

TEXAS PARKS AND WILDLIFE

Managing Riparian Habitats

F O R W I L D L I F E

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**In addition to their
aesthetic and economic
value, riparian areas
perform key ecological
functions.**

What is a Riparian Area?

Riparian areas are the margins of streams, rivers and intermittent draws, where vegetation is strongly influenced by the presence of water. Riparian-dependent plant communities differ markedly from those of the immediately surrounding non-riparian habitats. While comprising only a small proportion of the total habitat in Texas, riparian zones are some of the most productive for native wildlife. To illustrate their importance, an estimated 80% of all vertebrate species in the desert southwest depend on riparian areas for at least some part of their life cycle. Hence, conservation of riparian corridors is critical to the preservation of our native flora and fauna.

The Benefits of a Healthy Riparian Area

Riparian areas perform key ecological functions that contribute to the health of the entire ecosystem. Nutrients, detritus, and water are transported into a riparian system from runoff. Riparian vegetation adjacent to rivers and streams serves as a major energy source for aquatic organisms while providing habitat for numerous terrestrial wildlife species. Trees provide shade and prevent wide fluctuations in water temperature, protecting aquatic wildlife from the harmful effects of climatic extremes. Stems and roots of riparian vegetation stabilize the soil by reducing water velocity and minimizing erosion.

Water quality - In addition to trapping sediments due to erosion, the vegetation found along riparian areas assures water quality by filtering pollutants. By slowing and dispersing runoff that may contain excess nutrients and pesticides washing down from surrounding upland areas, lush riparian vegetation assures superior habitat for freshwater fish and other aquatic animals.

Wildlife Habitat - The rich diversity of native vegetation found in riparian areas fosters high species richness and abundance of wildlife. Riparian areas are particularly vital to wildlife, as they provide water, shelter, and food necessary for survival. As the human population continues to grow, however, large areas of riparian habitat are being altered or destroyed, making it increasingly difficult for riparian dependent wildlife to find sufficient space to live. Finally, riparian areas serve as important habitat corridors between larger areas of habitat facilitating dispersal, recruitment, and migration of wildlife.

Economics - Revenues from hunting leases, birdwatching, and other wildlife watching or recreational activities, can enhance income derived from traditional ranching and farming operations. Attracting potential wildlife users to private lands not only benefits the private landowner, but also brings added tourist dollars to the entire region. In addition to contributing to the overall health and stability of adjoining lands, quality riparian areas have an enormous aesthetic appeal. People and wildlife alike are drawn to rivers. For this reason, maintaining healthy riparian areas may well translate into higher property values for landowners with river-front property.

Types of Riparian Habitats in Texas

In the **High Plains** and **Rolling Plains** regions of Texas, riparian areas comprise a mere 2 to 5 % of the total wildlife habitat and are, accordingly, extremely important. The native plant communities of riparian areas in the Rolling Plains generally have an overstory of cottonwood, willow, hackberry, soapberry or locust, often associated with persimmon, bumelia, and mesquite. Many High Plains riparian zones consist of unwooded, entrenched draws, frequently dominated by invasive salt cedar. In the



High Plains Riparian Area. Photo by Leroy Gene Miller.

Panhandle, riparian areas provide habitat to such wildlife species as red and gray fox, squirrels, rabbits, coyotes, raccoons, skunks, bobcats, beavers, white-tailed deer, quail, turkey, pheasant, several species of ducks, mourning doves, red-tailed hawks and prairie falcons, common snapping turtles, and yellow mud turtles. Many neotropical birds that migrate through Texas during the spring and fall make heavy use of these critical riparian habitats. Some common nesters include Mississippi kites, American kestrels, Western and Eastern kingbirds, scissor-tailed flycatchers, purple martins, various swallows, robins, warblers, cardinals, buntings, sparrows, blackbirds, orioles and meadowlarks.



