noxious weed treatments, a land acquisition, a fence replacement, and two planning documents. Presumably, at least half of these projects have produced monitoring and completion reports, and the Elkhorn Steering Committee has considered the benefits to livestock, elk, and land management.

In examining the 14 listed projects, nine were prescribed fires or weed control efforts. Managers on the ground are far more capable of determining actual needs than an outside observer. With that said, we have listed here some of the projects accomplished in other livestock/elk situations. Applicability in the Elkhorns is a local decision, but there may also be some project ideas that have simply not been considered:

- Hicks et al. (1996) prescribed burning and shrub planting, road closures, and high tensile solar electric fencing to move livestock around;
- Hicks and Warren (1996) suggested "… drift fencing, upland water development, prescribed burning, vegetative plantings, and the use of instream structures";
- Porter (1996) reported the use of an extensive range inventory to drive the planning process, high tensile hay stackyards, fence realignment, irrigation project, well pipeline, willow planting, spring development, sagebrush treatment;
- Shiverdecker et al. (1996) suggested discing and seeding to improve upland vegetative cover, planting cottonwood and willow creekside, installing riprap on eroding banks, prescribed burns, and cutting encroaching conifers in aspen;

- Anderson and Scherzinger (1975) properly located fences, improved foraging area, and improved security for wildlife;
- Mullarkey (1996) describes 150 projects focused on habitat management, fencing, and salt distribution; and
- Knight (1996) provided elk crossing sites to prevent damage to fences.

5.1.6 Manage Elk Distribution to Keep Elk on Public Land

DeSimone and Vore (1992) suggested that while range condition in the Elkhorns is generally good, the effect of poor range condition on public land is to force elk onto private land. They further noted:

> Devil's Fence elk are primarily found on public land during spring and early summer but some of the herd abandon public land during late summer and are often found on private land near irrigated crops during late summer and fall. We recommend a comprehensive evaluation of range condition, cover, and road management on National Forest and BLM lands … to determine why elk abandon public lands and what management actions can be implemented to make the area more attractive to elk (DeSimone and Vore, 1992).

ERG could not determine whether this recommendation resulted in any specific action, but it at least confirms the existence of the problem in the Elkhorns. The 1998 South Elkhorns Range and Vegetation Project EA proposed numerous vegetation treatments such as prescribed burning and/or thinning in forested areas and grass/shrublands. These vegetation treatments were only carried out by the BLM, since the USFS's decision was upheld in court. In New Mexico, a partial solution involved timing of grazing to make state-owned areas more attractive (Knight, 1996). In the Blue Mountains, Oregon, Wertz et al. (1996) worked with road closures, prescribed burning, fertilizing, and salting to attract elk onto public land from private land.

5.1.7 Management of Riparian Habitats

In reviewing the management reports for the Elkhorns, we found it striking that riparian conflicts did not appear to be a major problem until the 1990s. All of the AMPs, released in the 1990s, specify riparian standards for livestock grazing including: livestock utilization levels, allowable stubble height, allowable woody utilization, allowable bank disturbance, and allowable soil disturbance. Elsewhere in the West, livestock damage to riparian zones is often controversial (Smith et al., 1992), and any strategy that involves fencing cattle out of riparian areas only increases the controversy. Because the problem is virtually ubiquitous, many different potential solutions have been reported. However, the amount of attention needed in the Elkhorns is not clear. Typical suggestions include:

- Anderson and Scherzinger (1975) suggest development of, and better distribution of, water sources, and distribution of salt to keep cattle away from water;

- Hicks et al. (1996) recommend water developments from troughs to ponds, herding cattle out of riparian areas, and instream structures for gradient control;

- Roberts and Becker (1982) suggest riparian zone management;
- Hicks and Warren (1996) mention "… drift fencing, upland water development, prescribed burning, vegetative plantings, and the use of instream structures"; and
- Knight (1996) notes to fence riparian areas as separate pasture, cross riparian drift fences encourage cattle to use uplands, off site water and fertilized plots.

ERG recommends that agency riparian standards and guidelines be reviewed so that standards are better suited to on-the-ground situations, consistent with dual use. For example, should elk be allowed more leeway with bank disturbance than livestock? We know from work in other riparian areas that wildlife has exceeded disturbance standards.

5.1.8 Hunting Season as a Management Tool

For much of the West, any area in which elk and livestock are jointly produced on public and private land, the ability of the game department to provide public hunting opportunity is determined by the tolerance of the private land manager. Sometimes minor changes in fences, herding, or pasture-use can benefit both wildlife and livestock, but the hunting season represents an opportunity to assist the landowner in managing hunter access. Recognizing that the Elkhorns Wildlife Management Area is a nationally unique and already intensively managed unit, there are no potential recommendations to be made without further observation of the local situation and existing results. The references cited here are mentioned primarily because they provide written examples of cooperative hunter management plans in similar public/private situations.

