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Funding provided
by Montana
Department of
Environmental
Quality

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Wildlife-Friendly Fences: Tools for Healthy Riparian Areas

Technical Guidance Series

Volume 1, Number 1

June 2010

A Resource Guide for Big Hole River Communities



Why do we need healthy riparian areas?

Healthy riparian areas have strips of native vegetation along stream banks that form a buffer between the uplands and the stream. Protecting these important transition areas has been shown to lower water temperatures and air temperatures through shading by shrubs and trees. In addition, riparian buffers¹:

- ⇒ Reduce flooding,
- ⇒ Reduce pollution,
- ⇒ Reduce stream bank erosion,
- ⇒ Provide fish and wildlife habitat,
- ⇒ Provide economic benefits,
- ⇒ Provide recreational benefits,
- ⇒ Provide privacy.

Managed grazing in riparian areas

Different methods of controlled grazing in riparian areas can be an effective tool for managing livestock, vegetation, and wildlife. In Montana, managing cattle numbers and intensity of grazing or using rest-rotation systems of grazing can²:

- ⇒ Reduce amount of dead vegetation while maintaining overall plant cover,
- ⇒ Increase palatability and nutritional value of plant forage,
- ⇒ Increase seed germination.

Fences in riparian areas

Fences are an iconic symbol of the West and an important tool for managing our lands, particularly our riparian areas. Fences help divide property boundaries, hold livestock, and shelter children playing in yards. In riparian areas, fencing can be combined with grazing management as a tool to protect stream banks and vegetation.

Recommended wildlife-friendly jack fence along a riparian area in the upper Big Hole River watershed. Photo: Mike Bias



Healthy riparian areas help maintain good water quality

The Big Hole River supports a landscape rich in cultural, economic, recreational, and biological values. To sustain these values we rely on the river to provide clean water for drinking, irrigation, fishing, swimming, boating, and aquatic life. Water quality problems have been developing on the Big Hole River in the form of elevated summer water temperatures and excess sediment in the river. The Montana Department of Environmental Quality (MT-DEQ) studied these problems and developed water quality standards for the river, called TMDLs.

A TMDL, or Total Maximum Daily Load, is a water quality standard that sets the total amount of a pollutant (like elevated water temperature or sediment) allowable in a stream or lake. Streams and lakes that exceed TMDL targets for a pollutant are considered *impaired*, and often require improved management, enhancement, or restoration to meet water quality standards for clean water.

Does the Big Hole River currently meet TMDL temperature targets? Not all the time – especially in the summer when stream temperatures are elevated. Restoring tree canopy cover and understory shrubs along the river provides shade over the water and cool microclimates within the vegetation, lowering summer water temperatures. Currently, the Upper Big Hole mainstem is classified as having low shrub density along 45% of the river.³

Does the Big Hole River currently meet TMDL sediment targets? Yes and no, depending on which sediment target and which area of the river you look at. In the Upper Big Hole section for example, more than half of sites MT-DEQ studied had high width-to-depth ratios, greater than optimal amounts of fine sediment in stream pools, and significant bank erosion. The TMDL calls for a significant decrease in the amount of sediment delivered to the river annually through bank erosion, ranging from a 15% reduction near the McVey Homestead up to a 51% reduction near Saginaw Creek.³



Wildlife-friendly riparian fences won't necessarily obstruct your view. In the photo above an electric fence is barely visible in the distance, while healthy riparian vegetation is clearly visible in the foreground. Photo: MT-FWP

Wildlife-friendly fences as a tool for protecting riparian areas and restoring water quality

Riparian fencing can be constructed in a manner that helps restore water quality by allowing managed grazing along stream banks and allowing wildlife to move freely across the landscape. Unfortunately, fences can also pose risks to wildlife if they can become ensnared in the wires or are unable to cross under or over the fence. Among game animals, elk, moose, deer, sheep, and antelope can all have difficulty crossing fences. Many birds (owls, swans, herons, cranes, raptors, and grouse) and even bats collide and can become ensnared in wire fencing. This is especially true in areas with high bird traffic, such as stream corridors. Animals typically have difficulty negotiating fences that have⁴:

- ⇒ A top height that is too high for animals to jump over;
- ⇒ Woven wire, which creates an impenetrable barrier and close spacing between wires increases the risk of leg or wing entanglement;
- ⇒ Bottom wires that are too low for animals to crawl or fly under;
- ⇒ Wires that may not be visible to fast moving animals.

