



NEW MEXICO



Long Canyon - Torstenson Family Wildlife Center.
Photo: USFWS.

Introduction and General Description

New Mexico is roughly a rectangle encompassing 121,666 square miles of diverse topography located at the southern end of the Rocky Mountains. It has an elevational range from 2,867 feet in the southeast corner to 13,160 feet at the top of Mt. Wheeler in the northcentral region. It is a vegetative crossroads in the southwestern United States, with mountain forests and alpine areas in the northcentral part of the state; the western edge of the Great Plains to the east; arid grasslands and the northernmost extent of the Chihuahuan Desert to the south; and the eastern fringe of the Great Basin to the northwest.

There are four major river systems, the San Juan (northwest), Pecos (east), and Gila (southwest) rivers, and the Rio Grande (central). The climate is semiarid to arid although annual rainfall ranges from 8 inches in southern New Mexico to nearly 40 inches in mountain areas. This combination of elevation, temperature, rainfall and soils has created a complex mosaic of fish

and wildlife habitats in New Mexico. It truly is a “Land of Enchantment.”

Our Mission

“The Partners for Fish and Wildlife Program in New Mexico restores, enhances, and protects fish and wildlife habitat by providing financial and technical assistance to non-

Federal landowners through voluntary cooperative agreements.”

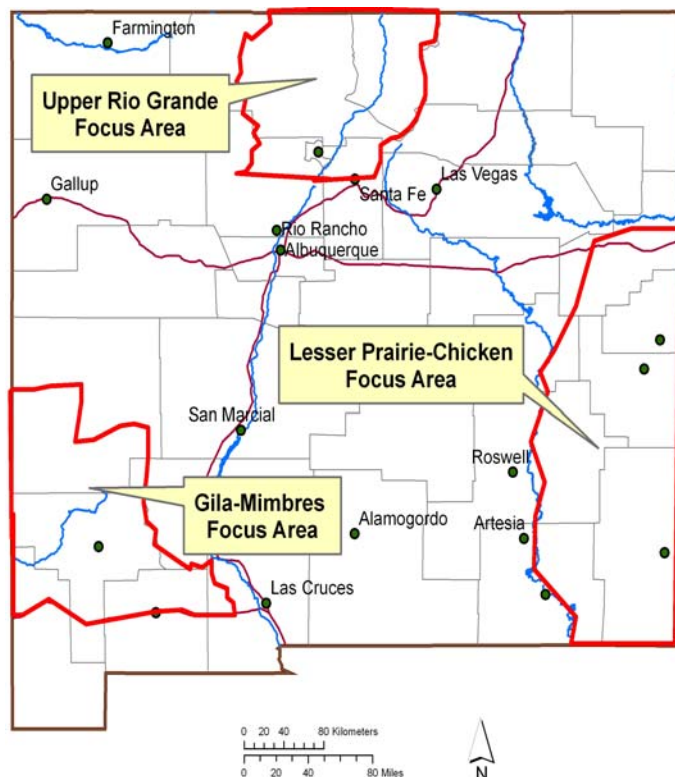
With approximately 50 percent of New Mexico in private ownership, there are ample opportunities for habitat restoration on private land. Restoration projects include: riparian

and in-stream habitat areas; wetlands within river, stream and arroyo floodplains; and uplands habitat restoration, including grasslands, shrublands, and forests. Nonnative vegetation removal and native vegetation planting occurs in all habitat types. Projects often provide educational opportunities with schools and communities.

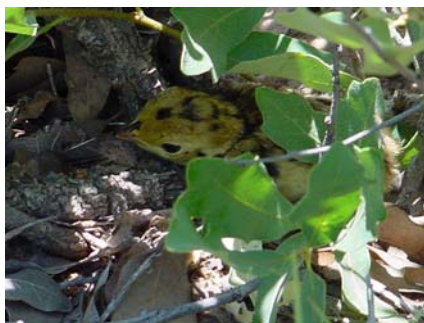
Habitats of Special Concern

In 2005, three Focus Areas were selected by the Partners for Fish and Wildlife Program in New Mexico:

- Lesser Prairie-Chicken Focus Area,
- Gila-Mimbres Watersheds Riparian Focus Area, and
- Upper Rio Grande Watershed Riparian Focus Area.