*Edwards Plateau Riparian Area.
Photo by Leroy Williamson.*

Three types of plant communities can characterize the riparian zones of the limestone-dominated **Central Texas/Edwards Plateau** region: those dominated by bald cypress and sycamore; pecan and hackberry; and hackberry and elm. In smaller creeks of the drier western portion of the Edwards Plateau, netleaf hackberry/little walnut; plateau live oak/netleaf hackberry; and sycamore/willow communities predominate. Species such as white-tailed deer, opossum, raccoon, Eastern cottontail, swamp rabbits, nine-banded armadillo, Carolina wrens, painted buntings, summer tanagers, yellow-throated and white-eyed vireos, prothonotary and yellow-throated warblers, are commonly found along the rivers in this region. In this area, the shallow soils are prone to heavy erosion, thus threatening water quality.

Although the **Trans-Pecos** region of Texas has less than 5% riparian habitat, these areas are critically important because of the extreme diversity of vegetation found there as compared to adjacent areas. Most of the riparian areas consist of the Rio Grande and Pecos River drainages. The deciduous riparian woodlands of the Trans-Pecos generally support plant communities with some combination of ash, cottonwood, willow, walnut, and hackberry. In areas with lower, shrubby veg-

etation, riparian areas consist mostly of mesquite/acacia, and sumac overtopped by cottonwoods, willows or ash. Riparian areas within the Trans-Pecos provide habitat to a large number of wildlife species, including white-tailed deer, desert mule deer, javelina, mountain lions, black-tailed jack rabbits, quail, raptors, roadrunners, nightjars, a myriad of flycatchers, and a host of other neotropical migrants and resident songbirds.

Riparian habitats in **South Texas** occur mainly along the Nueces and Rio Grande Rivers and associated tributaries. Mesquite, retama, granjeno, anacua (Rio Grande), live oak, cedar elm, hackberry, and whitebrush are dominant species. Research has shown that mountain lions prefer riparian areas over adjacent uplands in the South Texas region. Prey items, including feral hogs and javelininas, tend to concentrate in these areas as well. Alligators, several species of turtles, nutria, and numerous wading birds also can be found in South Texas riparian zones.

Riparian zones throughout most of the **Pineywoods** and **Post Oak Savannah** regions of Texas are mainly **bottomland hardwood forests**. These forests are subject to frequent flooding. Characteristic trees in lower flood plains in the Pineywoods region include willow oak, green ash and overcup oak. Water oak, cherrybark oak and sweetgum tend to occupy the upper flood plains. The swampy flatlands, sluggish bayous, backwaters, and river drainages of the Pineywoods support stands of baldcypress and water tupelo.

Bottomland hardwood forests harbor an incredible variety of wildlife. A survey by the U.S. Fish and Wildlife Service recorded 273 species of birds, 45 mammals, 54 reptiles, 31 amphibians, 116 species of fish and innumerable invertebrates. This amazing variety of wildlife includes such resident birds as the red-shouldered hawk, barred owl, and pileated woodpecker, as well as numerous neotropical migratory birds such as Northern parula, prothonotary warbler, and Kentucky warbler. Game birds include wild turkey, mallard, and wood duck. Mammals include beaver, swamp rabbit, river otter, bobcat, mink, and white-tailed deer.

Detecting a Degraded Riparian Area

Major factors that contribute to degradation of riparian zones in Texas include construction of roads, dams, reservoirs and impoundments, uncontrolled grazing, point and non-point pollution, urban development and timber cutting. It may sometimes be difficult to recognize the signs of a degraded riparian system when the condition is not extreme. If possible, compare the tree composition and vegetative structure of a disturbed riparian area to one nearby that is in better condition. A diverse array of forbs, grasses and wildflowers at ground level, followed by leafy shrubs and saplings in the understory are signs of a productive riparian area. Next, take a look at the width and depth of the waterway itself. Wide, gullied streams with cut-banks and murky water are telltale signs of accelerated erosion problems.

