

Riparian Area Management Techniques

--David Redhage, Director, Natural Resources Program

Kerr Center for Sustainable Agriculture, 2011

Introduction

Riparian area management and rotational grazing systems work together to protect and enhance water quality, soil, and wildlife habitat. The Kerr Center

Stewardship Ranch has developed several working demonstrations to show producers how these techniques work in the field.

Riparian Areas – An Important Natural Resource

A riparian area is the vegetated area adjacent to a stream or any other water body. Riparian areas are threatened primarily due to their location and attractiveness. Riparian bottomland forests are often prime farmland that has been cleared for crop land or pasture, while some riparian areas are considered prime real estate by developers. Channelization of streams has also reduced the effectiveness of many riparian areas.

What are the benefits of a riparian area? Riparian areas help reduce floods,

stabilize streambanks, control and reduce the effects of nonpoint source pollution, and provide food and shelter for wildlife. Nonpoint source pollution can include pesticides, fertilizers, and sediment from the surrounding watershed. Sediment loads can interfere with fish feeding and reproduction in the stream, as well as clog channels, increasing the erosion of streambanks. Recently, the Natural Resource Conservation Service (NRCS) has been emphasizing restoring and protecting riparian areas.

Fencing Riparian Areas

One controversy surrounding riparian area management is whether or not to exclude livestock. Before fencing a riparian area, several things must be considered. Often the riparian stream is the water source for livestock. If livestock

production is the goal, then developing other watering points is important.

The Kerr Center is developing several riparian area demonstrations on its Stewardship Ranch. Cattle have been fenced out of some riparian areas for eight

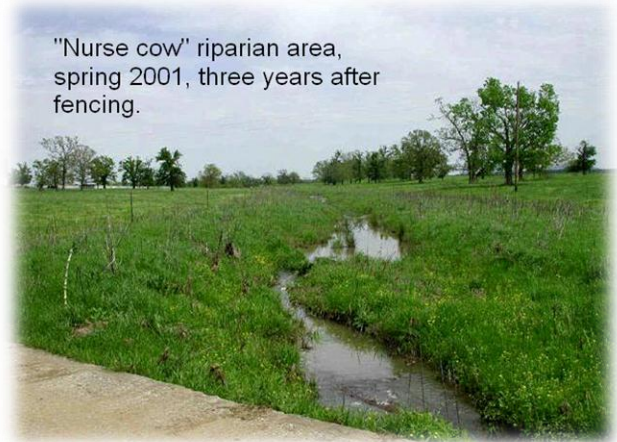
years and others for one to three years. Several riparian areas will not be fenced.

The Kerr Center Ranch practices rotational grazing as opposed to continuous grazing. By allowing access to some riparian areas and excluding livestock from others, we will be able to show visitors the differences between areas where livestock is fenced out and areas that are part of rotationally grazed pastures. Trees are being planted in fenced areas to enhance the wildlife habitat benefits.

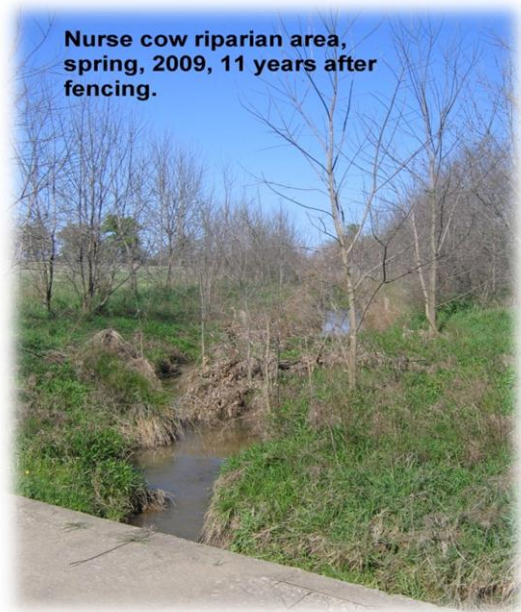
In 1998, Kerr Center fenced off a section of a stream running across its "nurse cow" pasture, establishing a buffer strip along this riparian area. The changes in vegetation have been dramatic.

Photo monitoring is being used to record changes in the riparian areas. Photo monitoring is an excellent way to monitor gradual changes in habitat that occur over long periods of time. To photo monitor a practice, select an area from which the photo will be taken, identify key features

such as a utility pole, tree, or other landmark, and record the spot in a file. Return at the same time each year to take a photograph.

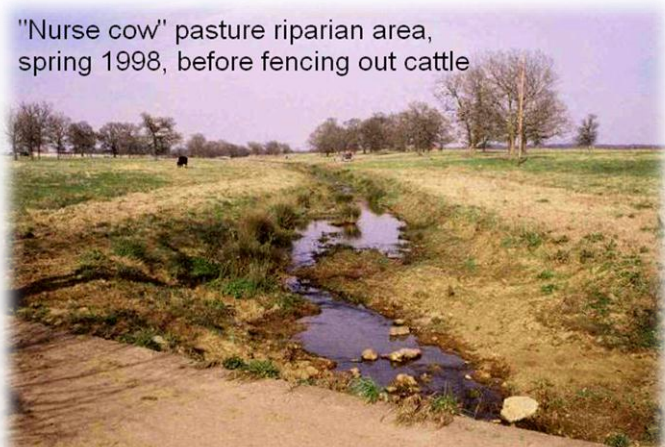


"Nurse cow" riparian area, spring 2001, three years after fencing.



Nurse cow riparian area, spring, 2009, 11 years after fencing.

