Wildlife Habitat

Common Issues

Whether an animal lives in the river or on land, many species depend on the river corridor. Much of the riparian forest along rivers was cleared for development or agriculture in the last century, impacting wildlife through habitat degradation and disconnection. River and riparian health should be improved where possible to support wildlife populations in the Yampa Valley.

Questions to Consider

- Is the riparian forest connected upstream and downstream to create a movement corridor, or is it disconnected?
- Are there movement corridors from the river up into the uplands?
- Is there habitat diversity on the landscape (forest, shrubland, grasses, wetland)?
- Is there habitat diversity in the river (pools, riffles, glides, wood, backwaters, side channels, bars)?
- Are fences wildlife friendly? Do fences specifically account for migrating wildlife to allow crossing and reduce potential for entanglement?
- Does the riparian area support river health?

Principles of River Health

The Riparian Corridor is Especially Important

Riparian areas comprise less than two percent of the land area of most western states, yet up to 80 percent of all wildlife species are dependent upon riparian areas for at least part of their life cycles. Wildlife needs access to the water, food, shelter, and movement corridors that riparian areas provide.

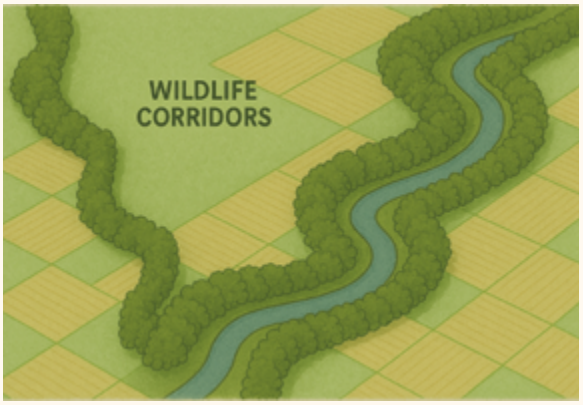
Complexity is King

This "messy" river segment provides wonderful diversity of habitat for wildlife | Photo by Kim Lennberg, Alba Watershed Consulting

When evaluating a property for its wildlife habitat value, consider how much "physical complexity" exists along the river. In the water, it is beneficial to have some places that are shallow, other places that are deep; some places where the water is flowing quickly, and other places where it is pooled behind a logjam or beaver dam. On shore, there should be similar complexity. There should be an undulating surface and "microtopography," where some places are higher and others lower, some places are drier and others wetter. If there are trees, some should be alive, others standing dead, and others fallen onto the ground or into the channel. Each of these different variations will create a niche for wildlife to live in. For landowners interested in enhancing wildlife habitat, do not try to clean up the "mess;" such attempts to simplify the landscape will reduce the habitat for animals. According to Dr. Ellen Wohl, an expert on Western river systems: "Natural river corridors are messy. They include floodplain wetlands; secondary or partially cutoff channels; instream obstructions from large wood, beaver dams, and large boulders; and downstream variations in the bed, banks, and channel shape."

Corridors and Connections

All wildlife, even the smallest critters, need to move across the landscape. Many of these animals would prefer to remain protected by vegetation as they move. Wildlife movement can be supported by restoring vegetated corridors across the property. Animals also need to move parallel to the river, so it is important that the riparian vegetation be continuous up and down the stream. Wildlife may also need to move between the riparian zone and the uplands, so it is important to have vegetated corridors that are as continuous as possible. Fences installed to create pastures or define property boundaries pose a barrier to movement and can result in entanglement and death—this risk is greatest for young elk, deer, and antelope. A study by Utah State University found that for every 2.5 miles of fence, one ungulate is killed every year. It is likely that every property has patches of native vegetation, so connecting those patches can help wildlife thrive.



Continuous wildlife corridors along the river and into the uplands | Diagram by Zenobia Consultants

Messy Rivers are Good Homes

Within the river itself, obstructions like downed trees, logjams, racked wood, and beaver dams create habitat for fish and other aquatic wildlife. Additionally, these types of impediments direct the water laterally into side channels, oxbows, backwaters, and riparian wetlands. It is very important to leave the "messy" elements in place, and if they have been removed, to install new structures or create conditions to restore natural processes to enhance wildlife habitat.

Recommended Practices or Actions

Landowners can take a variety of approaches to enhance wildlife habitat along rivers and streams while supporting healthy riparian systems. As discussed below, these approaches include protecting and improving riparian forests, designing wildlife corridors that connect the river to upland habitats, installing or modifying fencing to allow safe wildlife movement, increasing the presence of woody material in the river corridor, reconnecting secondary channels, expanding seasonal flooding of riparian wetlands, and assisting or supporting beaver activity to promote diverse and resilient habitat.

