



Introduction and General Description

New Mexico is a rectangle of 121,666 square miles at the southern end of the Rocky Mountains, with an elevational range from 2,867 feet in the southeast corner to 13,160 feet on Mt. Wheeler in the north-central region. New Mexico has a diverse landscape of mountain ranges, plateaus, and river valleys. There are four major river systems, the San Juan, Pecos, Rio Grande and Gila Rivers. The climate is semi-arid to arid, with an average annual rainfall of 15 inches, and a mean annual temperature of 53° F. The major types of vegetation are tundra, forest, woodland, grassland, and riparian.

Habitats of Special Concern

The Partners for Fish and Wildlife Program in New Mexico began in 1990, focusing on creating, restoring, and enhancing habitats of concern such as wetlands, streams, riparian areas (both montane and floodplain), and upland areas, including plains-mesa grassland and scrub/woodland, and juniper savanna. Wetland areas are used by Federal trust species such as migrating waterfowl, shorebirds, and songbirds. When connected to riverine systems,

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wetlands provide nursery and resting areas for many species of fish. Migratory birds often depend on wetlands for sustenance, especially in the arid regions of the Southwest.

Riparian areas make up less than 2 percent of the land in New Mexico, but are the most biologically diverse areas in the Southwest. Some of the riparian areas are in the flyways and nesting areas of the threatened bald eagle, and endangered southwestern willow flycatcher. At least 400 different bird species have been found in these habitats. The plains-mesa grassland/shrub areas are home to the lesser prairie-chicken and



Southwestern willow flycatcher.

the endangered sand lizard.

The Partners Program also funds projects for the benefit of pollinators, i.e., bats and butterflies, and projects with a focus on education, i.e., schools and open spaces in urban areas. These projects involve the placement of bat houses, planting vegetation for the life cycles of

butterflies, and pond developments that not only benefit wildlife but are used for demonstrations and field studies.

Threats

The many diverse areas of distinct environmental conditions and vegetative growth within the State have all been affected by human activities, some to the extent of drastic changes in vegetation. The floodplain riparian and wetland vegetation along the major river systems and the plains riparian vegetation along perennial and intermittent streams have suffered greatly, along with the fish and wildlife dependent on them. In the early 1800s the gallery forests along the rivers were cut down for shelter and fuel, and cleared away for agriculture, grazing, and urbanization. Up to 90 percent of the natural riparian communities have been lost or significantly altered due to human activity. This results in permanent loss of habitat for a variety of wildlife. More recently, streams and rivers have been impounded for flood control, irrigation water storage, and diversion for agriculture and municipal uses. Levees restrict the floodplains, and areas outside the levees are drained for development. The resulting hydrologic changes, such as the drop in water tables, reduced flow rates, lack of overbank

flooding adjacent to the channels, and lack of in-channel scouring, have reduced the opportunity for natural recruitment of native vegetation, i.e. cottonwood regeneration, and allowed for an explosion of growth in introduced, non-native vegetation. Introduced Russian olive and saltcedar are out-competing the native cottonwood and willows. These riverine and riparian areas now need active management to reverse the damage and restore the habitat for fish and wildlife.

Grasslands have also been altered in New Mexico over the past 150 years. The plains-mesa is the most extensive type of grassland in the State, covering half of the eastern side. Dryland and irrigated farming have greatly reduced this habitat; the reduction is continuing under grazing by domestic livestock and urbanization. Due to poor land management the grasses are being diminished and the exposed soil erodes during precipitation. The bare, drier soil invites shrub growth and the moister erosion gullies are ideal for the establishment of junipers. Even though the shrubs and juniper are native plants, when they move into the areas that were naturally grassland they are invasive species. These areas

require proper management to be restored to healthy grasslands.

Conservation Strategies

Wetlands

Wetlands provide precious habitat for a variety of fish and wildlife species, and have been a main focus for Partners projects since the Program's inception. Many of the projects have involved creating, restoring and enhancing wetlands in the floodplains and uplands throughout the State.

For example, the City of Albuquerque, Open Space Division, has created the Alameda Wetland in former Rio Grande floodplain that is now outside the levees and high and dry, and is in the process of creating Candelaria Wetlands at another location. These wetlands, which are typical of the many wetlands created throughout the State, are excavated with a gentle slope, lined to prevent seepage, and are planted with wetland vegetation along the margins to increase habitat diversity. Islands can be constructed to provide nesting areas protected from predation by domestic dogs and cats, or artificial nest boxes can be constructed. The cost of constructing lined ponds of ½ to 1 acre in size is \$20,000 on average, making it cost-prohibitive in many cases. Where ground water is close to the surface, these wetlands can be constructed without liners, for a cost of \$5,000.



Site prior to wetland construction.



Site 2 years after wetland construction.

