ABSTRACT

TITLE:	Environmental History of River Restoration in Grand Canyon National Park
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ABSTRACT: Before the Colorado River was controlled by several dams, it carried large sediment loads to the Sea of Corte, roared with unpredictable seasonal floods, and supported a dynamic ecosystem and the riparian zones were diverse. Since human impact has changed the Colorado River's system entirely, there have been various complex river restoration attempts in Grand Canyon National Park to restore it to its natural state. Because multiple jurisdictions control management of the Colorado River since the Grand Canyon turned into a National Park in 1919, river restoration has been difficult. The Colorado River Compact of 1922 makes every drop of the river accounted for from mass allocation. Demand for hydroelectricity is high and operators of Glen Canyon Dam must keep the turbines turning to power major cities in the Southwest. The Hoover Dam was completed in 1936 and began the desert civilization that is still booming today. In 1963, Glen Canyon Dam was completed by the Bureau of Reclamation at Lees Ferry at the start of Grand Canyon National Park. This dam turned the water clear and cold, directly affecting the Colorado River inside of the Grand Canyon. Now the predictable water is destroying beaches, allowing the establishment of invasive plant species, and killing the native fish, bird and mammal species. Monitoring projects commenced in the 1970s which triggered management plans and legislation to protect the Colorado River in the Grand Canyon. Starting in 1974, the Colorado Research Program began monitoring projects set up by Science and Resource Management division which lead to the Colorado River Management Plan. Following the monitoring projects, a preliminary report was conducted on expanding vegetation by the Museum of Northern Arizona in 1975. A foot-step induced sediment displacement report was piloted in 1979 after observations were made that the river no longer was replacing lost sediment on beaches from campers' erosion. In 1982 Glen Canyon Environmental Studies formed to conduct research on the Colorado River and its changing riparian environment. They also helped complete a Draft Environmental Impact Statement that led to the Grand Canyon Protection Act in 1992. Along with protective legislation, scientific investigation of morphing plant species in the Colorado River's riparian zone was also a focus. The invasive deciduous plant most commonly observed beginning in the late 1970s along the bank of the Colorado River is the Tamarisk (Tamarix ramosissima). The Colorado River no longer has surging floods which allows for the Tamarisk to flourish and dominate the riparian habitat. Tamarisk also increases fire frequency in the Grand Canyon where it had previously not played a significant role. The interim flows released from Glen Canyon dam beginning in 1991 have helped eliminate some of the invasion of tamarisk. From 2000 to 2004, The Arizona Water Protection Fund (AWPF) awarded a grant to the Grand Canyon Wildlands Council to conduct a multi-phase riparian restoration project focusing on tamarisk removal. In recent years, there has been effort to expend or remove nonnative fish in the Colorado River, especially the brown and rainbow trout, to help benefit the native fish populations such as the Humpback Chub. From January 2003 through August 2006, field trips were taken to mechanically remove the nonnative fish serial depletion passes by using boat-mounted electrofishing within the Little Colorado River inflow reach. Since the results of the study were proven successful, the U.S. Fish and Wildlife Service calls for continuation of mechanical removal of nonnative fish in critical humpback chub habitat.