RAZORBACK SUCKER IN LOWER GRAND CANYON AND THE LAKE MEAD INFLOW AREA—A HISTORY OF THE SPECIES AND BIOLOGICAL OPINIONS

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In 1995 the US Fish and Wildlife Service (USFWS) stated in a Biological Opinion (BiOp) on the Operation of Glen Canyon Dam that the Bureau of Reclamation (Reclamation) should "…sponsor a workshop, and develop a management plan for RBS in Grand Canyon." Then, in December 2007 the USFWS issued a Biological Opinion to the Bureau of Reclamation (Reclamation) on proposed coordinated operations of Lake Powell and Lake Mead. One of the Conservation Measures in the BiOp was for Reclamation to "…examine the potential habitat in the lower Grand Canyon for the species [razorback sucker, *Xyrauchen texanus*], and institute an augmentation program in collaboration with FWS, if appropriate." A project to survey for razorback sucker at the Colorado River inflow (CRI) area of Lake Mead was also recommended in the comprehensive review report on 10 years of razorback sucker monitoring in Lake Mead. In 2010 Reclamation initiated two projects to evaluate razorback sucker use of the CRI and lower Grand Canyon. The first project was a comprehensive survey for the fish at the CRI area using captive, pond-reared, sonic-tagged razorback suckers to locate wild fish. The second project consisted of two components: (1) a thorough literature review of the species, with special emphasis on information about this species in Grand Canyon, and (2) a river trip with several experts on the species' ecology and biology, as well as representatives of various management agencies, to evaluate the habitat in the lower Grand Canyon and make recommendations regarding fulfilling the BiOp's conservation measure. In early spring of 2010 three wild adult razorback sucker were discovered using the CRI area and several larvae were captured, indicating that fish were using this area and were reproducing. The literature review found 10 records of razorback suckers being captured in Grand Canyon between 1944 and 1990, primarily near the mouths of tributaries, including the Paria River, Little Colorado River, and Bright Angel Creek. All were adult fish and none have been captured since 1990. Further work at the CRI from 2011 through 2013 showed that more fish were using the CRI area and moving between the CRI and other spawning and congregation areas in Lake Mead (Virgin and Muddy River inflows, and Las Vegas Wash) as well as moving further upstream at least 35 miles to Quartermaster Canyon. In 2014 Reclamation initiated a more comprehensive study of the fish in lower Grand Canyon concentrating on the river from Lava Falls downstream to Lake Mead. This action is being conducted under collaboration with the Glen Canyon Dam Adaptive Management Program, Lower Colorado River Multi-Species Conservation Program, Upper and Lower Colorado Regions of Reclamation, National Park Service, USFWS, Grand Canyon Monitoring and Research Center, Nevada Division of Wildlife, Arizona Game and Fish Department, Hualapai Indian Tribe, Bio-West Inc., ASIR LLC, and other stakeholders and is one of the few projects where both the upper and lower basins are working together for the conservation of Razorback Suckers.