Protect and Improve Riparian Forest

Riparian forests provide critical habitat for many species. Songbirds nest in the shrubs, while osprey, herons, and eagles nest in cottonwoods. Sumac, serviceberry, and buffaloberry provide fruits, while willows provide browse for moose and elk. Sandhill cranes nest in the sedges and cattails. A riparian forest can be imagined as a three-story building. The bottom floor is filled with grasses, sedges, and wildflowers. Above that, the second level is dense with shrubs such as dogwood, willow, and alder. Rising overhead, the top floor forms an airy penthouse in the cottonwood canopy. Not every location in the watershed will have the same forest, so refer to the Yampa River Stewardship Project's Riparian Planting Palette (Appendix 1) to design the appropriate ecosystem for elevation and river gradient.

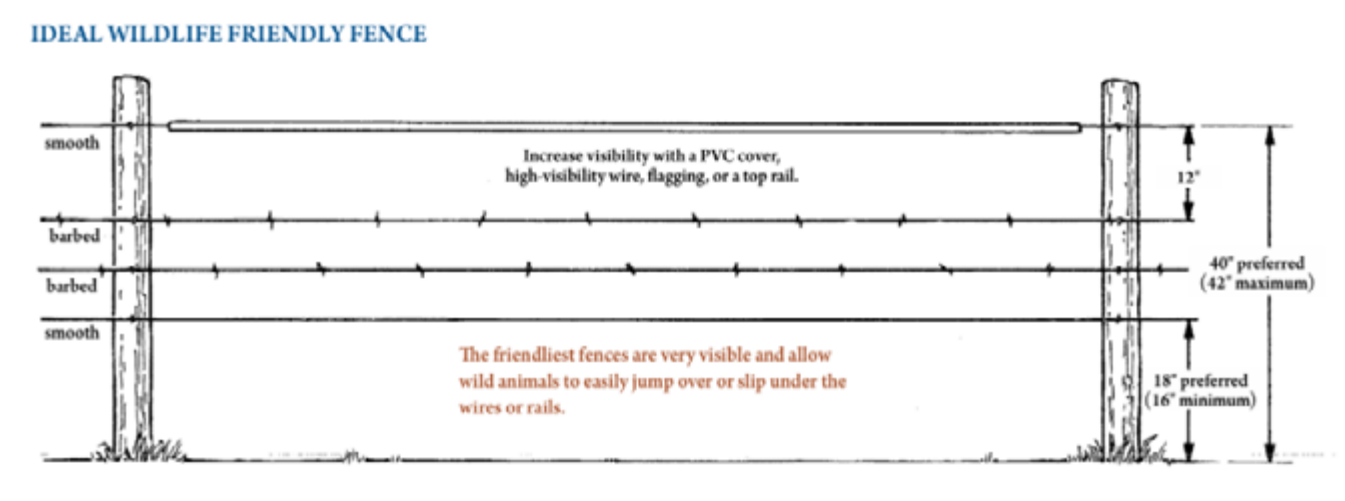
Design Wildlife Corridors from the Riparian to the Uplands

Elk, deer, antelope, foxes, and other wildlife spend most of their time in the uplands, but they depend on the river for water, and they find nutritious food at the water's edge. They often travel from the uplands to the river in the evening or morning and prefer a corridor of vegetation. Create a corridor of shrubs and trees connecting into the uplands, and assess fences and road crossings to remove obstacles.

Install or Replace Fencing to be Wildlife Friendly

Installed fencing should take into account not only livestock but also movement of wildlife, especially deer and elk. Fencing should be installed above the annual maximum flood flow level and allow enough width for the stream to meander. These guidelines help control cattle and enable wildlife movement:

- Place fencing wire on the same side of fence posts as the domestic animals
- Use a smooth wire or rounded rail for the top, and smooth wire at the bottom
- Make sure the top rail or wire is no higher than 42 inches
- Leave at least 12 inches of space between the top two wires where entanglement most frequently occurs
- Keep a minimum of 16 inches between the bottom wire or rail and the ground.
- Space fence posts at least 16 feet apart
- Provide gates, drop-downs, removable sections, or other passages for animals to cross where they tend to gather and livestock is seasonally present
- Add a rail, high-visibility wire, flagging, or other clearly visible marker to the top wire of the fence



Fence design considerations to allow for safer wildlife passage | Illustration courtesy of E.R. Jenne Illustration