Hibbard (1996) summarized results of a Block Management Plan in Montana that was designed to provide bulls, control the herd, and allow public access. Knight (1996) examined several approaches to the management of hunter access, and Snyder (1996) summarized some results of hunters utilized as a management tool in an elk "distribution management hunt."

> It is abundantly clear that unilateral resolution of two conflicting positions, with the land manager serving as referee, will benefit neither party and can only harm the resource. It is equally clear that political and court-ordered solutions are indefensible often on reasonable biological grounds (Lyon and Christensen, 2002).

This is not a new thought, but it has historically proven correct. There are examples throughout the West (Evans, 1996) demonstrating that on-the-ground discussions involving the best treatment for the land yield results that are also best for the land managers. Carlsen (2004) points out that around 20 landowners, representing over 100,000 acres of private land, have been enrolled in Block Management within the project area. These partnerships between MTFWP and private landowners have opened these private lands to public hunting, thus creating another tool for land managers to control elk populations.

5.2 RANGE CONDITION AND TREND: DISCUSSION AND RECOMMENDATIONS

The determination of range condition and trend (direction of condition) have been and will continue to be a critical in determining how management is influencing site factors. However, during the last fifteen years the theory and methodology associated with measuring range condition using a "secondary succession model" has received significant criticism. This criticism is important because in the Forest Plan (1986) and the IRMA (1989) stress that changes in range condition is a key criterion for altering livestock management. In the following sections we review the range condition concept and some of the current criticisms and provide initial recommendations for future monitoring of ecological condition and trend.

5.2.1 Range Condition Theory Development

Ecosystem planning, assessment, and monitoring of vegetation resources are improved with a prediction of vegetation spatial pattern at the landscape scale. Understanding vegetation factors and processes is a necessary prerequisite to predict future patterns of vegetation in landscapes. Toward that end, there is renewed interest in implementing models of vegetation dynamics to assess the effect of human activities on ecosystems and help manage landscapes. In range science, traditional approaches have proven inadequate for certain types of rangeland. Traditional range management was based on the hypothesis that the replacement of one type of plant cover by another was the most rational and reliable way to detect overgrazing, and grazing value of a range site was determined by the stage of succession represented.

Range ecologists and managers realized the need for determining range condition (rangeland health) on factors other than growing season conditions early in the 20th Century. Smith (1989) reports that both Sampson (1917) and Clements (1920) described changes in vegetation as a result of grazing in terms of successional stages; however, the concept of range condition based on secondary succession was not fully elaborated and put into widespread use until the 1940s (Parker and Woodhead 1944, Humphrey 1945; Renner 1948, Dyksterhuis 1949). Thus, by the 1950's range condition was based on succession stage and defined as the present status of vegetation of a range site[1] in relation to the climax (natural potential) plant community for that site. As such, it was an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site (SRM, 1999). Using the secondary succession model as the theoretical basis, range condition has generally been classified into 4 classes (excellent, good, fair and poor) based on percentage of the current plant composition with the perceived climax community. This was the general procedure of the U.S.

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1 A range site or ecological site is a distinctive type of land with specific physical characteristics (soils, climate, topography, landscape position, disturbance processes that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation (U.S. Department of Agriculture, NRCS, 1997).

Forest Service ECODATA and Parker 3-Step Condition and Trend transects. As disturbance (i.e., livestock grazing) increases the percentage of climax species would decrease (decreasers) and the amount of intermediate species (increasers) and disturbance species (invaders) would increase. Likewise, as disturbance (i.e., livestock grazing) was decreased the dominant climax species would increase and thus condition improved. By the late 1980', the theoretical basis of the secondary succession model was being questioned as being overly simplistic and not representative of natural events (Laycock, 1989; Smith, 1989; Friedel, 1991). A different theoretical approach is being developed using state-and-transition models and a determination of ecosystem functions as a measure of range condition or health. In 1994, the National Research Council defined rangeland health (condition) as "the degree to which the integrity of the soil and ecological processes of rangeland ecosystems are maintained" and the Task Group on Unity in Concept and Terminology (1995) refined the definition to "the degree to which the integrity of the soil, vegetation, water, and air, as well as the ecological processes of the rangeland ecosystem, are balanced and sustained." Thus, current range condition methodology may consider the current plant composition to a reference plant condition (possibly the historic natural plant community), but also considers a number of other factors (soils, hydrology, energy flow).

