FACT SHEET No. 19

Rangeland Watershed Program

U.C. Cooperative Extension and USDA Natural Resources Conservation Service

Riparian Pastures

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When the protection of rangeland riparian areas is mentioned to ranchers, they often fear the worst and think of total livestock exclusion with fences. The following paper explains an option that in many cases will protect the riparian habitat while also improving livestock production.

Introduction

Range managers have increased their attention to riparian values in recent years. Areas once considered sacrifice areas are now considered critical for grazing management. This causes a problem in many pastures because cattle tend to concentrate in or near riparian areas. To obtain proper use in riparian areas, much upland forage may no longer be grazed.

Management practices can be applied to accomplish practical livestock production and proper management of upland and riparian areas. These include: implementing grazing systems, developing hillside water, improving non-riparian vegetation, herding, salting, excluding riparian grazing, and building riparian pastures. Each practice is most appropriate with only certain conditions.

Optimum Settings for Riparian Areas

Putting in riparian pastures is most efficient where existing pastures are large and cannot be managed forboth upland and riparian objectives. These pastures generally include substantial amounts of upland and riparian forage. Commonly, upland forage is not grazed until after heavy use in riparian areas, and rotation grazing or range improvements will not resolve livestock distribution problems.

Concentration of Cattle

Cattle tend to concentrate in a riparian area if (1) water is not well distributed, (2) the land near riparian water is steep or rocky (especially if all the water is riparian, (3) salt is placed in or near riparian areas, (4) the weather is hot and riparian shade is available, (5) non-riparian forage is less palatable than riparian forage, (6) the herd is composed of cows with calves as opposed to yearlings, (7) individual animals develop behavior patterns that favor riparian areas, (8) animal distribution is not maintained by herding, and/or (9) the grazing season is long.

Seasonal Differences

The effects of livestock grazing vary by season. In spring, upland forage is palatable and water more available throughout large pastures. This reduces riparian use. Cattle using riparian areas in spring can cause physical damage to stream banks and meadows. Soil compaction can also be an important problem in moist (but not saturated) loamy or clayey soils.

Degraded Riparian Area	Healthy Riparian Area
	
Lowered water table	Higher water table
Poor water storage with downstream floods and reduced summer flows	Increased on site flooding, infiltration downstream summer flows
Low vegetation productivity	Higher vegetation productivity
Little shade - warm water	Good shade - cool water
Poor fish habitat - poor water quality	Good fish habitat - good water quality
Low wildlife habitat diversity	High wildlife habitat diversity
Little vegetation to protect and stabilize banks	Vegetation, including roots and debris, protects and stabilizes banks

Cattle use of riparian areas generally increases as the summer progresses. It reaches a peak during periods of prolonged drought or intense heat. In late summer forage preference switches to include more shrubs. This is the time associated with most willow, aspen, or cottonwood grazing. When fall rains moisten dry forage and create green-up on uplands or cold weather creates frost pockets in riparian areas cattle again disperse.

Fence Construction

Riparian pastures are designed to be grazed, although some need a few years of recovery first. Riparian pastures are generally much larger than exclosures. Normally their fence is built far enough away from the stream and riparian vegetation that the pasture includes upland. In fact, if there is not enough upland range included in the pasture, the upland may be overused.

The cost and amount of fence required for riparian pastures may not greatly exceed that needed for riparian exclosures. Side-fence lengths can actually be shorter because the fence can be straighter. A riparian exclosure fence might need to be stronger and need more maintenance because it is within or close to the riparian area.

The top wire on both riparian pastures and riparian exclosures should be smooth (not barbed) because riparian areas provide big-game habitat and water for surrounding upland big-game habitat. Riparian areas in antelope habitat should also have a smooth bottom wire that is no less than 16 inches off the ground. Deer generally go over fences and antelope go under.

Riparian Objectives

Writing good, reachable objectives for riparian values is perhaps the most technical and important part of riparian management. When setting riparian objectives, the manager should: (1) use stream and vegetation or soil riparian classification methods to identify similar riparian settings and then compare areas grazed differently or (2) identify current problems that are obviously caused by livestock and then seek to eliminate at least some of the direct impact.

On streams that have already cut down to base level or have well-armored beds, manage for the recovery of riparian vegetation so that steep or overhanding stream banks can form and endure. These provide deep, cool pools, shade, and shelter for fish. Broad, shallow streams may

become so warm that cold-water fish, such as trout, cannot survive.

Streams that are not well-armored with rocks may depend on riparian vegetation to stabilize stream meanders. On these streams the most important objective is preventing the stream from straightening and then down cutting, causing a gully.

Management of Pastures for Riparian Objectives

How to manage riparian pastures depends largely on the vegetation needed for stabilizing the stream bank or providing other riparian values. Steep streams typically need willows or trees with strong root systems. Flat streams can maintain stable banks with strongly rooted grasses, rushes, or sedges. Streams controlled by large cobbles and boulders don't need vegetation for bank stability. The vegetation may be important, however, for wildlife or livestock forage or cover and beauty. Some streams are naturally unstable. Their confinement and high gradient generate tremendous energy during high water, and vegetation has little or no effect on stream form unless it becomes especially dense and well rooted.

Shrub Lined Streams

Streams that depend on shrubs or trees can be severely impacted by heavy late-summer, fall, or winter grazing, or by frequent sheep grazing. They should be grazed in a rotation of spring and early summer use. A rest rotation or deferred rotation system that includes prolonged or intensive periods of late-season use should be avoided. Two years of rest, or grazing during a noncritical season, cannot make up for a grazing impact that removes three year's growth on woody species.

Grass, Sedge and Rush-Lined Streams

The effects of improper grazing may show up quicker and be difficult to reverse along streams that depend on grasses, sedges, and rushes. On these streams rotation grazing systems that include late-season use sometimes work well. Early-season grazing works well when overall livestock distribution favors non-riparian areas and when sediment can be trapped in last year's regrowth and stabilized by new growth.

Recovering Gullies

Sediment can build stream banks and raise the bottom of old, wide gullies. Some gullies fill and widen sufficiently to allow the stream to meander across a broad floodplain. This greatly reduces the force of flood water and allows it to soak into the soil. Stable banks along low-gradient meandering streams form deep, narrow channels that can provide good fish habitat while the floodplain provides water storage and flood control.

Midsummer Use

Midsummer (late spring in coastal California) use for a short time rotated between years offers several advantages. By midsummer (late spring), (1) stream banks are generally firm, (2) there is still sufficient soil moisture and warmth for riparian vegetation to regrow before winter, (3) sediments in spring flood waters have been trapped by last year's standing dead regrowth, (4) herbaceous species may still be green and forage preference has not yet shifted to woody species, and (5) livestock can most benefit from green feed after upland range has matured. The reason for a short season is to minimize grazing of regrowth and to achieve, but not exceed, proper use levels. Use at this time can be heavy if the season is very short and there is moisture available for regrowth. Use can be prolonged if utilization levels are conservative.

Location and Size

Ideally, riparian pastures should be located and designed to fit the livestock production operation. They could be used for bulling, weaning, pregnancy checking, shipping, gathering, or grazing pastures. Labor can be saved by locating them where cattle will automatically use them in the normal sequence of rotation. Topography and

cattle numbers have a great influence on size and location. In some settings a series of riparian pastures can be set up for sequential or rotation grazing. Riparian pasture fences may also divide large pastures, allowing the implementation of a large-scale rotation grazing system.

Further Reading

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