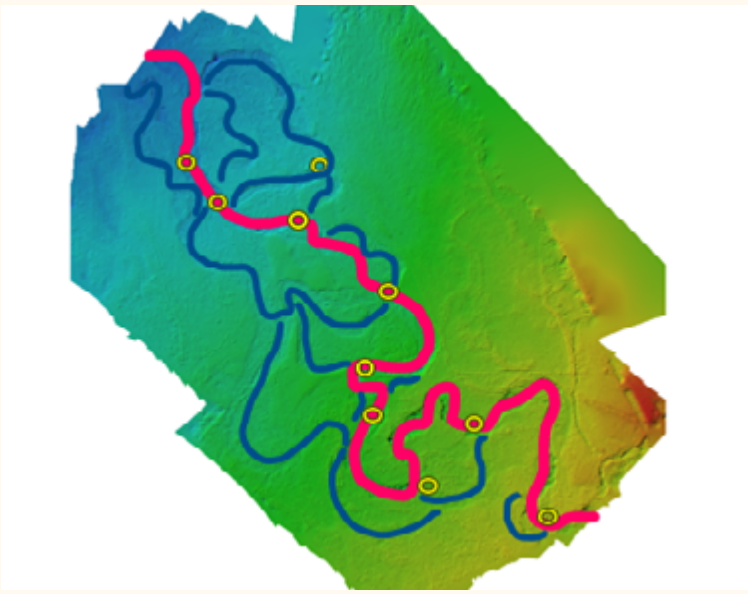
Increase Woody Material in the River Corridor

Presence of woody material along the river corridor improves diversity of wildlife habitat | Photo by Kim Lennberg, Alba Watershed Consulting

Large woody material, also referred to as large wood, is typically described as fallen trees, logs, and branches that are at least four inches wide and six feet long. Traditionally, large wood has been removed from streams in an effort to clean up stream channels and to prevent localized flooding. But as discussed in the Fisheries section, large wood helps create a more diverse aquatic habitat. Exposed logs are also used as basking and perching sites by reptiles, amphibians, and birds. Fallen trees create cover and hiding places for fish and other aquatic organisms. As water flows over and around large wood, localized scouring of the bed and banks creates pools and undercut banks that provide additional shelter and act as resting areas for fish. Finer substrate, such as small gravel, is typically deposited upstream of large wood as flows are slowed, creating important spawning habitat for some fish species.

Reconnect Secondary Channels

Land management over the past century has led to the simplification of rivers and streams into a single channel. On some properties, landowners built berms and stacked car bodies to close off secondary channels. In other areas, the removal of riparian vegetation, wood, and beavers eventually led to the river's simplification. Reconnecting secondary channels could restore high flow or overflow pathways to dissipate flooding and erosion. It could also restore wetland habitat for birds, nursery habitat for cranes, or low-flow refuge for fish. As seen in the diagram below, some sites have many secondary channels that rarely or never receive streamflow.



Digital surface model of a segment of the Yampa showing the current channel (red) and historic secondary channels (blue). Log structures at strategic locations (yellow icons) could reconnect secondary channels | Diagram by Roddy Beall, Zenobia Consultants

Increase Seasonal Flooding of Riparian Wetlands

When spring floods overflow the banks and enter the floodplain, they reinvigorate the habitat by bringing water, nutrient-rich sediment, and seeds onto the land. Annual flooding supports a rich and diverse riparian landscape, creating habitat for wildlife. In areas where it is acceptable, increase flooding onto the floodplain by adding wood, installing or encouraging logjams, and encouraging beaver dams in the stream or river.

Assist and Support Beaver Activity

As discussed in the Beaver Coexistence section, beaver complexes create diverse wildlife habitat and riparian forests. Consider installing beaver mimicry structures such as beaver dam analogs and post-assisted log structures to provide improved conditions for beaver activity. Often, beavers will colonize the human-made structures and promptly work to improve and maintain them. As water spreads along the valley floor from beaver activity, the overall footprint of the riparian area expands.

Benefits of Implementing Recommended Practices

- Wildlife viewing
- Wildlife habitat
- Hunting and fishing opportunities
- Income from guiding or leasing

Reference and Resource Materials:

Professor Ellen Wohl of CSU wrote an essay Messy Rivers are Healthy Rivers about the benefits of physical complexity in a river corridor.

NRCS published a useful Stream and Riparian Corridor Habitats handout describing what NRCS will pay for through the EQIP program.

CPW's Colorado Wildlife Habitat Program is a voluntary, incentive-based partnership program focused on habitat protection and public access.

The Watershed Center published the Wood is Good Fact Sheet on the role and benefits of large wood in Colorado streams and rivers.