For the Elkhorns, a change in range condition methodology could be significant. For example, on some sites where range condition is declining because of increases in Rocky Mountain juniper (*Juniperus scopulorum*) or Mountain big sagebrush (*Artemisia tridentata vaseyana*) removal of grazing will not improve range condition. The increase in these species is more associated with a reduction in the fire regime rather than with overgrazing; although, overgrazing by livestock may increase the rate of encroachment. For these sites the state-transition-model would show that a lack a fire would result in a relatively stable state with high coverage of mountain big sagebrush and will not "transition" to a "grassland" without fire (livestock grazing is not the driving factor). Stringham et al. (2001) believe that "state-and-transition models hold great potential to aid in understanding rangeland ecosystems' response to natural and/or management-induced disturbances by providing a framework for organizing and understanding potential ecosystem dynamics." We believe the development of state-and-transition models for ecological sites for the Elkhorn study area would improve the ability of land managers to assess changes and possibly determine treatments to alter states to more desirable communities for area objectives.

5.2.2 Recommendations for Measuring Ecological Condition and Trend

Current theory on rangeland ecosystems implies a need for state-and-transition models to predict vegetation changes. ERG recommends that state-and-transition models be developed for key ecological sites on the study area. The NRCS is developing state-and-transition models for rangelands and some of the information may be available. We do not imply that past condition and trend measures are not usable, but the information needs to be carefully reviewed to determine how vegetation conditions are related to current ecological theory. As stated previously, there are numerous photographs from the old Parker 3-Step files and ECODATA plots that could be used to determine vegetation changes on some important sites and would help in the development of state-and-transition models. We also recommend that rangeland condition not be based on "climax plant communities" or the historic natural plant community, but on ecological processes and integrity of the biotic community (Pellant et al, 2000). A similarity index, a comparison of the current plant community with a desired reference community should be computed. For example, the reference community may be with a historic natural plant community (fescue grassland), a potential plant community (mountain big sagebrush/fescue grassland), or other desired plant community for the site.

Rangeland trend has been defined as the change in range condition (SRM, 1999). Significant changes in plant communities are generally slow, except for intensive treatments (i.e., fire, mechanical treatment, intensive grazing). The adoption of state-and-transition models will help determine "treatments" needed to direct change toward the desired plant community. We recommend that careful attention be given to methods for determining changes. Nested frequency methods have been adopted in some areas and provide for statistically reliable data for determining changes. At this time more information is needed to provide recommendations on developing trend measures to help permittees and agency personnel be comfortable with the impacts of management on plant communities and changes in rangeland health.

5.3 VEGETATIVE MONITORING RECOMMENDATIONS

A wide array of quality vegetative information has been collected over the years in the Elkhorn Mountains. A major problem, however, has been that collection techniques have changed numerous times, resulting in older data becoming outmoded because they don't contain comparable data. These diverse vegetative data collection techniques all sought the same goal, i.e., trying to track vegetative change over time and respond to differing management systems, but they provide differing data that ultimately hinders the land manager's goal of tracking the vegetation through time.

ERG recommends that vegetation data collection techniques be standardized and carried out uniformly across jurisdictional boundaries. Historic vegetation data, even though it does not provide the exact same data, needs to be compiled and incorporated into the present monitoring and data collection program. With further development (though not within the scope of this project), regression equations could be used on a species-by-species basis to convert percent composition into percent cover, thus increasing the usefulness of the older Parker 3-Step data.

ERG specifically recommends that the USDA NRCS methods be used to quantify the departure from a historic climax plant community (HCPC) using a Similarity Index. The key measurement regarding wildlife, cattle, and vegetation noted in the Forest Plan (1986) is "range condition." Range condition is the present status of vegetation of a range site (ecological site) in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site (SRM, 1999). The similarity index is sometimes considered synonymous to range condition (SRM, 1999). The similarity index is a measure of where the current plant community is in relation to the historic climax plant community, or to a desired plant community, that is one of the site's potential vegetation states. As seen by this definition, the only difference between range condition and the similarity index is that the comparison of the current plant community can be to a desired vegetation state of that ecological site and not necessarily only to the potential natural plant community as was done with range condition. With that said, generally the similarity index is compared with the potential natural plant community (climax), to provide a basis for describing the extent and direction of changes that have taken place from a perceived historic natural community. These evaluations provide the manager with a milepost for establishing objectives and developing management goals. These goals can result in a change in the present plant community toward a community desired by the decision-maker that meets the needs of the soil, water, air, plant, and animal resources, as well as those of the manager.

5.3.1 Recommendations to Agencies

Agencies involved in the management of the Elkhorns provide vegetative data dating back to the 1920s; however, the protocol for the data collected has changed repeatedly. These changes in collection techniques have been driven by evolving national environmental policy and by the transition of the Elkhorns to a WMU. The problems with agency vegetative data are that vegetative plots were not always read as scheduled, and changing methods do not make a clear transition between historical and current data.