Many wildlife species undergo seasonal movements to seek out food, water, or breeding habitat. During these movements they can often encounter fences that create barriers between winter or summer range. Traditional methods of fencing (5-wire, 6-wire, woven wire) also increase the risk of entanglement for wildlife and can act as barriers to movement. These problems are often associated with older or poorly-maintained fence systems.



Mule deer doe attempting to cross a barbed wire fence, owl ensnared in a barbed wire fence. Photo: BLM



Non-wildlife-friendly fence constructed of 6 strands of barbed wire transecting rangelands near Bannack, MT. Photo: Michelle Anderson

Constructing Wildlife-Friendly Fences

Fence problems encountered by wildlife can often be easily fixed by retrofitting existing fences or building new fences that allow free travel of wildlife under, over, or around the fence while still maintaining an effective barrier for livestock. Fences should be constructed to the following recommended guidelines to reduce adverse impacts with wildlife:

- ⇒ Constructed entirely of smooth wire or rail, or at least smooth wire or rail along the top and smooth wire along the bottom;
- ⇒ Top wire or rail on fence should be at 40 to 42 inches above the ground;
- ⇒ Bottom wire or rail should be left 18 inches above ground;
- ⇒ Posts should be spaced at 40 feet apart;
- ⇒ Gates, drop downs, or openings in the fence should be placed in known wildlife corridors or flyways;
- ⇒ The top of the fence should be highly visible—top rail, reflective tape, vinyl markers, or some type of flagging;
- ⇒ 12-inch spacing between the top 2 wires;
- ⇒ Avoid vertical stays.

Not all of these fence design recommendations may be appropriate for all areas of your property. For example, a smooth top and bottom wire can work well for horse pastures but may not work as well with cattle. The following are examples of different wildlife-friendly fence designs that can be constructed to address a variety of different land uses:

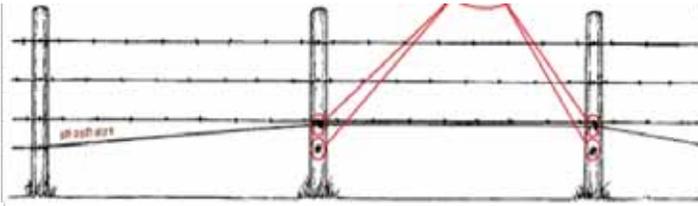
Wildlife-Friendly Fences: Tools for Healthy Riparian Areas



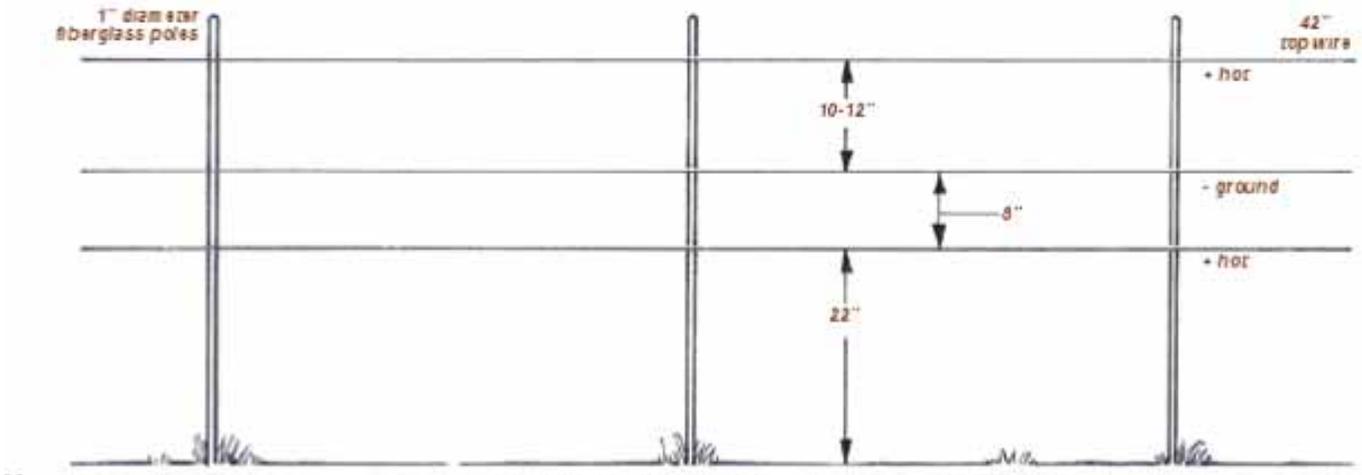
4-strand Barbed Wire with Bottom Smooth Wire Figure: MT-FWP



