Riparian Grazing: Brogan Canyon Case Study

Willow Creek, Malheur County, Oregon

Introduction

Responding to growing concerns about the management of riparian areas to improve water quality and fish habitat, federal, state and private land mangers have instituted a series of practices to protect critical riparian areas. These practices include:

- Exclusion fencing
- Creation of riparian pastures
- Off-stream watering

Over a 3-week period in the summer of 2004, the Malheur SWCD and the Oregon Department of Agriculture's regional water quality specialist conducted a riparian assessment to measure vegetation in an area that has experienced these management changes.

The assessment results can help guide land managers in choosing the best management options.

Study Site

Willow Creek is a large tributary to the Malheur River; these two watercourses converge near the town of Vale. The Willow Creek study site was in Brogan Canyon, a relatively narrow canyon just below the Malheur Reservoir.

Landownership in the canyon is a mixture of one private individual and the Bureau of Land Management, but the entire area is considered one management unit with multiple pastures.

The Brogan Canyon area offers an opportunity to observe vegetation changes as a result of a series of management changes in a contiguous area and over a period of time.

We assessed three riparian pastures, identified as the "Private," "Diversion Dam" and "Lower Canyon" pastures, all previously grazed year-round. Management of the Private pasture, which is the furthest upstream, changed in the late 1990s. Now managed as a riparian pasture, cattle are present only for a brief time in the spring or fall in alternating years.

Management of the Diversion Dam pasture, just downstream from the Private pasture, changed in the mid-1980s. Cattle are present in a similar pattern as the Private pasture.

Management of the Lower Canyon pasture changed in the early 1980s. By 2004, cattle had been excluded from the riparian area for the past two decades.

Willow Creek runs north to south through three riparian pastures in Brogan Canyon

Methods

We selected locations along the creek at random points or where there was a significant change in topography or management. We then recorded the vegetation community in a three-foot wide swath along the stream bank for approximately 300 feet for each plot. With this information we estimated the percentage each community type occupied in that particular riparian area in each pasture.

Riparian Vegetation Changes in Brogan Canyon

1978

1989

2005

Key Findings

- The vegetation community of the Lower Canyon pasture is at or near the Potential Natural Community.
- The vegetation in the other pastures is still developing, but the trend is strongly towards the Potential Natural Community.
- Proper grazing management is compatible with and supports vegetation recovery.

Riparian Grazing: Brogan Canyon Case Study

Willow Creek, Malheur County

Results and Discussion

Private Pasture
The sedge/rush/forbs community is the most common vegetation group in the Private pasture. This community comprises nearly 96 percent of the sampled area.

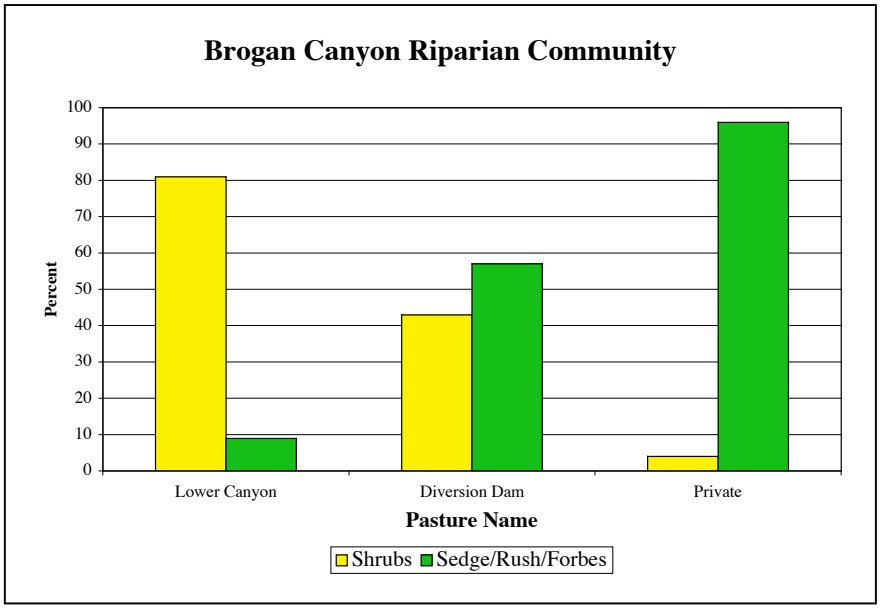
Shrubs occupy the remaining area. The primary shrub species are willow and water birch.

Diversion Dam Pasture
The sedge/rush/forbs community is the most common type in the Diversion Dam pasture. However, shrubs are a much greater component in this pasture than in the Private pasture. They comprise 43 percent of the sampled area. Willows are the most common shrub species here, followed by dogwoods.

Lower Canyon Pasture
The Lower Canyon pasture riparian vegetation consists almost entirely of shrubs. They comprise 81 percent of the sampled area.

As with the other two areas on Willow Creek, willows are the most common shrub species in the sampled areas. Wild rose, dogwood and service berry, in that order, are the next most common. We also found aspen and alders in this area where there were none in the other sample locations. They comprise 1.7 percent of the area we sampled.

We assumed the vegetation in the Lower Canyon pasture is at or near the potential natural community. Based on that assumption, we estimated the ecological status of the other two sites by determining the percentage of common community types. The technique is described in Winward (2000).[1]



The riparian vegetation community along Willow Creek, Malheur County Oregon. Management changes occurred in the early 1980s in the Lower Canyon pasture, mid 1980s in the Diversion Dam pasture, and late 1990s in the Private pasture.

With a similarity index of 13.3, the Private pasture, as expected, is in the very early stages of its successional path. The Diversion Dam pasture had a similarity index of 52.3, placing it in the mid-stages of succession.

Conclusions

Changes in management have benefited the riparian vegetation along Willow Creek. With time and proper grazing management, riparian areas can achieve a desirable, healthier vegetative condition. Better vegetation brings better water quality and improved fish and wildlife habitat.

This comparison of three pastures in different stages of recovery shows that, in some cases, vegetation responds quickly to management changes. Response time is dependant on a variety of factors, including:

- Soils
- Precipitation patterns
- Disturbance patterns

It also shows that the grazing management decisions have been the correct ones for this site. The timing and duration of grazing as well as the stocking rates have allowed recovery of the woody vegetation.

Making management changes has incurred some costs. For example, weeds have been a problem in these pastures. Only time will tell if weed populations will decline.

Overall, the Brogan Canyon experience has shown that proper grazing management is compatible with riparian vegetation recovery.

[1] Winward, A.H., 2000. Monitoring the vegetation resources in riparian areas. Gen. Tech. Rep. RMRS-GTR-47. Ogden, Utah. USDA, Forest Service, Rocky Mountain Research Station. 49 p.