COLORADO RIVER RECOVERY PROGRAM
FY 01 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: C-6

I. Project Title: Floodplain Habitat Restoration Program

II. Principal Investigator:

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III. Project Summary:

The purpose of the Floodplain Habitat Restoration Program is to restore or enhance natural floodplain functions that support recovery of endangered fishes in the upper Colorado River basin. Following are some 2001 highlights.

-Pre-acquisition contaminants surveys were conducted for six properties
-Two contaminants reports (Hamilton et al 2001) were finalized

-Pre-acquisition floodability assessments were conducted for three sites
-Pre-restoration floodability surveys and design options were developed for four sites
-Post-restoration evaluation could not be performed because of low 2001 peak flows

-A 463-acre easement was acquired on the Green River

-Floodplain habitat was restored at the Escalante State Wildlife Area on the Gunnison

-Lands (877 acres to date) are being managed by the FWS-ONWR Refuge Manager as part of the Colorado River Wildlife Management Area.

-Age-1 razorbacks stocked into Above Brennan in 1999 successfully overwintered into 2001. Unfortunately, many did not make it through the summer of 2001, thought to be the result of high water temperatures combined with low dissolved oxygen..

-The levee removal evaluation completion report final draft developed

IV. Study Schedule:

1993 to 2003

V. Relationship to RIPRAP:

-GREEN RIVER ACTION PLAN: MAINSTEM
ACTIVITY II. RESTORE HABITAT
II.A. Restore and manage flooded bottomland habitat.
-COLORADO RIVER ACTION PLAN: MAINSTEM
ACTIVITY II. RESTORE HABITAT
II.A. Restore and manage flooded bottomland habitat.
-COLORADO RIVER ACTION PLAN: GUNNISON RIVER
ACTIVITY II. RESTORE HABITAT
II.A. Restore and manage flooded bottomland habitat.
-GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN
ACTIVITY II. RESTORE HABITAT
II.A. Conduct inventory of flooded bottomland habitat for potential restoration.
II.B. Support actions to reduce or eliminate contaminant impacts.

VI. Accomplishment of FY 01 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Contaminants

Federal mandates require that contaminants surveys be conducted on properties in which the government wishes to acquire an interest (e.g., easement). Also, the Habitat Restoration Program does not wish to spend money restoring areas that cannot sustain endangered fishes because of contaminants problems. The following sites were surveyed for contaminants and/or pre-acquisition samples were collected and analyzed:

Green River	River Mile	Acres	Clearance
Thunder Ranch	305.5	?	Pending

Colorado River	River Mile	Acres	Clearance
Ron Tipping	174.6	?	Yes
Ephemeral Resources	174.5	?	Conditional
Ela Sanctuary	167.8	23.0	Yes

Gunnison River	River Mile	Acres	Clearance
Helen Morgan	55.0	45.0	Yes
Lucarelli	62.0	56.7	Yes

Sites designated as “conditional clearance” will require clean-up if acquired.
Sites designated as “pending” are awaiting clearance.

Two contaminants reports were submitted to the Recovery Program.

Hamilton, S.J., K.M. Holley, K.J. Buhl, F.A. Bullard, L.K. Weston, and S.F. McDonald. 2001. The evaluation of contaminant impacts on razorback sucker held in flooded

bottomland sites near Grand Junction, Colorado - 1996. U.S. Geological Survey, Yankton, SD. 302pp.

Hamilton, S.J., K.M. Holley, K.J. Buhl, F.A. Bullard, L.K. Weston, and S.F. McDonald. 2001. The evaluation of contaminant impacts on razorback sucker held in flooded bottomland sites near Grand Junction, Colorado - 1997. U.S. Geological Survey, Yankton, SD. 229pp.

Hydrology/Geomorphology (see annual report attached)

The objectives of this work are 1) to conduct pre-acquisition and pre-restoration floodability surveys to determine what the Recovery Program is getting for its acquisition and construction dollars; 2) to develop habitat restoration design options and to assist with construction oversight; and 3) to conduct post-restoration surveys to refine site designs that will not adversely affect channel morphology or adjacent landowners and that will require minimal long-term O&M.

Pre-acquisition floodability assessments were conducted for the Tipping site, the Hot Spot site, and the Audubon site on the Colorado River. Preliminary results were provided to appraisers to help determine easement values, and to evaluate floodability enhancement options assuming easement negotiations are successful.

Pre-restoration floodability surveys and design options were developed for the Walter Walker State Wildlife Area and Grand Junction Pipe sites on the Colorado River, and the Unaweep Charolais site on the Gunnison River. Construction is scheduled for pre-runoff 2002. Design options were also developed for the Audubon site.