Partners Program projects within the Lesser Prairie-Chicken Focus Area will concentrate on improving nesting habitat for the lesser prairie-chicken, a candidate for listing under the Endangered Species Act, within the historic shinnery oak-sand bluestem vegetation association in eastern New Mexico. Projects in this Focus Area will also benefit the sand dune lizard, another candidate for listing, as well as declining populations of migratory birds that use this habitat.



Lesser prairie-chicken hatchling in shinnery oak habitat in eastern New Mexico. Photo by: Dawn Davis, NM Dept. of Game and Fish

The riparian Focus Areas were selected to target watersheds where habitat restoration projects will be designed to improve habitat for federally endangered, threatened, or candidate species, such as the southwestern willow flycatcher, loach minnow, spikedace, Chiricahua leopard frog, Chihuahu chub, Gila chub, Gila pyrg, and yellow-billed cuckoo, as well as other unique, rare or declining Federal trust species. These watersheds have excellent partnership potential with other agencies and organizations to leverage funding and increase restored habitat for these species.

Threats

The diverse habitats and vegetation types within the State have all been affected by human activities. Some activities have resulted in dramatic changes in vegetation composition or



Bank undercutting and slumping prior to Partners project construction near Santa Fe, New Mexico.

Photo: USFWS

density. The riparian vegetation along the major river systems and perennial and intermittent stream channels have been altered affecting the fish and wildlife species 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 eliminated or significantly altered by human activity. This has resulted in loss of habitat for a variety of wildlife, increased or decreased stream flows, increased erosion, and altered stream channel configurations.

More recently, streams and rivers have been impounded for flood control, irrigation water storage, and agriculture, and municipal uses. Levees have constricted the floodplains, and areas outside the levees have been drained for development. The resulting hydrologic changes (e.g., drop in water tables, diminished flow rates, lack of overbank flooding adjacent to channels, and reduced in-channel scouring), have decreased natural regeneration of native vegetation, such as cottonwood and willows, and allowed for uncontrolled growth of exotic, nonnative vegetation. Invasive species, especially Russian olive and salt cedar trees, are out-

competing native cottonwood and willows. These riverine and riparian areas need to be actively managed to restore fish and wildlife habitat.

Grasslands have also been altered in New Mexico over the past 300 years since European colonization. The plains-mesa grassland association is the most extensive type of grassland in the State, covering half of the eastern side. Dryland and irrigated farming have converted a portion of these grassland habitats. Livestock overgrazing and land development continue to reduce the wildlife value of these habitats or convert them to other uses. Some grazing practices can decrease height, density, and species composition of grasslands. Exposed soils are subject to drying and to erosion during precipitation events. The bare, drier soil is conducive to weed and shrubby species invasion that normally cover a small percentage of the landscape. Increased runoff during storm events removes soil and creates gullies in pastures. Gullies generally have higher soil moisture than the surrounding grasslands, which supports the establishment of junipers. Although junipers are native plants, when they spread into or dominate the grasslands, they are



Grazing management and rain at the right time produced excellent habitat and livestock forage on this ranch in Bueyeros, New Mexico. Photo: USFWS

considered invasive species. These areas require more intensive management to restore or maintain healthy grasslands.



Newly constructed fence excludes livestock from the Rio Penasco and adjacent riparian areas. The river provides recreational trout fishing in this stretch. Photo: USFWS

Conservation Strategies

In-Stream, Riparian, and Wetland Habitats

In the arid Southwest, these relatively moist, lush areas are among the most productive wildlife habitats for bird breeding, wintering, and migration. Desert riparian ecosystems have the highest density of breeding birds in North America, with at least 400 different bird species observed. Riparian areas comprise just 1 to 2 percent of New Mexico's landscape, yet three-fourths of the vertebrate species in the State depend on riparian habitat for at least a portion of their life cycle. The federally endangered southwestern willow flycatcher and threatened bald eagle migrate through and nest in suitable riparian corridors in the State. Wetlands connected to the river systems provide spawning, nursery, or cover habitat for many species of fish, amphibians, and invertebrates.

