

Developing a Successful Riparian-Wetland Grazing Management Plan for the Upper Ruby River Cattle and Horse Allotment in Southwestern Montana

Paul Hansen

Introduction

The Upper Ruby Cattle and Horse Grazing Allotment lies in the Upper Ruby River drainage, a watershed of approximately 88,000 acres in southwestern Montana. The Allotment encompasses 43,261 acres within the Beaverhead National Forest. It is located approximately 35 air miles southeast of Sheridan, Montana. The Ruby River flows northward and is bounded by the Snowcrest Range to the west and the Gravelly Range to the east. To the south lies the Centennial Valley. The entire area has been grazed by livestock since the late 1800's. The landscape of the Upper Ruby River is characterized as having open grasslands and wet meadows, sagebrush and grass slopes, willow and aspen complexes, open conifer/grass stands, and dense coniferous forests. Topography is varied and includes the Ruby River bottoms, large open valley bottoms, high benches, open basins, and rough rocky mountainous terrain. Elevations range from 6,000 ft on the lower Ruby River to over 10,000 ft on the Gravelly crest.

Since the 1970 Allotment Management Plan (AMP) was implemented, a large number of interest groups have expressed concern. More recently; this concern has been elevated to the national level by the various parties. In 1990 the Beaverhead National Forest started to prepare an Environmental Impact Statement (EIS) for the allotment. The draft EIS became a focal point for the various groups.

The major concern with the Upper Ruby Cattle and Horse Grazing Allotment has been the health of the riparian zone. The historic use of the riparian zone along the Upper

Ruby River and its major tributaries has left much of it in a degraded state. The issue is complicated in that both allotted and nonallotted livestock trail along the main road which lies for most of its length immediately adjacent to the Upper Ruby River.

Cattle and sheep are trailed annually to and from the Upper Ruby, adjacent USDA Forest Service allotments, and private, State, and USDI Bureau of Land Management lands in the Centennial Valley. In the spring, approximately 2,919 cow/calf pairs of the Upper Ruby Allotment are trailed from home ranches to the Allotment. Also in the spring, an additional 2,450 nonallotted cow/calf pairs are trailed southward through the allotment to USDI Bureau of Land Management, State, and private lands in the Centennial Valley. In the fall, approximately 3,275 head of nonallotted cattle and 3,245 head of nonallotted sheep trail back through the Allotment. In addition, 2,919 head of cattle from the Upper Ruby Allotment trail back through the Allotment.

Paul Hansen is a Research Associate Professor in the School of Forestry at the University of Montana in Missoula. Dr. Hansen is a riparian-wetland ecologist and principal ecologist for the Montana Riparian Association. He has been working on riparian-wetland classification and management issues in the Northern Great Plains and Northern Rocky Mountain ecosystems for the past 15 years.

The fall trailing has historically taken place immediately before the opening of big game hunting. The fall is typically characterized as a time of increased precipitation when heavy rainfall or snowfall may occur at any time. The main road and livestock trail lie immediately adjacent to the Ruby River, the same location where many of the big game hunting camps are established. This has created a classic case of big game hunting vs. livestock managing.

In 1990 the Beaverhead National Forest began preparing an Environmental Impact Statement (EIS) for the Allotment. The draft EIS became a focal point for the various groups. All sides reached an impasse and wanted an independent third-party review of the Allotment and requested the Section 8 process. Within Montana, the Section 8 process represents a Memorandum of Understanding (MOU) between the Governor of the State of Montana and the Regional Forester of the USDA Forest Service regarding rangeland management issues such as allotment management plans (AMP). (The MOU was signed on May 31, 1990.) The USDA Forest Service has just recently started to develop a memorandum of understanding on a state-by-state basis in the West.