"Nurse cow" pasture riparian area, spring 1998, before fencing out cattle



For more photos visit www.kerrcenter.com

Limited-Access Watering

At the Kerr Center Stewardship Ranch, several ponds have been constructed outside of the riparian areas to provide water for the livestock. Developing these water points has had the added benefits of allowing us to cross-fence more effectively, intensify grazing, and better utilize the pastures.

The new ponds have been fenced so cattle have restricted access. A floating fence and rock ramps have been installed to allow cattle access to the water, yet keep them from wading into the pond. The ramps help prevent soil erosion, extend the life of the pond, improve water quality and enhance the wildlife benefits of the pond.

Limited Access Watering Points-Ponds			2011 \$
20' wide and 40' out in pond			
Geotextile	\$1.42/sq. yd.	89 sq. yds.	\$ 126.38
Rock (gravel, 2") 8" deep	\$16.67/ton	26.67 tons	\$ 444.59
PVC Pipe Fence			\$ 137.15
Tractor	\$10	4 hrs.	\$ 40.00
Labor	\$10	3 hrs	\$ 30.00
Total Cost			\$ 778.12

For the access point, the slope should be 4:1 or flatter. A floating fence needs to be located where the water is at least 5 feet deep, 20 feet from the shore. Fence may be constructed from 2" schedule 40 PVC pipe to form an access lane for cattle. If muddy conditions are possible at the watering point, gravel and possibly an underlying layer of geotextile, should be installed on the ramp.



Stream Crossing Points

Stream crossing points are an important consideration for both livestock and machinery. Often pastureland is dissected by a stream and simply fencing the stream out can concentrate livestock at a single crossing point. Stabilizing crossing points can help eliminate some of the problems associated with the increased traffic.

A stabilized crossing point has a gradual sloping bank covered with a material that resists the impact of cattle and machinery. This type of crossing helps reduce water pollution by stopping soil erosion, thereby reducing nutrients and sediment from entering the waterway.

Several crossing points have been installed on the stewardship ranch for livestock and equipment. The NRCS provided the design which called for excavating a trench one foot deep across the bed of the waterway. The bottom was covered with three inches of sand, one piece of 8mm geotextile, sheets of geocell, and ten inches of gravel. The idea is to provide a firm crossing point that is stable enough to withstand the force of water flowing over the top without eroding the crossing.

To watch a slideshow of the installation of a crossing point visit www.kerrcenter.com

Stabilized Stream Crossing Points			2011 \$
Geocell	\$11.60/sq. yd.	89 yds.	\$1150.00
Geotextile	1.20/sq. yd.	104 yds.	\$ 124.80
Sand	\$16.67/ton	10 tons	\$ 66.67
Gravel	\$16.67/ton	30 tons	\$ 500.00
Dozer	\$70/hr.	4 hrs.	\$ 280.00
Tractor	\$10/hr.	2 hrs.	\$ 20.00
Labor	\$10/hr.	6 hrs.	\$ 60.00
Total Cost			\$2301.47

Building a Stabilized Stream Crossing at Kerr Center

1. The stabilized stream crossing has been sloped 5:1 and dug 10" below the level of the stream. Sand is then hauled in.



3. Next put down geotextile, and then sheets of geocell. The geocell is 6" tall and comes in 8' x 20' honeycomb sheets



2. The sand after it has been spread, 3 inches deep.



4. Rock is then hauled in and dumped onto the geocell. It fills the honeycomb structure and remains in place. Before the tractor drives over the recently filled section of geocell, the rebar is removed to prevent puncturing the tires.



Check with your NRCS office for technical assistance & info on possible financial assistance.

Benefits of Protecting Riparian Areas

One of the most important aspects of a riparian area is the benefit to wildlife. Not only do riparian areas provide food and shelter, but they act as travel corridors between increasingly segmented habitats.

The main threat to wildlife today is habitat loss. Riparian areas provide two major habitats: aquatic and terrestrial. The aquatic habitat consists of perennial streams and wetlands. Vegetation in the riparian area affects the water temperature which influences fish. Vegetation is also a source of food for invertebrates which are the basis of the food chain. If protecting the fishery is important, maintaining the vegetation within twenty-five feet of the shoreline is important.

Providing habitat for land-based wildlife is another important function of a riparian area. Generally, the riparian area contains a diversity of structure which increases the number and kind of animal species present. Diversity of structure refers to diversity in the type and age of vegetation.

One of the most frequently asked questions seems to be: "How wide should a riparian area be, and what should be planted? Unfortunately, the answer is not that easy. It all depends on what your goals are, how the adjacent land is being used, and the slope of the land.

The width of a riparian area is measured from the top of the stream bank, back. If the adjacent land is in row crops, a

riparian buffer may be needed to filter out fertilizers, herbicides and sediment before runoff enters the stream. A buffer strip in this case may consist of maintaining a grass strip between the field and stream. If the goal is diverse wildlife habitat, the width of the riparian area is influenced by the wildlife you hope to attract and what type of vegetation you will plant. Often planting trees and shrubs is not necessary. If native tree and shrubs exist in the watershed, eventually they will be found in the riparian area.

Agriculture is being looked at increasingly as a source of non-point source pollution, and riparian areas can help buffer and reduce the effects of non-point source pollution. Protecting riparian areas demonstrates to an increasingly urbanized population that agriculture is concerned about the environment while producing the food society needs.

Reference: Oklahoma Cooperative Extension Service, Oklahoma State University. Riparian Area Management Handbook. Publication E-952. 1998



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