Many of these important habitats have been altered or eliminated by land management activities. There are several strategies to restore, improve, or protect them. Fencing

is an effective way to protect in-stream, riparian, and wetland habitats from livestock impacts. Fences can also reduce or eliminate impacts from recreational use, such as off-road vehicles, or other activities (e.g., trash dumping). Habitats recover rapidly in these protected areas. Removal of nonnative species such as salt cedar and Russian olive, and replanting and reseeding with native species speeds the restoration of these areas. Invasive species removal and control and native species replanting along large rivers averages \$2,000 to \$5,000 per acre.

In-stream restoration work in New Mexico concentrates on maintaining or restoring natural channel configurations that reduce erosion and sedimentation, improve fish and wildlife habitat, and reestablish stable stream channels. In-stream restoration costs vary depending on the size and length of the channel, and the amount of work that needs to be accomplished. These costs range from \$3 to \$25 per linear foot.

Restoration of wetlands within the floodplains of river systems restores or replaces wetland functions and habitat reduced or eliminated by human activities such as flood control, water diversion for municipal and agricultural use, and development. Wetland restoration may



The federally endangered southwestern willow flycatcher nests in riparian habitat in New Mexico. Photo: USFWS

include excavation of open water areas; restoring the microtopography of former agricultural fields that were laser-leveled for efficient water distribution and crop production; restoring or maintaining hydrologic connections to the river; and replanting native wetland vegetation. Costs for wetland restoration can vary from \$1,500 to over \$5,000 per acre depending on the scope of the project.



Shinnery oak-bluestem vegetation in eastern New Mexico is the primary habitat for the lesser prairie-chicken. Photo: The Nature Conservancy

Prairie, Grassland, and Shrubland Habitats

The plains-mesa sand scrub areas with their associated grasslands in eastern New Mexico provide habitat for prairie species such as the lesser prairie-chicken, sand dune lizard, grassland-dependent migratory birds, and resident mammals. Research studies show that declines in lesser prairie-chicken and sand dune lizard populations are directly correlated to the decline in the quantity and quality of their habitats.

The plains-mesa sand scrub habitat tends to become dominated by junipers or other desert scrub species (e.g., cholla cactus, mesquite) with intensive livestock use. Restoration of these areas to



Lesser prairie-chicken habitat degraded by nonnative mesquite invasion. The Partners Program helps landowners control mesquite to restore nesting habitat for the lesser prairie-chicken.

Photo: The Nature Conservancy

native grasses and shrubs is important to migrating and resident songbirds, raptors (e.g., hawks, eagles, owls), reptiles, and mammals. Grasslands also provide valuable water quality benefits by reducing runoff, minimizing erosion, and trapping or filtering pollutants to adjacent or downstream aquatic systems such as large rivers, wetlands, and playas.

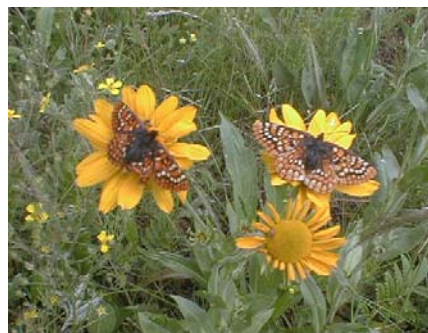
The Partners Program works with landowners to remove invasive shrubs, reseed native grasses and forbs, mulch eroding areas, and construct structures to stop gully formation or to restore natural arroyo functions. Project components may include installation of structures to facilitate improved grazing management (e.g., cross fencing, stock tanks), and fence removal. Improved grazing management (e.g., pasture rotation and deferral from grazing for a growing season or longer) results in enhanced habitat for grassland species. The cost for grassland restoration activities averages less than \$50 per acre.

Forest Habitats

Forests provide habitat for migratory birds; resident wildlife such as elk, deer, and wild turkey; and several rare, threatened or endangered species including the federally endangered Mexican spotted owl and the rare Sacramento Mountains checkerspot butterfly. Montane forests contain headwaters of large watersheds such as the Pecos and Gila rivers, and the Rio Grande. Pinyon-juniper woodlands provide habitat for a

number of wildlife species, especially migratory birds.