Post-restoration hydrologic evaluation and scour and deposition monitoring could not be performed for Bonanza Bridge and Above Brennan on the Green River, nor for the Escalante State Wildlife Area on the Gunnison River, because of low peak flows during 2001.

Environmental Compliance

Compliance with federal and State environmental laws is necessary prior to acquisition and/or restoration of sites. Assessments are needed to cover NEPA, 404 permits, water rights, water quality regulations, Section 7, floodplain regulations, etc. During FY 2001, the necessary permits were acquired for construction at the Escalante State Wildlife Area on the Gunnison River, and Old Charlie Wash and Johnson Bottom on the Green River.

Land Acquisition Activities (see annual report attached)

The purpose is to acquire interests in land from public and private landowners to restore and protect bottomland habitat. This involves acquisition planning, community involvement, establishing and monitoring acquisition procedure, acquiring land from willing landowners, and transferring that land. During FY 01 an easement contract was signed for 463 acres on the Green River.

Old Charlie Wash (see annual report attached)

Old Charlie Wash is a wetland on the Ouray National Wildlife Refuge. Since 1994, it has served as a pilot site for testing hypotheses on floodplain habitat and razorback sucker restoration. Water inlet and outlet control structures, fish screens, and a harvest kettle were installed.

During 2001, low spring runoff peak flow conditions limited fish access into Old Charlie Wash. Old Charlie was drained completely in September. Few fish were retrieved during draining. All were nonnatives.

Johnson and Leota

Outlet structures with fish kettles have been completed for Leota L-7/7a and Johnson Bottom. Additional work was done on Johnson to enhance drainability. During 2001 draining, a few inches of water remained in Johnson. Speckled dace was the only native species harvested during draining. Fathead minnow comprised 75%.

Bonanza Bridge and Above Brennan

Levees were breached in three locations at the upstream end of each of the two sites, so that they will entrain drifting razorback larvae during spring runoff. Biological evaluation could not be conducted during 2001 because of low peak flows. Evaluation is now scheduled for 2002.

The Stirrup, Baeser Bend, and Above Brennan

On April 14, 1999, these three floodplain wetlands were each stocked with 1,985 razorbacks, 1998 year class, 103 mm. Survival during 1999 (in the presence of nonnative fishes) was good; growth was excellent. Survival estimates from spring 1999 to spring 2000 were 49% for the Stirrup; 61% for Baeser Bend; 72% for Above Brennan, suggesting good overwinter survival. Some of the razorbacks were caught trying to escape into the river during spring runoff. Baeser Bend was connected to the river for 7 days, 31 razorbacks were captured trying to escape; Above Brennan 10 days, 10 razorbacks captured; the Stirrup 3 days, one razorback captured. It is unknown if the razorbacks were trying to leave the sites because of poor site conditions or for other reasons.

On April 12, 2000, each of the three sites received 2511 razorbacks, 1999 year class, 103.7 mm, 12.8 g. Survival was poor, possibly because of low flows during runoff, sites

were connected to the river for only a few days, high water temperatures and low dissolved oxygen.

No survival was detected for the ~57,000 larval razorbacks stocked into the Stirrup in spring 1999.

Larval fish were stocked into the Baeser Bend site in May 2001 (no Age I fish were available for stocking). No survival of these fish was detected during mid-summer sampling.

No overwinter survival was detected in The Stirrup site. Razorback suckers were not caught in Baeser Bend. Carp were the only fish caught in the site. There were an estimated 232 razorback suckers remaining in the Baeser Bend during fall 2000; these fish were apparently unable to survive through the winter into 2001. At Above Brennan 49 razorback suckers were caught. These were 1998 year class fish that were stocked in 1999. The average length and weight of these fish was 412 mm and 932 g. Many were ripe males; no ripe females were caught.

Gravel Pit at 29 5/8 Road and Jarvis Site (see annual report attached)

There are ~340 gravel pits in the Colorado (Grand Valley) and Gunnison (Delta) rivers. The Gravel Pit at 29 5/8 Road (also known as Gardner Pond) and the Jarvis site were connected to the Colorado River to determine if gravel pits can serve as a surrogate floodplain habitat to assist in recovery of the endangered fishes.

Project goals are to 1) evaluate gravel pits traditionally reclaimed as depressions but reconfigured, backfilled, and sloped to drain and behave as ephemeral, floodplain habitats for adult Colorado pikeminnow and other native fishes, and 2) remove and dispose of nonnative fishes from these same modified ponds.

