WATER MANAGEMENT'S EFFECTS ON FISH AND WILDLIFE MANAGEMENT ALONG THE RIO GRANDE IN NEW MEXICO

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In order to appreciate the present and properly plan for the future, we need to look to the past. Geese, cranes, turkeys and other native fowl were abundant along the banks of the Rio Grande. Many saline seeps on both sides of the river suggested poorly drained conditions. These were some of the findings of early explorers like Coronado and Espejo along the Rio Grande in the 1500s. In 1844 Joseph Gregg found the Rio Grande near Santa Fe to be several hundred yards wide but quite shallow, often less than knee-deep, with cottonwoods scattered along it banks. In 1846 and 1847, J.W. Abert recorded seeing mallards, brant, snow geese, "blue" cranes, sparrow hawks, quail, western meadowlarks and many muskrats along the Rio Grande between Socorro and Santa Fe. He described the river as a magnificent winding stream, its continuity broken by meanders and islands. It looked like chain of silver lakes.

The Rio Grande of the past was a magnificent river surrounded by desert and mountains, flowing unimpeded out of its deep gorge, onto a broad floodplain. A very precise and synchronous association evolved between this river and the

plant and animal communities living within its waters and on its floodplain. Today, since 1900, things have changed considerably. Elephant Butte Dam was constructed in 1916 and Caballo Dam in 1938. Cochiti Dam was completed in 1975. The Rio Grande channelization project from below Caballo Dam to the Texas border was authorized in 1936. Several miles of low flow conveyance channels, levees, and several diversion dams were constructed within a 300-mile reach of the Rio Grande from Velarde to Elephant Butte Dam during the 1930s, 1940s and 1950s.

These activities and others, have resulted in the loss of at least 10,000 acres of wetlands. They have also rendered fish habitat unsuitable along 60 percent, or 290 miles, of the Rio Grande's natural floodway in New Mexico. Levee construction and channelization have confined the once dynamic Rio Grande within a very small portion of its broad floodplain. This confinement, coupled with strict controls placed on stream flows, have brought about the additional loss of hundreds, perhaps thousands, of acres of riparian and wetland habitats.

Effects

These activities have had several effects on the Rio Grande's fishery. For example, dams and their operation modify instream flows and impede migration within the system. Instream flow modifications affect the availability

of required habitats of fishes during their various life stages. For example, if exceedingly large flows are released during the spring, they may kill young fry that have just hatched from eggs laid the previous fall. Likewise, if fish are not allowed to migrate to and from feeding, spawning, rearing and resting areas, they will not survive.

The modifications to the Rio Grande have also introduced a new aquatic environment to the system -- reservoirs. Many new exotic species of fish have been introduced to the Rio Grande as a result. Largemouth bass, crappie, northern pike, striped bass, bluegill and walleye are some examples. These fish are popular as sport fish, as are the rainbow and brown trout, which also have been introduced to the river. These fishes require fairly dependable and constant water storage levels in the reservoirs or instream flows in order to survive.

The annual and/or seasonal fluctuation of reservoir storage levels and resultant downstream releases often conflict with the needs of the fish fauna. Thus, management becomes difficult. These problems can become magnified during periods of water abundance due to the need for evacuation of reservoirs to accommodate extraordinary runoff and the obligation to meet the seasonal irrigation needs of agriculture.

The effects on the birds, mammals, reptiles and amphibians and their habitat are not dissimilar from the fishes. Construction and channelization also change several aspects of life along the Rio Grande. Operation and maintenance activities associated with water projects on the Rio Grande affect 73,000 acres of riverine, riparian, and wetland habitats along the Rio Grande from Velarde to Elephant Butte. The reservoirs created by the dams, inundate and destroy thousands of acres of riparian, wetland, and upland habitats that support hundreds of species of animals and millions of individuals.

Modification of instream flow affect seasonal flooding events that are necessary for the regeneration of cottonwood communities that support hundreds of species of birds. In addition, extended periods of water abundance and inevitable drought cycles create severe problems in management of riverine habitats for migratory waterfowl.

The Fish and Wildlife Service is responsible for protecting the Rio Grande's valuable fish and wildlife resources under the authorities of the Fish and Wildlife Coordination Act, Endangered Species Act, National Environmental Policy Act, Clean Water Act, Migratory Bird Treaty Act and other pieces of federal legislation as well as some executive orders. We do not take the responsibility lightly. Today the Rio Grande remains, in spite of the

pressures placed upon it, a productive ecosystem. It supports approximately 60 percent of the 444 bird species known to occur in the state. The bald eagle, whooping crane and peregrine falcon, three of our nation's endangered species, occupy the skies above it and rest on its shores. Two federal and three state wildlife refuges are located in its floodplain. We must, and we shall, keep trying to find the median ground between water management for the people and water management for the wildlife along the Rio Grande.