Fire suppression in forested habitats has led to overcrowded trees, insect and disease outbreaks that kill trees, and has greatly increased the risks of catastrophic wildfires. The Partners Program is working with private landowners in these forested areas to provide technical assistance and cost-share funding to thin woodlands to improve forest and watershed health, and fish and wildlife habitat. Conservation practices include livestock exclusion fencing, forest meadow enhancement, and forest stream and riparian improvement. The costs for forest improvements averages \$30 per acre.



Sacramento Mountains checkerspot butterfly in a forest meadow in New Mexico.
Photo: USFWS

Partners

Zuni Pueblo
 Santa Ana Pueblo
 Zia Pueblo
 Isleta Pueblo
 San Ildefonso Pueblo
 Santo Domingo Pueblo
 Bureau of Indian Affairs
 Farm Bureau
 Natural Resources Conservation Service
 U.S. Forest 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
 Theodore Roosevelt Conservation Partnership
 University of New Mexico
 New Mexico State University
 Interstate Stream Commission
 State Historic Preservation Office
 City of Albuquerque
 City of Las Cruces
 City of Santa Fe
 Middle Rio Grande Conservancy District
 Town of Taos
 New Mexico Association of Conservation Districts
 Chaves County S&WCD
 Valencia County S&WCD
 Tarrant 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
 National Wild Turkey Federation
 Quail Unlimited
 Mesilla Valley Flyfishers
 New Mexico Riparian Council
 Galisteo Watershed Association
 San Francisco Watershed Association
 Tree New Mexico
 Santa Fe Botanical Gardens
 Rio Grande Botanic Garden
 Farm Service Agency

Accomplishments

Since 1990, the Partners Program in New Mexico has funded 219 projects in New Mexico, totaling 70,155 acres. This includes the habitat restoration, protection, and/or enhancement of:

- ◆ 1,260 acres of wetlands,
- ◆ 4,425 acres of riparian area,
- ◆ 310 riparian miles,
- ◆ 63,025 acres of (grasslands, forests, and shrublands), and
- ◆ 75 in-stream miles.



Petroglyph of a deer at the Torstenson Family Wildlife Center.

Photo: USFWS

Future Needs

The Partners for Fish and Wildlife Program is an important tool that provides financial support and technical assistance to private landowners who decide to restore habitat on their lands. Partners Program projects benefit many fish and wildlife species, as well as each landowner and the Service. The landowners' lands are restored, enhanced, or protected. These habitat improvements foster pride of stewardship and good relationships are developed between the private landowners and the Federal government.

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.

Most of the species in New Mexico listed as endangered or threatened, designated as candidates under the Endangered Species Act, or are declining require one or more of these habitat types. The efforts of private landowners to restore or improve habitat on their lands will be instrumental in the recovery of species, in keeping species off the endangered species list, and in halting the decline of other Federal trust resources.

Continuing Challenges

The Partners Program in New Mexico will continue to face challenges in the future. The costs to the Service or the private landowner for restoration supplies, cultural resource surveys, and other materials continues to climb. We strive to coordinate our efforts with other Federal, State, Tribal, and local agencies, non-governmental partners and our current participating landowners to identify needs and to improve the service and products we provide to private landowners throughout New Mexico. Some of these needs include:

- ◆ Increasing biological and project performance monitoring,
- ◆ Augmenting outreach to potential partners,
- ◆ Refining Focus Area selection,
- ◆ Expanding program awareness and encourage applications from Native American Tribes and Pueblos,
- ◆ Providing additional technical assistance to private landowners (e.g., restoration techniques brochures),
- ◆ Encouraging private landowners to help recover at-risk species by providing them assurances of no additional future regulatory requirements, and
- ◆ Expanding invasive plant species control or eradication.



Permanent photo point to monitor success of willows to be planted to enhance habitat for migratory birds.

Photo: USFWS

CONTACT

Nancy D. Riley
Partners for Fish and Wildlife Program
2105 Osuna Road NE
Albuquerque, NM 87113
505 346-2525 (Fax) 505 346-2542



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