



Arizona Riparian Council

Fact Sheet

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RIPARIAN

RIPARIAN—This is a word heard more and more frequently in the Southwest. What does it mean and why should we care about the future of riparian areas?

WHAT IS RIPARIAN?

The term “riparian” is defined as vegetation, *habitats*, or *ecosystems that are associated with bodies of water (streams or lakes) or are dependent on the existence of perennial, intermittent, or ephemeral surface or water drainage.*

Put more simply, riparian areas are the green ribbons of trees, shrubs, and grasses growing along watercourses. For example, the cottonwood groves where we like to picnic along sandy riverbeds, and the stream edges with tadpoles and dragonflies are among the riparian features we enjoy.

Riparian ecosystems occur in many forms. These ecosystems vary depending on local physical conditions (water flows, soil, temperature, etc.), and on their location (elevation, valleys, canyons, etc.).

WHERE ARE RIPARIAN AREAS?

Riparian areas are found at every elevation from mountain top to desert floor. They differ from the surrounding drier habitats by having more lush, dense vegetation because of the available water. Riparian areas have more herbaceous undergrowth, grasses, shrubs, vines, trees, debris, and fallen trees. They are also noisier because they are home to more living creatures such as insects, birds, and frogs.

To find a riparian area, look for places where water flows or collects when it rains. If you hike to the top of a desert mountain and look out across the landscape, you can see narrow ribbons of green vegetation that grow in the bottom of the canyons and along dry sandy washes. Wildlife often prefer these riparian areas because they can hide in the thick shrubs and trees, and because food sources are more abundant than in the surrounding drier habitats.

Desert riparian areas vary immensely from the lush, shady band of cottonwood and willow trees growing along the perennial Verde River in central Arizona to the thin ribbon of ironwood and palo verde trees which thrive along the sandy desert washes where surface water flows only a few hours a year. Less abundant are riparian marshlands or wetlands, called “ciénegas.” Ciénegas are spring-fed marshlands that are usually found in riverine environments, such as the St. David Marsh along the San Pedro River in southeastern Arizona.



Granite Creek, Prescott, Arizona



Fremont Cottonwood

Oak Creek Canyon near Sedona, with its white-barked sycamores, wild grapevines, native and stocked fishes and noisy jays, is also a riparian area. Higher elevation riparian areas can be found along the icy cold Black River and the wet alpine meadows in the White Mountains.

Riparian areas are found throughout the state, differing in the types and kinds of vegetation and animals that inhabit them, but they all have several things in common. They are shadier, cooler, and moister than the adjacent environments, whether the adjacent environments are desert, woodland, grassland, or forest. A wide diversity of wildlife is attracted to these riparian areas including insects, amphibians, reptiles, fishes, birds, and mammals. For many species of wildlife, riparian areas provide all the necessary elements for survival (food, water, and shelter) which are absent from surrounding drier habitats.



Least Bittern

WHAT DOES A RIPARIAN AREA DO?

Riparian areas are unique environments. No part of Arizona's landscape provides so many benefits at so little cost to the public as do riparian areas.

Riparian vegetation along rivers provides food and cover for wildlife species, shade for temperature regulation of the river (which helps the fish), and provides habitat for many small animals and insects that are food for a large number of other wildlife species. Insects fall from the vegetation to feed fish. The leaves and branches that also fall into the stream or pond decompose to become food and nutrients for the other forms of life that inhabit the area.

Riparian habitats provide travel corridors for deer, mountain lion, javelina, and

Riparian Habitat Provides:

- Shadier, cooler moister habitats
- A wide diversity of wildlife
- Elements of survival (food, water, shelter)
- Travel corridors
- Improved water quality and quantity

other animals as they move across desert areas and travel from low elevations to higher elevation mountain habitats. Migratory birds are especially conspicuous travelers along these corridors.