The Section 8 process can be invoked by either the USDA Forest Service or the grazing permittee(s). The process typically occurs after both sides have met an impasse and all other attempts, such as a Coordinated Resource Management Planning (CRMP) process, has failed. If technical concerns develop during the development or revision of an AMP, either the USDA Forest Service or the grazing permittee(s) can request that the Governor's representative become involved in the consultation. The USDA Forest Service, the permittee(s), and the Governor's representative then become the Core Consultation Group or Core Group. The Core Group then selects a Target Group to provide technical services. The issues, concerns, and resource values of the allotment determine the composition of the Target Group. The Target Group reviews existing data in a timely manner and identifies any additional data that will be needed to develop or revise the AMP plan. The Target Group can also

identify responsibilities for additional data collection. In order to resolve the issues in conflict, the Target Group will make recommendations that are based on a consensus. The comments on the recommendations of the Target Group are given to the Core Group. Any consensus reached by the Target Group must comply with applicable federal laws, policies, administrative orders, guidelines, etc. The recommendations of the Target Group are included in the environmental analysis and the National Environmental Policy Act (NEPA) documentation. The appropriate USFS line officer selects an alternative (NEPA decision) and approves the final AMP. If the permittee(s) disagrees with the line officer's decision, the permittee(s) retains the opportunity to appeal the decisions as provided in the appeal regulations.

In 1991, a Target Group was chosen that included Edward Ruppel, state geologist from Butte; Pat Currie, a range consultant from Miles City; Don Collins, a biologist from Montana State University; and myself, Paul Hansen, a riparian-wetland ecologist from The University of Montana. The Target Group prepared a draft set of recommendations. After a review of these recommendations by the Core Group, additional riparian-wetland technical information was requested. The Core Group felt this was necessary to support recommendations concerning riparian-wetland management and monitoring. The following discussion represents my recommendations on developing a riparian-wetland grazing management plan for the Upper Ruby Cattle and Horse Grazing Allotment. The same discussion is also applicable to riparian-wetland areas throughout the West.

Background

Although the land area is small, riparian-wetland areas occupy a unique position in the landscape and life of the West with their importance far exceeding their total area. Riparian-wetland areas are important islands of diversity within extensive upland ecosystems. Abundant water, forage, and habitat attract a proportionately greater

amount of use and conflict than their small area would indicate. They are of prime importance to water quality, water quantity, stream stability, and fisheries habitat. They are vital to the livestock grazing industry and many are also well suited for development as high quality agricultural farmland. In addition, many riparian-wetland sites are excellent timber producing sites. Most sites provide critical habitat needs for many species and they support a greater concentration of wildlife species and activities than any other type of location on the landscape (Pfister and Batchelor 1984). Finally, riparian-wetland areas can be considered the "thread" that ties together all the other ecosystems. The importance of these areas as wildlife corridors can not be emphasized enough.

Riparian-wetland areas are defined as the green zones associated with lakes, reservoirs, estuaries, potholes, springs, bogs, fens, wet meadows, and ephemeral, intermittent, or perennial streams. The riparian-wetland zone occurs between the upland or terrestrial zone and the aquatic or deep water zone.

In contrast to their importance, riparian-wetland communities are among the least studied and least understood areas in terms of structure, function, and management. The riparian-wetland zone has often been overlooked, ignored, or considered a minor inclusion of the larger terrestrial or aquatic systems. Impacts from improper grazing, timber harvesting, road construction, and agricultural practices may drastically affect these communities. However, in general, riparian-wetland areas are among the most resilient ecosystems. Depending on the health of the site (condition) and potential of the site, riparian-wetland areas usually respond more quickly to changes in management than do drier upland sites.

Identifying the Problem

The management of livestock grazing in riparian-wetland areas is one of the most difficult and complex issues facing the western rangeland manager today. Kinch (1989) and Clary and Webster (1989) found that in reviewing the literature and in discussions with range managers, it is apparent that no single grazing management system has as yet conclusively proven to result in consistent improvement of degraded riparian-wetland areas throughout western range. Many varying combinations of sites, resource health (condition), and impacts as well as the interaction of many different human perspectives are involved. Therefore, the grazing management strategy designed for an area should be tailored to the conditions, problems, site potential, objectives, and livestock management considerations on a site specific basis that will best meet the resource needs.

