**Problem: Tamarisk Invasion on the San Rafael River**

Although present in the watershed since the 1930s, tamarisk (Tamarix ramosissima) came to dominate the riparian vegetation after the flood years in the 1980s, according to local landowners. As the tamarisk encroached, the river channel narrowed and oxbows were abandoned. Juvenile rearing habitat for native fishes was lost, as was nesting habitat for birds. At-risk species in the watershed include:

- bonytail chub (Gila elegans)
- Colorado pikeminnow (Ptychocheilus lucius)
- razorback sucker (Xyrauchen texanus)
- humpback chub (Gila cypha)
- bluehead sucker (Catostomus discobolus)
- roundtail chub (Gila robusta)
- flannelmouth sucker (Catostomus latipinnis)
- southwestern willow flycatcher (Empidonax traillii extimus)

**Evaluation: Conservation Effects Assessment Project Agreement**

Some research suggests that restoration plans such as this are not a wise use of resources because tamarisk provides acceptable wildlife habitat, native riparian vegetation uses just as much water, and streamflow management (i.e., reductions in flow due to dams and irrigation diversions), not the tamarisk, creates and maintains conditions that favor tamarisk invasion. To evaluate the success of the WHIP plan, and help predict the effects of future similar projects, NRCS provided funding through the Conservation Effects Assessment Project (CEAP) to Utah State University (USU). USU researchers have begun an analysis of aerial photos and USGS stream gage data. They also excavated a trench perpendicular to the channel, described the stratigraphy of sediments, and recovered six buried tamarisk trees. Analysis of tree-ring characteristics will determine the timing and elevations of initial establishment of tamarisk and the rate of subsequent floodplain accretion.

**Preliminary Results:**

Preliminary analyses of hydrological and sediment data acquired to date reveal the following:

1. The historical hydrological regime of the watershed was dominated by snow melt from the Wasatch Range, with some flow contributed by monsoonal events in the summer. It is not yet clear which flow events are most important in influencing channel geomorphology.
2. Peak discharges have been dramatically reduced over the past 50 years. Instream flows have been reduced to the point where the San Rafael River is no longer perennial in some reaches. This is likely due to reservoir development and irrigation diversion in the upper watershed.
3. Floodplain accretion is occurring, in addition to channel incision in the study reach. This may hinder the ability to restore connectivity between the channel and its floodplain to maintain the native riparian vegetation.

**Restoration Plan:**

In 2008, NRCS provided funding under the Wildlife Habitat Incentives Program (WHIP) to the Utah Division of Wildlife Resources (UDWR) to remove tamarisk and restore native vegetation on 1049 acres of state land along the San Rafael River. Objectives of the WHIP Plan are to improve fish and wildlife habitat by:

- Increasing the amount of native vegetation in the riparian zone
- Increasing streamflows in the river
- Improving the ability of the stream channel to respond to large flow events and access its floodplain

**References**


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