Besides providing homes and food for fish and wildlife, riparian areas play a less conspicuous, but nonetheless important, role in improving degraded waters and maintaining high environmental quality, especially in *aquatic* habitats. They do this in a number of ways, including purifying the water and removing nutrients for plant growth, processing chemicals and organic pollutants, and reducing sediment loads and *turbidity* of flood waters.

The trees and other vegetation in a riparian area grow where they do because it provides a reliable source of water. This same water, in the form of raging floods, can carry away trees and soil, and wash away the very streambank that trees grow on. Riparian plants have adapted to these dynamic conditions. The soil that is washed away settles downstream, creating new areas for cottonwood tree seedlings to grow.

If river and streambanks were devoid of vegetation, the water would flow through the channel unimpeded and not replenish the water table. Abundant vegetation found along streambanks slow water flows and help reduce shoreline or bank erosion. By slowing down the water flows, riparian areas also serve to recharge the underground water *aquifers* by letting water slowly percolate through the soil into the water table.

WHAT IS SO SPECIAL ABOUT RIPARIAN AREAS?

The keyword is "diversity." Riparian areas can support a wide diversity of animal life because the plant community is so varied. Suitable habitat (food, water, and shelter) is provided that does not occur in the surrounding drier areas.

A riparian forest contains numerous microhabitats where many forms of wildlife occupy their unique niches, or roles within the ecological community. Some animals live in the tall trees, such as several species of woodpeckers and tree lizards, eating insects that hide under the tree's bark. Others, like snakes, and towhees can be found on the ground eating insects that



Sycamore Canyon, Yavapai County

burrow under fallen trees and into the soil. By "specializing" in this way, more animals can live in a particular habitat without competing for the same food or shelter.

Riparian areas have been called "streams of life" and "life-blood" of the desert. Approximately 60 to 75% of Arizona's resident wildlife species are dependent on riparian habitats to sustain their popula-

tions, yet these riparian areas occupy less than 0.5% of the state's total land area.

Riparian areas are among the most productive ecosystems in the world and they may be the highest, rivaling our best agricultural lands. They are particularly efficient converters of solar energy. Through photosynthesis, plants convert sunlight into plant material or biomass and produce oxygen as a byproduct. This biomass serves as food for a multitude of animals, both aquatic and *terrestrial*. Thus, riparian areas can be regarded as the farmlands of the aquatic environment where great volumes of food are produced annually.

It has been estimated that if riparian ecosystems and their watersheds were managed for their natural values, desert riparian systems may be capable of producing as much as *100 times* more living matter than adjacent desert areas.

WHY SHOULD WE CARE ABOUT RIPARIAN AREAS?

This is a question that is often asked and answered in terms of wildlife habitat.

However, riparian areas are essential to people too. If it were not for riparian areas, we would be without water to drink, not be able to irrigate our crops, or have water for recreation. Riparian areas purify our water by removing chemicals, organic pollutants, and sediments. They also allow more water to percolate through the soil to the water table. Both water quality and quantity are enhanced by riparian areas.

We should care because Arizona's riparian areas are a "resource in crisis." Little more than a century ago, rivers and streams flowed year-round in nearly every area of the state. In the last 100 years, *most* of Arizona's low-elevation riparian habitats have been altered or destroyed by man and his activities. Many of the plant and wildlife species that inhabit riparian areas are threatened with extinction because of the loss of these special places to live. This *loss of habitat* is the greatest threat to wildlife in our near future.

For centuries, perennial streams and their associated riparian habitats were



Box Elder

mainstays of Native American cultures. Indians built their villages and planted their crops near streams because these areas offered a reliable source of water, food, and shelter, and provided good soils for growing crops and materials for making tools.

Later, Hispanic and Anglo-American communities relied extensively on streams and riparian areas as locations for farms and towns and as travel routes through the desert. These riparian areas supported a diversity of game species that served as a food source and provided pelts for clothing and trade. The streams contained fish for food and water for domestic uses, irrigating crops, mining ore and minerals, and for livestock. The riparian forests provided timber for homes, wagons, and fences; fuel for fires and steamships, and forage for livestock.

