

COLORADO RIVER RECOVERY PROGRAM
FY 99 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: CAP-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.

- Levees have been breached at 8 sites on the Green River such that they would begin to flood when Jensen flows exceed 13,000 cfs
- Construction of an outlet structure was completed at Leota L-7
- Construction of an outlet structure was completed at Johnson Bottom
- Repairs to prevent the Old Charlie outlet from leaking were completed
- Periodic excavation will be necessary to maintain drainability of controlled facilities (e.g., Leota, Johnson, Old Charlie)
- Pre-acquisition contaminants surveys were conducted for 22 properties
- Pre-acquisition floodability surveys were conducted at 14 properties
- Post-restoration geomorphic surveys were conducted at 8 sites
- A status report was developed and approved for 1997-1998 floodability assessment and geomorphic survey data
- Easements have been acquired on 426 acres (7 properties); an additional 30 properties are currently in various stages of the acquisition process.
- Northern pike spawned in Old Charlie early in 1999. The site could not be drained completely because of sediment deposition in the outlet canal
- Age-1 razorbacks stocked into floodplain wetlands “grew like gang-busters”
- A levee removal evaluation completion report is due in July 2000 (for 1996-99 data)
- The weed management plan is behind schedule; new target is for spring of 2000.

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 99 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 sampled pre-acquisition:

<u>Green River</u>	<u>River Mile</u>	<u>Acres</u>	<u>Clearance</u>
SH-W	304.2	76.7	Yes
IMC-W	302.5	12.0	Yes
EJH-E	286.3	65.0	Yes
BDO-W	270.0	272.0	Yes
RL-W	237/247	446.0	Yes

Colorado River

Clifton Pond/Slough	178.0	38.4	
Pick-up Pond	174.8	6.5	
RT-N	174.6	?	
ER-N	174.5	?	
TH-S	169.8	?	
NH-I	169.5	?	
MC-N	168.5	?	Yes
MC-S	167.0	?	Yes
GJP-N	165.5	17.7	Yes
P/B-I	165.0	25.0	Yes

MC-I	161.5	?	Yes
GM-I	161.5	?	Yes
TF/RR-N	160.0	?	
SNK-S	156.8	31.0	Yes

Gunnison River

GF-E	55.0	?	
BC-W	12.5	52.0	Yes

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 nine privately-owned properties along the Green River; four properties along the Colorado River; and one property along the Gunnison River. Preliminary results are being provided to appraisers to help determine easement values, and to evaluate floodability enhancement options assuming easement negotiations are successful. Also, floodability assessments that were conducted in 1997 were refined to improve the hydraulic modeling.

Pre-restoration floodability surveys and design options were developed for the Escalante State Wildlife Area on the Gunnison River; Bonanza Bridge, Above Brennan, and Sheppard Bottom on the Green River.

Post-restoration scour and deposition monitoring was performed at eight sites along the Green River. Thus far, little or no sediment has been deposited in the bottomlands themselves, although there has been significant scour and deposition in the breached inlet/outlet areas. However, these areas have maintained their as-built floodability more or less. It appears that deposition and scouring of the breach areas may be partly a function of flow magnitude, duration, and rate of change and, as a result, the relative floodability of each restored site may vary somewhat from year to year. Sand bars that formed adjacent to restoration sites in 1997 have eroded or move away during 1998.

Construction inspection and stake-out surveys were conducted for fish kettles at Leota Bottom and Johnson Bottom. A status report was developed which summarized all data collected during 1997 and 1998.

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. A supplemental EA was developed which allows BR to transfer acquired easements to FWS.

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.

Seven properties (426 acres) have been acquired. Approximately 30 properties are currently in various stages of the acquisition process.

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 FY 99, the outlet structure was repaired by ONWR staff to prevent leaks.

The original goal for FY 99 was to use Old Charlie for trapping and removing nonnative fishes from the Green River and to return any native fish, including Colorado pikeminnow and razorback sucker, back to the river. Draining of Old Charlie began in mid-September 1999. Unfortunately, the drainage canal had filled with sediment since it was last cleaned out in the spring of 1995, so the site could not be drained completely. BR-Provo was able to clean out the canal in late November/early December. When the outlet was opened to reinitiate draining and fish harvest, water flowed from the river into the site because of high releases from Flaming Gorge. Therefore, in order to drain Old Charlie, flows from Flaming Gorge will need to be reduced (or the site will need to be pumped).

In addition, numerous age-1 northern pike were harvested during the September draining, and many are thought to remain in the dead pool. To prevent them from getting into the river, the site will need to be rotenoned and/or drained or pumped prior to spring runoff 2000.

Johnson and Leota

Outlet structures with fish kettles have been completed for Leota L-7/7a and Johnson Bottom. Both sites were meant to be completely drainable. Unfortunately, additional work will be needed to accomplish this. Assessments will be conducted during FY 00 to determine drainability options.

Bonanza Bridge and Above Brennan

Surveying was conducted and design options were developed to breach levees on the upstream end of these two sites, so that they will entrain drifting razorback larvae during spring runoff. Construction is scheduled for April 2000.

Pariette Draw

A nonnative fish outlet control structure was installed by BLM-Vernal to prevent escapement of nonnative fishes into the Green River during the annual draining of the Pariette wetlands. The structure seems to be working well for the most part. Gabions will be installed below the structure to improve efficiency in preventing fish escapement.

The Stirrup, Baeser Bend, and Above Brennan

These three floodplain wetlands were each stocked with 1,985 age-1 razorback suckers. Survival (in the presence of nonnative fishes) was good; growth was excellent.

Each of the three sites was stocked with ~10 radio-tagged adult razorbacks. Results have not been analyzed as yet.

In addition, the Stirrup was stocked with ~57,000 larval razorbacks. None (or maybe one) of the fish were recaptured, suggesting 1) no survival, or 2) the survivors had not grown large enough to be vulnerable to capture. Best-case scenario would be that large numbers are captured during spring/summer 2000.

Walter Walker (see annual report attached)

Walter Walker, combined with Adobe Creek and Horsethief, are expected to help determine if razorback suckers are adversely affected at floodplain sites with high levels of selenium and, if so, if "freshening flows" can be used to reduce selenium levels. Analyses and reports are behind schedule; but are expected to be completed during FY 00.

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.

Levee Removal (see annual report attached)

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, and studies are nearing completion to evaluate fish species' and ecosystem response. A final report is due in July 2000.

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 is planned for Bonanza Bridge and Above Brennan prior to runoff 2000.

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).

Fish food. Preliminary results of studies on fish-food organisms suggest that floodplain habitats are highly productive and provide a tremendous amount of food to the river ecosystem. 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. A noxious weed management plan is currently under development. 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 13k cfs) 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 00 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 and juveniles into floodplain depressions to demonstrate survival to recruitment in the presence of nonnative fishes; and to determine if/when razorbacks decide to move into the river.
4. Compile existing data to determine if there is a relationship between area and duration of floodplain inundation and subsequent percentages of native and nonnative fishes within main channel habitats.

VIII. Project Status:

On track and ongoing.

IX. FY 99 Budget

- A. Funds Provided: \$1,584.6K
- B. Funds Expended: \$ Will need to check with BR-GJ
- C. Difference: \$ Unknown at this time
- D. Percent of FY 99 work completed: 90%
- E. Recovery Program funds spent for publication charges: None as yet.

X. Status of Data Submission (Where applicable):

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

XI. Signed: Pat Nelson January 3, 2000
Principal Investigator Date