Streams and Riparian Areas

Rivers and streams are sensitive indicators of environmental stress, as shown when excess sediment supply and channel adjustments occur due to deforestation, overgrazing, subdivision development, and other watershed activities that cumulatively impact stream systems. One restoration technique that is cost effective is stream bank fencing. In-stream work concentrates on the concept of natural channel design that reduces sediment, improves fish and wildlife habitat, and creates channel stability such that, over time, the stream system neither aggrades nor degrades, and erosion is not excessive. Stream restoration often costs \$50-100 per linear foot.

Riparian areas, often referred to as the “thin green line,” are extremely important in the Southwest for a variety of species of fish and wildlife. Restoration efforts within the State often include fencing out trespass cattle, and sometimes involve removal of non-native vegetation species, and planting native species. These activities can range from \$500 per acre for fencing, to \$7500 per acre for removal of saltcedar, a non-native invasive species that has choked out the native vegetation in many areas.



Riparian fence-line contrast, first growing season

Grasslands

The plains-mesa sand scrub areas and their surrounding, supporting grasslands are habitat for the lesser prairie chicken. The decline of the population of this bird is directly correlated with the decline of this habitat, in both quantity and quality. The success of mating, nesting, and brood rearing, besides year round foraging and protection, is dependent upon a healthy condition of the remaining scrub/grassland.

The Partners Program is working with private landowners, in coordination with other Federal and State agencies, to evaluate habitat conditions and offer technical advice and assistance along with funding for restoration, enhancement, and maintenance of habitat. Some efforts have involved seeding with native grasses, limitations on chemical removal of shrubs, and grazing management plans. Initial efforts have included a 16,000-acre ranch and a 22,000-acre ranch, helping fund fencing and water development to provide more flexible grazing management practices, averaging \$2-3 per acre. The landowners realize that healthy habitat for the lesser prairie-chicken means healthy, productive scrub/grasslands for their livelihood and for posterity.

Other conservation efforts by the Partners Program in the grasslands of New Mexico have included working with private landowners to remove invasive juniper or shrubs, to reseed with



Vegetation survey in shinnery oak/grassland

native grasses and forbs, to add mulch to eroding areas, and to build water catchments in undercutting, eroding arroyos. The plains-mesa grasslands tend to become juniper woodland or desert scrub land when they have been mismanaged with overgrazing or plowing. It is important to restore these areas back to their natural grasses for migrating and resident songbirds, raptors, and mammals. These grasslands are also critical areas for the large watersheds servicing some of the major river systems in the State. Thus, they are also related to the health and populations of aquatic life.



Multi-agency grassland vegetation survey team

Partners

Natural Resources Conservation Service
U.S. Forest Service
Fish and Wildlife Service
U.S. Army Corps of Engineers
U.S. Bureau of Reclamation
New Mexico State Land Office
New Mexico Department of Game and Fish
New Mexico Environment Department
University of New Mexico
Interstate Stream Commission
State Historic Preservation Office
City of Albuquerque
Middle Rio Grande Conservancy District
Town of Taos
City of Las Cruces
City of Santa Fe
Chaves County S&WCD
Valencia County S&WCD
Torrance County S&WCD
Rio Grande Nature Center
Upper Gila Watershed Association
The Nature Conservancy of New Mexico
Ducks Unlimited
Rocky Mountain Elk Foundation
Trout Unlimited
New Mexico Riparian Council
Forest Guardians
Galisteo Watershed Association
Tree New Mexico
Santa Fe Botanical Gardens
Zuni Pueblo
Santa Ana Pueblo
Zia Pueblo
Isleta Pueblo

- < 3,772 acres of riparian area
- < 287 riparian miles
- < 38,000 acres of prairie
- < 21,954 upland acres
- < 63 in-stream miles

Future Needs

The Partners for Fish and Wildlife Program is a very positive tool for working with private landowners in habitat restoration. The benefits are many for fish and wildlife, as well as the landowner and the Service, including improvements in habitat, pride in landowner stewardship, and positive relationships with a government agency. The potential for habitat restoration in New Mexico is tremendous, including:

- < 200,000 acres of restorable wetlands
- < 2,500 miles of restorable streams and
- < 5,000 miles of restorable riparian areas
- < Over 1,000,000 acres of restorable grasslands.

Almost all of the species listed as endangered or threatened under the Endangered Species Act, and species that are declining, use the habitat types that we have identified as important. Without restoration projects on private lands, these species may not survive.

Accomplishments

Since 1990, the Partners Program has funded 207 projects in New Mexico, totaling 33,303 acres. These areas of habitat creation, restoration and/or enhancement include:

- < 1,169 acres of wetlands

CONTACT



Chuck Mullins
Partners for Fish and Wildlife Program
U.S. Fish and Wildlife Service
2105 Osuma NE
Albuquerque, NM 87113
505 346-2525 (Fax) 505 346-2542

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