Permanent streams and wetlands have disappeared because of land and water use practices. Pumping of the groundwater drains the water from underlying aquifers, and land use practices such as grazing, farming, and recre-

ational use, have altered the vegetation and surface hydrology. Water flowing in all of the major rivers and many of the lesser streams has been impounded (dams), regulated, and diverted (canals). River courses have been straightened and deepened (channelized), and the riparian vegetation removed to enable water to move swiftly downstream. Streambed sand and gravel are mined for use in construction and development of our cities and roads. Riparian plants are often removed to make way for croplands or because some people believe that these plants consume too much water.

People build their homes in riparian areas to take advantage of the shade, trees, good soils, nearby stream and wildlife, and for the beautiful scenery. Riparian areas are among the most popular recreation sites because they offer so many opportunities to enjoy the outdoors.

WHAT CAN WE DO TO HELP?

As you can see, a lot of people and other forms of life rely on riparian areas for their survival. There are many reasons to make sure that riparian areas remaining in Arizona are in a healthy condition.

Properly managed, riparian areas can provide for many uses, but people need to realize there are only a limited number of riparian areas left in Arizona and



Lowland Leopard Frog

the demand for the few areas is great. In addition, many of the demands conflict with each other, which make management decisions more difficult.

There must be an awareness of all the values of and demands upon Arizona's remaining riparian areas. People of all ages and interests need to learn about riparian ecosystems and what it takes to keep them healthy, because they are essential to our existence and heritage.

Careful planning and management are necessary to ensure that these valuable and critical natural resources continue to thrive and support all life in Arizona. By placing a priority on proper management and protection, the threats facing riparian areas can be reduced. In fact, restoration of destroyed habitats is possible if we simply choose to dedicate a portion of our energy to the ethical treatment and care that these unique areas so richly deserve.

Creeks Preservation Association, The Nature Conservancy, National Wildlife Federation, Audubon Society, or others, to become more involved in riparian protection by:

- Planting native trees along streams
- Participating in bird counts
- Conducting fish census studies
- Joining litter clean-up events
- Working toward the passage of legislative initiatives
- Participating on committees
- Attending public meetings that focus on natural resource issues



Wet Beaver Creek, Arizona

HOW TO LEARN MORE AND GET INVOLVED

Many public agencies and private organizations have acknowledged that riparian areas are the most threatened ecosystems in the state and have initiated several efforts and programs to help protect these valuable areas. Contact Arizona Game and Fish Department, Arizona State Parks, Forest Service, Bureau of Land Management, Fish and Wildlife Service, American Rivers, Prescott

The Arizona Riparian Council was formed in 1986 by individuals interested in the conservation of riparian areas in Arizona and throughout the West. Its members are from various academic, private, and state and federal agencies. Anyone interested in helping preserve and protect Arizona's riparian areas is invited to become a member.

GLOSSARY

Aquatic

Growing or living in or on water.

Aquifer

A water-bearing layer of rock, sand or gravel that is porous enough to allow water to pass through it.

Ephemeral

Lasting only a short time.

Ecosystem

The complex of living organisms and their environment functioning as a unit in nature.

Groundwater

Water within the earth that supplies wells and springs; water in the ground that is entirely saturated.

Habitat

The type of site where a plant or animal naturally or normally lives.

Intermittent

Coming and going at intervals, not continuous.

Perennial

Occurring year round; present at all seasons of the year, continuous.

Terrestrial

Growing or living in or on land.

Turbidity

The condition of being thick or opaque because of sediment.

OTHER AVAILABLE FACT SHEETS

Call the Arizona Riparian Council at (480) 965-2490 or write to us at:
 Arizona Riparian Council
 Center for Environmental Studies
 Arizona State University
 Box 873211
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<http://azriparian.asu.edu>

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