Moore and others (1979) summarized it best by stating "From the standpoint of

"Livestock grazing is a compatible use in riparian-wetland areas when the functions of the riparian system (sediment filtering, streambank building, water storage, aquifer recharge, energy dissipation during storm events, etc.), potential of the site, and the needs of the riparian vegetation guide the development of the grazing management strategy."

achieving livestock management objectives and minimizing soil, vegetation and water quality impacts, grazing management plans will vary. There is no set formula that will identify the type of grazing system or management plan that will be best for any livestock operation or

allotment. Water quality impact will be closely related to soil erosion and sedimentation, associated with vegetation cover and concentration of livestock grazing. The grazing system must be designed on the basis of soil and vegetation capabilities, water quality considerations and livestock and wildlife requirements."

Livestock grazing is a compatible use in riparian-wetland areas when the functions of the riparian system (sediment filtering, streambank building, water storage, aquifer recharge, energy dissipation during storm events, etc.), potential of the site, and the needs of the riparian vegetation guide the development of the grazing management strategy.

Developing Management Objectives

Grazing management based only on objectives related to nonriparian-wetland areas (uplands) does not usually result in maintenance or improvement of riparian-wetland areas present in the same pasture or allotment. Therefore, where maintenance or improvement of riparian-wetland areas is desired, land use plan, activity plan objectives, and management prescriptions must be determined specifically for the riparian-wetland features while considering the needs of the entire watershed.

The establishment of specific objectives, description of the desired plant community, and selection of key species should be an interdisciplinary effort carried out in close cooperation with the range user. Objectives need to have realistic and attainable goals. They should be dictated by the present condition and trend of the riparian-wetland habitat in relation to management goals, the resource potential for change, and the importance of other resource values. Major considerations in establishing management objectives in riparian-wetland areas should include the following (Kinch 1989):

Vegetation

1. The potential of the site (e.g., the riparian-wetland plant association).
2. The desired plant community.
 - If the potential of the site is woody vegetation, then the health and reproduction of woody vegetation should receive equal consideration as the herbaceous vegetation (depending on the riparian-wetland

objectives). If one of the objectives for a riparian-wetland area is streambank stability, then woody vegetation vigor should be of utmost importance due to the vastly different streambank stability protection afforded by the woody vegetation when compared to the herbaceous vegetation.

- The development and/or maintenance of different age classes (e.g., seedlings, saplings, poles, and mature for trees; seedlings, saplings, and mature age classes for shrubs) of the key woody plant species on the site in order to maintain a viable plant community. (Once again, only if the potential of the site is for woody vegetation.)

- The type of vegetation cover necessary to minimize trampling damage and reduce the erosive effects of run-off events.

- The vegetation structure necessary for wildlife cover diversity.

3. The stabilization of streambanks and elimination of bank hoof shearing.

4. The value of the site for forage production.

5. The amount of vegetation stubble required to trap and hold sediment deposits during run-off events to rebuild streambanks and restore/recharge aquifers. It is important to realize that on streams with high gradients and low silt loads, it is more difficult to improve them than those with low gradients and high silt loads (e.g., mud management).

Water Quality/Quantity Issues

1. Raising the elevation of the present water table.

2. The improvement or maintenance of water quality and quantity or change in the timing of the flow.

Streambank Stability

1. The establishment of proper stream channels, streambanks, and floodplain conditions and functions.

2. The maintenance of long term adjustment processes which may affect channel/riparian-wetland zone conditions. These processes include sediment deposition, streambank development, floodplain development, and stream dynamics (meandering).

Wildlife

1. The improvement or maintenance of the fishery habitat.

2. The importance of the riparian-wetland community to riparian-wetland dependent wildlife and to wildlife species that occur primarily on upland sites but are periodically attracted to riparian-wetland areas.

Other

1. The aesthetic values of a healthy riparian-wetland zone.

2. The period of time which is acceptable or necessary for riparian-wetland rehabilitation/restoration.

3. The reduction of upland erosion and stream sediment load and the maintenance of soil productivity.

The proper management of livestock grazing in riparian-wetland areas requires a recognition that:

- grazing management practices which improve or maintain upland sites may not be good management practice for riparian-wetland areas, and

- season-long grazing is not a viable option to improve deteriorated riparian-wetland areas or to maintain a healthy riparian-wetland zone. Grazing management must provide for an adequate cover and height of vegetation on the streambanks and overflow zones to permit the natural stream functions (e.g., sediment filtering, streambank building, flood energy dissipation, aquifer recharge, and water storage) to operate successfully.