ERG recommends standardizing protocol for data collection. In addition, realistic resampling goals should be set to ensure data is collected. Changes in sampling methodology should consider prior sampling methods and strive for consistency and comparability between methods.

5.3.2 Recommendations to Private Landowners

ERG recommends that a standardized monitoring protocol be adopted by lessees. The current monitoring of utilization, stream bank disturbance, and composition is not standardized across the allotments. In order to establish trends and gather defensible monitoring data, it is important that all lessees be gathering the same information in the same format. A few key recommendations for monitoring are:

- Summarize each year’s data to enable lessees to track changes and start to establish a trend. Table 5.3.2-1 below is an example that may be used to summarize utilization data:

Table 5.3.2-1 Utilization Transect Summary – Elkhorn Allotment (Sample)

Location	Year			
	1999	2000	2001	2002
Dry Creek	56	45	30	22
Sawmill Gulch	25	15	46	12

- Establish permanent photo points. Take photos at the same place, preferable at the same time each year.
- Use a white card behind grass or shrub species to emphasize use.
- Document date and location on all photos, data sheets.

5.4 Allotment Management Recommendations

Since the conception of the USFS, grazing on public land has been among the fundamental multiple uses, which the USFS has been required to provide. Private grazing on public lands has many benefits, including stimulating the local economies and providing fuels reduction to aide in wildfire prevention and suppression. Special designations of the Elkhorns over the years has removed timber harvest from the "multiple uses" provided, but has maintained cattle grazing as a tool for land managers to meet vegetative goals.

ERG recommends maintaining cattle grazing on public land and using cattle as a tool for achieving wildlife management goals. Grazing programs should be developed to minimize elk/cattle conflict. Cattle grazing can be used as a technique to improve forage quality for wintering elk, leaving enough forage on public land to help minimize elk impacts on private land. This will be key for the future of the Elkhorns. The current guidelines for cattle grazing leave at least 40% of the forage for the elk. Depending on timing of use and the stage of the herbaceous vegetation, up to 95% of forage could be left on site. These guidelines are adequate, but more intensive grazing during the correct season could prove beneficial to elk winter range by increasing the succulent fall regrowth of rangeland grasses.

Improved communication between stakeholders is needed in the Elkhorn WMU. Presently the USFS is responsible for the majority of the vegetation management; MTFWP is responsible for elk and wildlife management, the BLM manages numerous allotments; and landowners manage the livestock and private lands surrounding the area. While agencies often collaborate on the landscape level planning process, it is the landowners who are left out of the process. It would be useful to have more interaction between USFS range staff and landowners in the form of cooperative allotment inventories with established photo points to document changes in allotment condition. While the USFS often collects good information and does analysis on range condition and productivity, the information is often unavailable or metadata explaining the methods used and critical assumptions are missing. Thus, standardizing management records between the three USFS districts should be achieved.

There is a need for a complete range inventory. The current range polygon in GIS does not cover all allotments in the WMU. The BLM lands adjacent to the WMU should also be included in the range inventory.

The primary reason for the recommending a complete range inventory is to reconcile the data used by the USFS to assign forage use for herbivory. The Crow Creek EA Appendix describes the methods used to calculate stocking rates. ERG reviewed the stocking rate calculations, and found that the USFS stocking rate calculation bases an AUM on 33 lbs/day of forage utilization by an animal unit. This is different than the figure used by the USDA NRCS of 26.3 lbs/day or even that of 20 lbs/day noted by the Society for Range Management (SRM) (Holechek, 1998). This difference between the NRCS, USFS, and SRM animal unit days could account for a 20% to 40% overall change in gross stocking capacities. The calculation used to arrive at stocking rates are derived from the "worksheet - estimate grazing capacity" (reference FSH 2209.21 R1, 740). These worksheets compute production based on vegetation type and condition and trend.

The clipped and extrapolated USFS production values used to calculate stocking rates vary from those shown in the range management section of the Soil Survey of Broadwater County. USFS production values in their database show only the graminoid production and do not have any herbage yield figures for forbs and shrubs. The highest graminoid production figures are attributed to timothy dominated vegetation communities. In contrast to the USFS production values, the Soil Conservation Service (now NRCS) publishes production values for soils and range sites. The range sites show production values which vary significantly compared to USFS values.

A complete range inventory would also identify areas in allotments that have a forage resource but are currently disregarded as an herbage resource. While woodland understory herbage yield is less than that of rangelands, there can be a significant addition to the current AUMs. Presently, the AUMs for the North Crow allotment are based only on primary and secondary range classifications. Primary and secondary range accounts for only 39% of the area. The 43,000 acres un-inventoried should be characterized for forage.