

**NWI Region 2  
Pecos River  
Mapping Project  
2003**

**DRAFT**

**Project Extent:**

The Pecos River meanders 900 miles covering 101 USGS 7.5" quads. Starting North New Mexico near the village of Pecos New Mexico and it flows into the Rio Grande at Del Rio, Texas.

**NWI Mapping History:**

This project was mapped in the mid 1980's with B&W 1:80k along with 10/20/75 aerial photography as part of the standard NWI mapping program of the late 1980's.

**Current Project:**

The 2003 mapping effort will be totally digital, using 1:12,000 CIR aerial photography from Winter 2001 photography. Geodatabase feature classes will be created for polygon and linear data using a THALES-OPTEM DTS scope. The older coverages will be converted to feature classes and re-projected to UTM NAD 83 to be used as collateral.

Base data will consist of 1996-98 CIR and B&W and color USGS DOQQ's along with USGS DRG's. The Cowardin and Riparian will be used to identify wetland and riparian habitats.

**Project Background:**

The river has its headwaters in the Sangre de Cristo Mountains west of Santa Fe in New Mexico and empties into the Rio Grande above Del Rio, Texas. The Ninth Circuit Court required the Service to prepare an Environmental Impact Statement designating Critical Habitat for the Rio Grande Silvery Minnow. The historic range of the Silvery Minnow includes the Pecos River. The Service is considering this area for reintroduction of the RGSM. Existing NWI wetlands maps do not include the riparian component necessary to evaluate habitat conditions. The maps also are at a scale which is too small for meaningful analysis. Two other endangered fish live in the Pecos River and need baseline wetland/riparian data. Fires are a constant problem in the upper watershed of the Pecos and continually alter the structure of the riparian bosque. Restoration of riparian areas and river rehabilitation efforts in and around the Bitter Lake NWR are ongoing. Water management is crucial; an MOU exists among the federal agencies to properly management the river. By court order, the state of New Mexico must provide a stated amount of Pecos River water to the state of Texas. To accomplish this, water rights are being purchased from individual landowners. The state is looking at future water delivery systems and/or diversions to accomplish this. Habitat alteration due to the invasion of exotic plant species, particularly salt cedar and Russian olive, is becoming worse. Contaminants and poor land use practices are critical issues in the Pecos River watershed. The Corps of Engineers has many rehabilitation projects on the Pecos, in addition to at least six dams, and several planned, which alter water levels in downstream reaches. Monitoring of the rivers wetlands and riparian Bosque is critical for endangered species.

## General Photo Interpretation Guidelines:

Like almost all rivers in the west, the Pecos is a controlled system. Reservoirs and diversions for agriculture prevent the river from flooding on any kind of regular basis. Hence, most of the vegetation along the river will be considered riparian in nature. Natural and man-made wetlands do exist and are easily differentiated by signature.

With early winter photography, signatures are sometimes difficult to distinguish (most species have a purplish tone). The photography used in the 2003 update was an early winter over flight. The northern section was the most diverse in the number of signatures, (see corresponding location information below) while the central and southern sections only had on or two signatures. A high number of the Salt Cedar signatures were of a very dark or black shrub with some forested; which would indicate a leaf off, or dead. Seeing that there is no "dead" class in the riparian system and the difficulty of telling the live leaf off and the dead Salt Cedar, we identified all Salt Cedar as live. The high number of dead Salt Cedar is due to the fact that many Federal, State and local conservation agencies are trying to eradicate the Salt Cedar plant, most by aerial chemical application, due to its high water consumption rates in the arid South West.

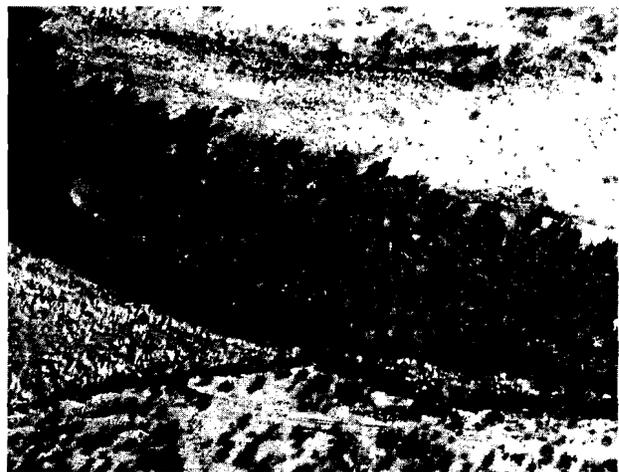
The Pecos River's vegetation changes drastically moving North to South. The most Northern section is an Alpine environment consisting mostly of non-deciduous Ponderosa Pine (*Pinaceae Pinus ponderosa*). Cotton Wood (*Populus deltoids*), Alder (*Alnus tenuifolia*), Willow (*Salix sp.*) Salt Cedar (*Tamarix ramosissima*), , Russian Olive (*Elaeagnus angustifolia*) and a variety of mixed deciduous vegetation.

The Central section of the river contains, Russian Olive (*Elaeagnus angustifolia*), Live and dead Salt Cedar (*Tamarix ramosissima*), Mesquite (*Prosopis pubescens*). The Salt Cedar will fill the riverbanks and have a dark red or nearly black shrubby/narrow signature with the Russian Olive mixed in, however the Russian Olive has a rounded crown and purple shrub/forested signature. The Mesquite comes in from the upland and fills the Riparian zone up to the Salt Cedar/Russian Olive. The Mesquite has a dark, flat, shrub signature.

The Southern Section is nearly a monoculture of Salt Cedar. The Pecos River has a very high saline content, which doesn't allow for many woody vegetation species to take root. Pre modern times the river was situated in a an upland tall grass prairie, however in the early 1900's Salt Cedar was introduced to strengthen riverbanks from failure in high water years. The Salt Cedar has now reached epidemic numbers creating a riparian zone made up of nearly entirely Salt Cedar. (See photos below



The Pecos River cutting through the Texas Prairie, lined with a mono culture of Salt Cedar.(leaf on)



The contrast of dead and live Salt Cedar.(leaf on)

**Bitter Lakes National Wildlife Refuge:**

A dynamic Refuge that has artificially created and flooded wetlands/moist soil units that serves as a winter home for migrating and native birds. Extensive restoration of Bitter Lakes NWR is also in progress here (elimination of salt cedar, introduction of willow and native tall grasses).

We went on a field/site check with the Refuge biologist, which he concurred on the NWI mapping. The refuge contains many impounded spring fed, saturated wetlands which is indicated on the mapping.

This is a general description of the dominant, most widely observed wetland and riparian habitats along the Pecos River and is not all-inclusive. Future, more in-depth, NWI mapping and studies in this area may yield slightly different results.