Mule deer crawling under an otherwise non-wildlife-friendly 4-strand barbed wire fence with vertical wire stays. Photo: BLM



A wildlife-friendly underpass fence that has a bottom raised smooth wire to facilitate wildlife passage under the fence. Figure: MT-FWP

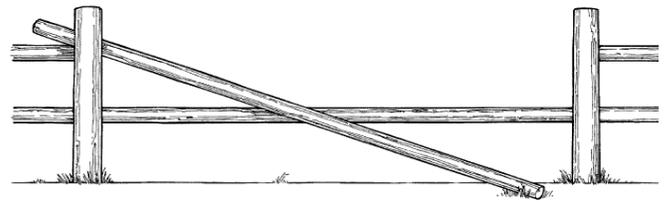
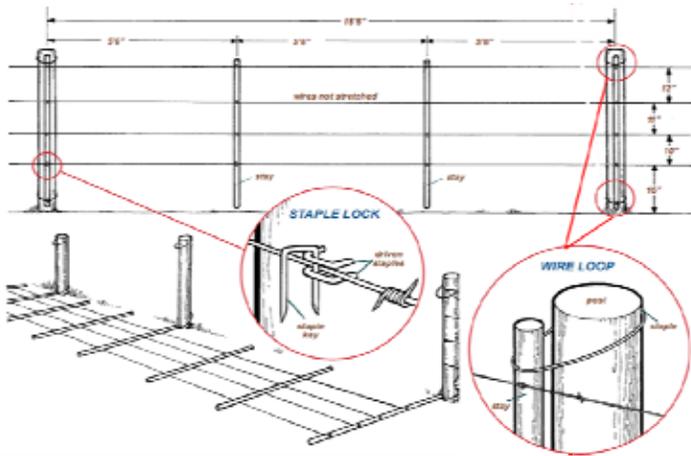