Developing the Monitoring Plan

Key Areas

As objectives are considered and developed for riparian-wetland areas, key areas for monitoring must be located in representative portions of the riparian-wetland areas as well as in the uplands. These key areas will serve as the location where appropriate monitoring will be conducted and where decisions will be made as to whether management objectives are being met or not. Key areas must possess (or have the potential to produce) all the specific elements in the objective(s) because these will provide data for evaluation of management efforts. In many cases, it is appropriate to select the key areas first and then develop objectives specific to each.

Key Species

Key species will vary with the potential of each individual site. Key species should be selected which are necessary to the operation of the natural stream functions. The type of vegetation present will affect channel roughness and the dissipation of stream energy. Willows and other large woody vegetation (trees) filter large water-borne organic material, and their root systems provide streambank stabilization. Sedges, rushes, grasses, and forbs capture and filter out the finer materials while their root masses help stabilize streambanks and colonize filtered sediments. On sites where the potential exists for both woody and herbaceous vegetation, the cumulative effect of plant diversity greatly enhances stream function. Finally, it is essential that the physiological and ecological requirements of the key wood species, along with key herbaceous species, be understood so that a proper management program can be designed. This includes determining the effects of grazing/browsing on the particular growth characteristics of the species involved.

Utilization Guidelines

Utilization targets guidelines are a tool that can be used to help insure that long-term objectives are met. Utilization can be monitored annually, or more often, whereas progress in reaching long-term resource objectives such as streambank stabilization, rebuilding of the streamside aquifer, and the re-establishment of beaver, fish, or moose habitat can only be determined over a longer period of time. The accomplishment of these long term objectives relates directly or indirectly to the need to leave a certain amount of vegetation available for other uses (soil stabilization, trapping sediment, wildlife cover, or forage, etc.,). Utilization monitoring provides a means of insuring that the necessary amount of vegetation is left to protect the site and provide for reaching other vegetation-dependent objectives.

The establishment of utilization targets for riparian-wetland key plant species and the management of grazing to insure these targets are met are critical factors involved in proper riparian-wetland area management. It is important to remember that without proper livestock distribution, utilization targets in riparian-wetland zones will usually be reached much sooner than those in adjacent uplands. The establishment of utilization targets requires that the manager know the growth habitats and characteristics of the important plant species for which they are managing and how the plant species respond to grazing and browsing.

The manager must know the characteristics, preferences, and requirements of the grazing /browsing animals. Therefore, utilization targets should be developed for riparian-wetland areas that:

- Will maintain both herbaceous species and woody species (where present) in a healthy and vigorous state and promote their ability to reproduce and maintain different age classes in the desired riparian-wetland plant community.

- Will leave sufficient plant residue necessary to protect streambanks during run-off events and provide for adequate sediment

filtering, and dissipation of flood water energy.

- Are consistent with other resource values and objectives (e.g., aesthetics, water quality, water quantity, wildlife populations, etc.,).

- Will limit streambank shearing and trampling to acceptable levels.

In many instances, proper utilization guidelines can only be derived over time through trial and error by monitoring, analyzing, and evaluating the results. Initial results may be different than expected. The manager should not hesitate to make changes in key species or utilization guidelines where required to meet objectives.

When establishing utilization targets to ensure riparian-wetland area improvements, guidelines should be considered that will provide a margin of safety for those years when production is less than average (Riparian Habitat Committee 1982). This could take the form of reduction in the utilization targets for both riparian-wetland and upland areas to provide additional carryover forage and vegetation necessary for streambank protection and sediment filtering. The importance of providing for adequate vegetation vigor and regeneration at the end of the growing season can not be emphasized enough.

Finally, due to the variation in riparian-wetland sites and management, one standard utilization target is not appropriate. However, utilization should be considered, together with regrowth potential, to ensure the presence of vegetation stubble necessary to the operation of natural stream functions or accomplishment of other land use objectives.