Land Uses of Riparian Areas

Grazing

Continuous overgrazing can cause degradation of riparian habitats, especially in arid environments. Reducing or eliminating streamside vegetation will cause bank destabilization and erosion. An appropriately planned grazing system will limit the intensity and duration of livestock grazing, and promote the natural recovery of the system. A rotational grazing program that moves cattle in and out of riparian pastures with sufficient recovery periods can enhance overall plant diversity.

When deciding how to prevent livestock from impacting a riparian area, land managers have several options. Complete exclusion of livestock or controlled livestock grazing are two options. Separating riparian areas from other pastures, thus facilitating the timing, intensity, and duration of grazing in those sensitive areas is another. Either temporary or permanent fencing can accomplish this to various degrees. If some grazing is allowed, the best strategy consists of short grazing periods followed by long rest periods. No one grazing strategy fits all situations, and several variations exist to meet special needs. Three common strategies include the winter grazing system, the early grazing system, and the three-season rotation system. Winter grazing provides rest to the riparian area during the growing season. Livestock graze in sensitive areas while plants are dormant. This system promotes plant vigor, as well as seed and root production. Early grazing can minimize livestock browsing on woody plants because grazing occurs very early in the growing season. The three-season rotation system utilizes the riparian pasture in the spring the first year, the summer in the second, and allows the pasture to rest in the third.

Farming

In riparian areas bordered by cultivation, habitat degradation is often caused by removal of native, perennial vegetation for annual crops. This results in decreased water quality, as valuable topsoil is lost. Riparian buffer zones should be established. These zones, ideally as wide as possible, protect native vegetation and are especially important because they act as filters to runoff which may carry silt, nitrates, fertilizers, or pesticides. When large buffers are not feasible, narrower grassy filter strips on field borders can be highly effective.



Trans-Pecos Riparian Area. Photo by Matt Wagner.

Timber

Special silvicultural methods may be used to protect riparian areas. Retention of streamside management zones in mature hardwood or mixed pine/hardwood forests greatly benefits riparian wildlife. Single-tree or small-group harvesting should be practiced, leaving the vegetation nearest the water's edge untouched. Objectives for growth of saw timber are compatible with wildlife management.



*Bald Cypress/Tupelo Swamps of East Texas.
TPWD photo.*

Conclusion

Depending on the current condition of the riparian zone, what results are desired, and how fast results are expected, a number of different approaches may be taken to restore the health of the riparian zone and enhance wildlife habitat. Some practices may simply be stopped, or variously modified, to allow native vegetation to recover on its own. The area may be actively revegetated with native plants appropriate to the ecological region. Mechanical means of channel stabilization may be employed to retard severe erosion. However, be aware that erecting structures for bank stabilization alone will not solve an erosion problem. The best solution is found by identifying and correcting the cause of the erosion and thus minimizing the effects.

Much still needs to be learned about the dynamics of riparian areas. There exists a critical need to manage them more effectively, not only for wildlife but also for people. The publications listed at the end of this brochure offer detailed information on measures available to protect and preserve riparian habitats. In addition, professionals with the agencies listed below can provide assistance upon request.

For More Information

Texas Parks and Wildlife Department
4200 Smith School Road
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Natural Resources Conservation Service
101 S. Main
Temple, TX 76501-7682
www.tx.nrcs.usda.gov

Lower Colorado River Authority
P.O. Box 220
Austin, TX 78767-0220
www.lcra.org

Texas Cooperative Extension Service
Texas A&M University System
College Station, TX 77843
<http://tce.tamu.edu>

Texas Forest Service
John B. Connally Building
301 Tarrow, 3rd Floor
College Station, TX 77840-7896
<http://texasforests.tamu.edu>

U.S. Fish & Wildlife Service
10711 Burnet Rd.
Austin, TX 78758
<http://southwest.fws.gov/statelinks/texaslinks.htm>

U.S. Forest Service
506 Hayter
Nacogdoches, TX 75962
www.southernregion.fs.fed.us

Environmental Protection Agency
1445 Ross Ave., Ste. 1200
Dallas, TX 75202
www.epa.gov/earth1r6/states.tx.htm

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