Recommended wildlife-friendly 3-strand electric fence. Figure: MT-FWP

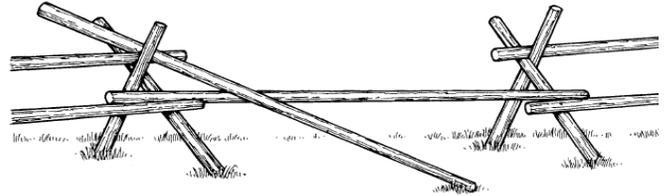


A 3-strand electric fence on a property along the Big Hole River. Photo: MT-FWP

Wildlife-Friendly Fences: Tools for Healthy Riparian Areas



DROPPED RAIL IN JACKLEG

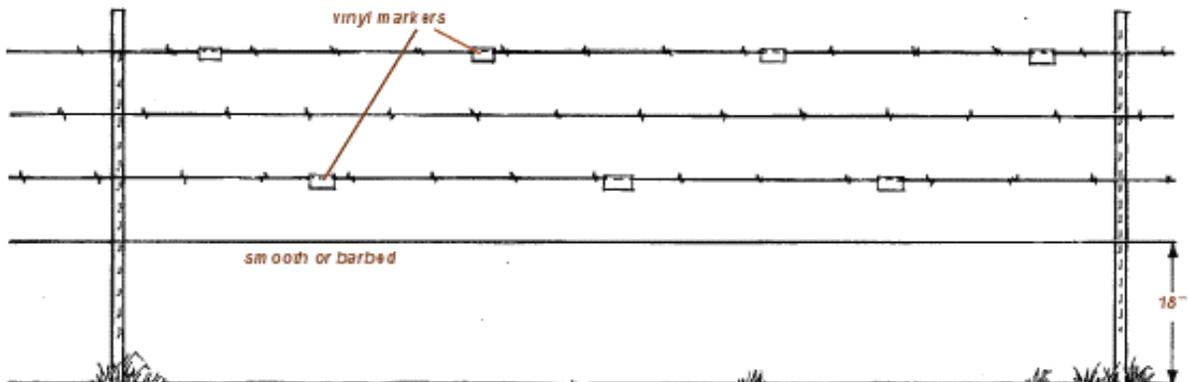


Recommended wildlife-friendly lay-down fence. This fence facilitates wildlife passage by removing large sections of the fence and laying them on the ground. Figure: MT-FWP

Wildlife-friendly crossing structures on wooden fences include dropped rails. Figure: MT-FWP



Recommended wildlife-friendly dropped rail crossing structure on a fence in the Big Hole watershed. Photo: Hans Humbert



Recommended high-visibility vinyl markers placed on wires of a wildlife-friendly 4-strand fence allows for wildlife to see where the fence is located. The Bureau of Land Management has been using this marker technique to make fencing along sage grouse habitat near Bannack, MT more wildlife-friendly. Figure: MT-FWP



Openings, crossings, and passes incorporated into your fencing system allows for easy wildlife passage. In some situations or seasons, providing temporary passage across a section of fence may be the best solution to allow seasonal wildlife passage, as can be seen in this picture from a pasture along the Big Hole

There are many different design options to consider when installing fences. Finding the optimal balance between the needs of effectively managing livestock and allowing wildlife barrier-free access may be in the best interest of the landowner. Creating open networks of habitat connectivity across areas with wildlife-friendly fencing reduces the number of injuries and deaths among wildlife, as well as reducing maintenance costs of fence repair. When constructing a riparian area fence, evaluate what design works well with:

- ⇒ The type of livestock (horse, cattle, sheep, etc) that will occupy the pasture;
- ⇒ The longevity and maintenance associated with different fence designs;
- ⇒ The type and number of wildlife that frequent the area;
- ⇒ The options involving topography and natural wildlife corridors;
- ⇒ Wildlife use of the area seasonally as corridors.

Additional resources for protecting riparian areas by building wildlife friendly fences

For more information on riparian health and wildlife friendly fencing in the Big Hole River watershed or to evaluate potential fence projects on your property, contact:

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- ¹From The Governor's Task Force for Riparian Protection, <http://water.montana.edu/riparian>
- ² From: Alt, K. L., M. R. Frisinia, and F. J. King. 1992. Coordinated management of elk and cattle, a perspective-Wall Creek Wildlife Management Area. *Rangelands* 14:12-15 and Frisinia, M. R. 1992. Elk habitat use within a rest-rotation grazing system. *Rangelands* 14:9-96.
- ³Montana Department of Environmental Quality. 2009. Upper and North Fork Big Hole River planning area TMDLs and framework wwater quality restoration approach. 280p.
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Prepared by Big Hole River Foundation

Thanks to our sponsors and those who donated photos, figures and text: Mark Kelley (MT-DEQ), Laura Andersen (MT-DEQ), Emma Rens (MT-FWP), Joe Weigand (MT-FWP), Kelly Bockting (BLM), and William Burton (UM-Western).

This document was funded in part through a generous grant from Montana Department of Environmental Quality, grant number WQPB-MG09-08