Compliance And Supervision

Range management in riparian-wetland areas will require a greater level of management because livestock are attracted to riparian-wetland areas during certain seasons. Resource managers must work closely with users to insure that alternate water sources are functional, that fences are

maintained, that salt and supplements are located as required in the management plan, that essential riding and herding is done, that livestock are in the proper pasture at the proper time, and that the necessary vegetation stubble is left. It only takes a few weeks of unauthorized use or overgrazing to set back years of progress in improvements of riparian-wetland systems. Myers (1981) states "that compliance with grazing systems is critical. When livestock are moved from a management pasture, it is commonplace for a few animals to be overlooked. In one stream, annual use by a few head of unauthorized livestock throughout most of the hot season period has nullified positive riparian-wetland habitat responses in an otherwise excellent grazing systems." Therefore, compliance is one of the key issues in proper riparian-wetland management.

Steps Necessary for a Successful Management Plan

The following steps are necessary in order to have a successful riparian-wetland grazing management plan (Kinch 1989, Skovlin 1984):

1. The grazing management designed for an area must be tailored to a particular site or stream reach. The management plan should include the following: a) determine the site potential(s), b) determine the existing vegetation type(s) (community type[s]), and c) determine the desired plant community or desired future condition. Determine the current health (e.g., condition) of the site or stream reach. Identify the factors contributing to undesirable habitat conditions (if applicable). Grazing must be managed to leave sufficient vegetation stubble on the banks and overflow zones to permit the natural functions of the stream to operate successfully. Define realistic and attainable management objectives for the site or stream reach. Those involved in the management of the area including the livestock user and the involved public (if applicable) should understand and agree on the problems and objectives to be addressed, as well as understand the changes which can occur, and how they can benefit from proper management and improvements in the riparian-wetland conditions. All parties

involved need to share the commitment to achieve the management objectives. Rangeland rest should be employed wherever and whenever possible. Implement the management plan. Design a monitoring plan that will evaluate the effectiveness of the management plan. Monitor the site or the stream reach over time. Grazing management must be flexible enough to accommodate changes based on experience. Mistakes need to be documented and not repeated elsewhere. Once the management is in progress, the most important element is frequent use of supervision. This is necessary to foresee and avoid adverse impacts (e.g., trampling damage to streambanks and excessive utilization). Determine the outcome of the management plan. If it is successful, then proceed with the existing management plan. If the plan was either a partial or complete failure, then modify the management objectives.



Literature Cited

Clary, Warren P. and Bert F. Webster. 1989. Managing grazing of riparian areas in the Intermountain Region. USDA Forest Service General Technical Report INT-263. Intermountain Research Station, Ogden, UT. 11 p.

Kinch, Gene. 1989. Riparian area management. Grazing management in riparian areas. Technical Reference 1737-4, September 1989. USDI Bureau of Land Management, Denver, CO. 44 p.

Moore, E., E. James, F. Kinsinger, K. Pitney, and J. Samsbury. 1979. Summary of best management practices for minimizing or preventing adverse water quality impacts. *In: Livestock Grazing Management and Water Quality Protection (State of the Art Reference Document)*. EPA Publication 9190/9-79-67. Denver, CO. pp. 13-199.

Myers, Lewis. 1981. Grazing on stream riparian habitats in southwestern Montana. *Proceedings of the Montana Chapter, Wildlife Society, Great Falls, MT.*

Pfister, Robert D., and Ronald F. Batchelor. 1984. Montana riparian vegetation types. *Western Wildlands* 9(4):19-23. School of Forestry, University of Montana, Missoula, MT.

Riparian Habitat Committee--Western Division American Fisheries Society. 1982. The best management practices for the management and protection of western riparian stream ecosystems. American Fisheries Society, Western Division. 45 p.

Skovlin, J. M. 1984. Impacts of grazing on wetlands and riparian habitat: A review of our knowledge. *In: Developing Strategies for Rangeland Management*. Westview Press, Boulder, CO. pp. 1001-1104.

*"When man obliterates wilderness,
he repudiates the evolutionary force
that put him on this planet. In a deeply
terrifying sense man is on his own."
David Brower*