During 1999, 5,943 nonnative and 413 native fish (including 2 sub-adult and 15 adult Colorado pikeminnow) were collected from Gardner Pond; 1,017 nonnative and 175 native fish from the Jarvis Pond.

During 2000, 101 native and 6,813 nonnative fish were collected from Gardner and Jarvis ponds. Green sunfish, black bullhead, and red shiner were dominant. Gardner Pond continues to be a suitable spawning area for green sunfish and largemouth bass. Three adult Colorado pikeminnow were captured from Gardner Pond, compared to 17 in 1999 and 11 in 1998. Two razorback sucker, one stocked in Gunnison River and one stocked in Colorado River upstream, were collected in Gardner Pond. No endangered fishes were captured in Jarvis Pond. The draft final report is scheduled to go the Biology Committee by 2/1/02.

Levee Removal

The primary purpose of this work is to restore or enhance natural floodplain functions that support recovery of endangered fishes (especially the razorback sucker) in the upper Colorado River basin. Levees have been breached at eight sites along the Green River in Utah. The report is behind schedule; a revised final draft is expected to go to the Biology Committee by 1/15/02.

Site design. For most sites, the levees were breached at the downstream end. While this configuration allows access by adult and juvenile fishes, it is not conducive to entraining drifting razorback larvae. Upstream levee breaching was done for Bonanza Bridge and Above Brennan prior to runoff 2000, and is scheduled for Unaweep Charolais and Grand Junction Pipe in spring 2002.

Razorback response. There are not enough razorbacks left in the system to adequately evaluate response to habitat restoration or other recovery activities. Increased hatchery production and stocking is underway to help with response evaluations and to "kick-start" razorback populations.

Nonnative fish response. Both floodplain and main channel habitats are dominated by nonnative fishes. Some nonnative species have been found to reproduce in floodplain habitats (e.g., black bullheads and green sunfish). So far, there has been no evidence to suggest that floodplain habitat restoration results in an increase in abundance of nonnative fishes that persist in the river over the long term. In instances where fishes have been purposefully drained directly into the river, however, a short-term pulse in nonnatives has been observed.

Fish food. Preliminary results of studies on fish-food organisms suggest that floodplain habitats are highly productive and provide food to the river ecosystem, especially plankton. Water temperatures in the floodplain were found to be warmer even after spring runoff had subsided.

Vegetation. A variety of plant species (including tamarisk and whitetop) have begun to colonize the disturbed areas where levee cuts were made. It remains to be seen which species will win out. During 1999 it was observed that the levee cut at Bonanza Bridge has been colonized primarily by cottonwoods and other native plant species.

There appears to be a correlation between densities of native fishes and aquatic vegetation. One hypothesis that was suggested is that native fishes may be keying on vegetative cover.

Duration of inundation. Inundation of both terraces and depressions are expected to help feed the ecosystem and benefit endangered, native, and nonnative fishes. However, floodplain terraces do not remain inundated for a long enough period of time for razorback larvae to grow large enough to avoid predation when they have to return to the main river channel.

Timing of inundation. Timing high flows (greater than 13kcfs) to coincide with larval razorback drift would ensure that larvae have access to and/or would be entrained in floodplain habitats where levees have been breached or lowered.

VII. Recommendations:

1. Continue existing studies as planned in FY 02-03 Work Plan.
2. Continue to breach levees at the upstream end of sites, and evaluate ability of sites to entrain drifting razorback larvae.
3. Continue to stock razorback larvae into floodplain depressions to demonstrate survival to recruitment in the presence of nonnative fishes; and to determine when (and why) razorbacks decide to move into the river.
4. For floodplain wetlands where razorbacks have been stocked, monitor conditions (e.g., water levels, dissolved oxygen, temperature). Retrieve/harvest razorbacks if conditions become marginal.

VIII. Project Status:

On track and ongoing.

IX. FY 01 Budget	Capital	Annual	O&M
A. Funds Provided:	$1,170.8K	$51.4K	$133.7K
B. Funds Expended:	$???.?K	$51.4K	$116.7K
C. Difference:	$???.?K	$00.0K	$ 17.0K

D. Percent of FY 01 work completed: 90%

E. Recovery Program funds spent for publication charges: None as yet.

Note: The expenditures for capital funds cannot be determined until internet access is restored. Of the unexpended O&M funds, $17K had been earmarked for drainage canal maintenance, which was not needed in FY 01.

X. Status of Data Submission (Where applicable):

No data have been submitted to the database manager as yet.

XI. Signed: Pat Nelson January 4, 2002
Principal Investigator Date