Fiscal Year 2018
Draft Scope of Work to Conduct
2017 San Juan River Nonnative Fish Control Program
Data and Results Assessment Workshop

Background

Since implementation of annual intensive nonnative fish removal in 2000, the structure of the fish community in the San Juan River has changed substantially (Franssen et al. 2014a). On an annual basis, Colorado Pikeminnow and Razorback Sucker densities (i.e., CPUE) have increased over time, nonnative Common Carp densities have decreased, and Channel Catfish densities have decreased but only in upper reaches of the river (Franssen et al. 2014a, Franssen et al. 2014b). However, the relative contribution of nonnative fish removal via electrofishing, other management actions and environmental factors in driving these changes is unclear. For example, establishing a causal linkage between nonnative fish removal or other management actions (e.g., flow manipulation, habitat restoration) and changes in endangered fish densities is difficult due to the heavily augmented nature of these populations. Conversely, temporal variation (or the lack of) in the densities of nonnative fishes following removal efforts are potentially more directly related, but this variation is also not exempt from other environmental factors (e.g., flow variation and reduced immigration). Given the spatial and temporal inconsistencies of the previous nonnative fish removal program as well as the multiple biotic and abiotic factors contributing to temporal variation in densities of fishes, it is not surprising effects of this management action have been difficult to elucidate.

Based on annual population estimates of Channel Catfish (Duran 2015 and Hines 2015), it is readily apparent the level of nonnative fish removal effort previously put forth will likely not suppress recruitment enough to induce system-wide population decline of this species. Nonetheless, removing individual Channel Catfish from the river by definition lowers their densities, which has the potential to directly impact endangered fishes through reduced competition or predation as well as indirectly through deleterious effects of electrofishing on native fishes. Yet, these potential direct (or indirect) effects of the San Juan River's nonnative fish removal program has been difficult to assess due to the complications mentioned above. Therefore, the nonnative fish removal efforts was redesigned to evaluate by what factor and for how long Channel Catfish densities were lowered and the responses of native fish densities to electrofishing and nonnative fish removal. Continued implementation and evaluation of a more structured nonnative fish removal design should provide the San Juan River Basin Recovery and Implementation Program with a clearer scientific evaluation of the effects of the nonnative removal program on native and nonnative fishes in the San Juan River.

Relevant Long Range Plan Tasks

Task 3.1.1.5 Organize and conduct workshops, as necessary, to develop a comprehensive non-native species management plan, including measurable river wide objective to determine effects of removal effort on native and nonnative fishes.

Study Area

The experimental design will be conducted in geomorphic reaches 5, 4, 3, and 2, from Shiprock Bridge, NM (RM 147.9) to Mexican Hat, UT (RM 52).

Objectives

1. Spatially demarcate removal and control reaches on the San Juan River in order to statistically evaluate responses of fishes to nonnative fish removal via electrofishing.

2. Assess Channel Catfish CPUE and size distributions within removal reaches over time using nonnative fish removal data.

3. Compare Channel Catfish, Razorback Sucker, and Colorado Pikeminnow CPUE between control and treatment reaches using sub-adult and adult fish community monitoring, and nonnative fish removal data.

4. Compare Channel Catfish, Razorback Sucker, and Colorado Pikeminnow population estimates (pre and post removal).

5. Compare Channel Catfish size distributions between control and removal reaches using sub-adult and adult fish community monitoring, and nonnative fish removal data.

6. Quantify movement of tagged Channel Catfish among treatment and control reaches over the summer.

7. BC recommendations to the CC for alterations to the nonnative removal program.

Methods

The PIs and Program Office will collect and analyze the data to answer the specific objectives described above.

Products

Prior to the workshop the results of analyses will be summarized and distributed to workshop participants. Workshop discussion and deliberations will be summarized and distributed to SJRIP participants.

Estimated FY-18 Budget

The will be no specific cost associated with conducting a nonnative fish workshop in December 2017. Any data analyses for the workshop will be carried out under the Program Office and nonnative fish removal SOWs.

Literature Cited

Duran, B.R. 2015. Endangered fish monitoring and nonnative species monitoring and control in the upper/middle San Juan River: 2014. Final report to the San Juan River Basin Recovery Implementation Program. Albuquerque, New Mexico.

Franssen, N.R., S.L. Durst, K.B. Gido, D.W. Ryden, V. Lamarra, and D.L. Propst. 2014a. Long-term dynamics of large-bodied fishes assessed from spatially intensive monitoring of a managed desert river. River Research and Applications doi: 10.1002/rra.2855

Franssen, N.R., J.E. Davis, D. Ryden and K.B. Gido. 2014b. Fish community responses to mechanical removal of nonnative fishes in a large southwestern river. Fisheries 39:352–363.

Hines, B. 2015. Endangered fish monitoring and nonnative fish control in the lower San Juan River 2014. Final report to the San Juan River Basin Recovery Implementation Program. Albuquerque, New Mexico.